

700

851121 Accelerometer Drop Test
851231 Dry Cycle F.P. Head
851483 Accuracy 7mm Rem Exp
851562 Strains Muzzle
851621 Destructive 350 REM Mag
851973 Accuracy 5.56 MM
852102 Accuracy - Button rifled Varmint

852482 Accuracy 7mm Rem Exp
852971 Dry Cycle Fire Control
853392 Recoil Force 7mm Exp

MEASUREMENT LAB TEST RESULTS

REQUESTOR: R. Murphy TESTER: P. Conant DATE: 04/23/85

REPORT NO.: 851121 WORK ORDER NO.: C-5004-315

TEST TYPE: Developmental, New Design ,Drop Test

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: _____

BARREL TYPE: _____ PROOFED: YES ____ NO ____

REASON FOR TEST : This test was initiated to find the acceleration a M/700 receiver sees on impact when it is dropped from heights of 1, 2, 3, and 4 feet onto the 90 durometer mat.

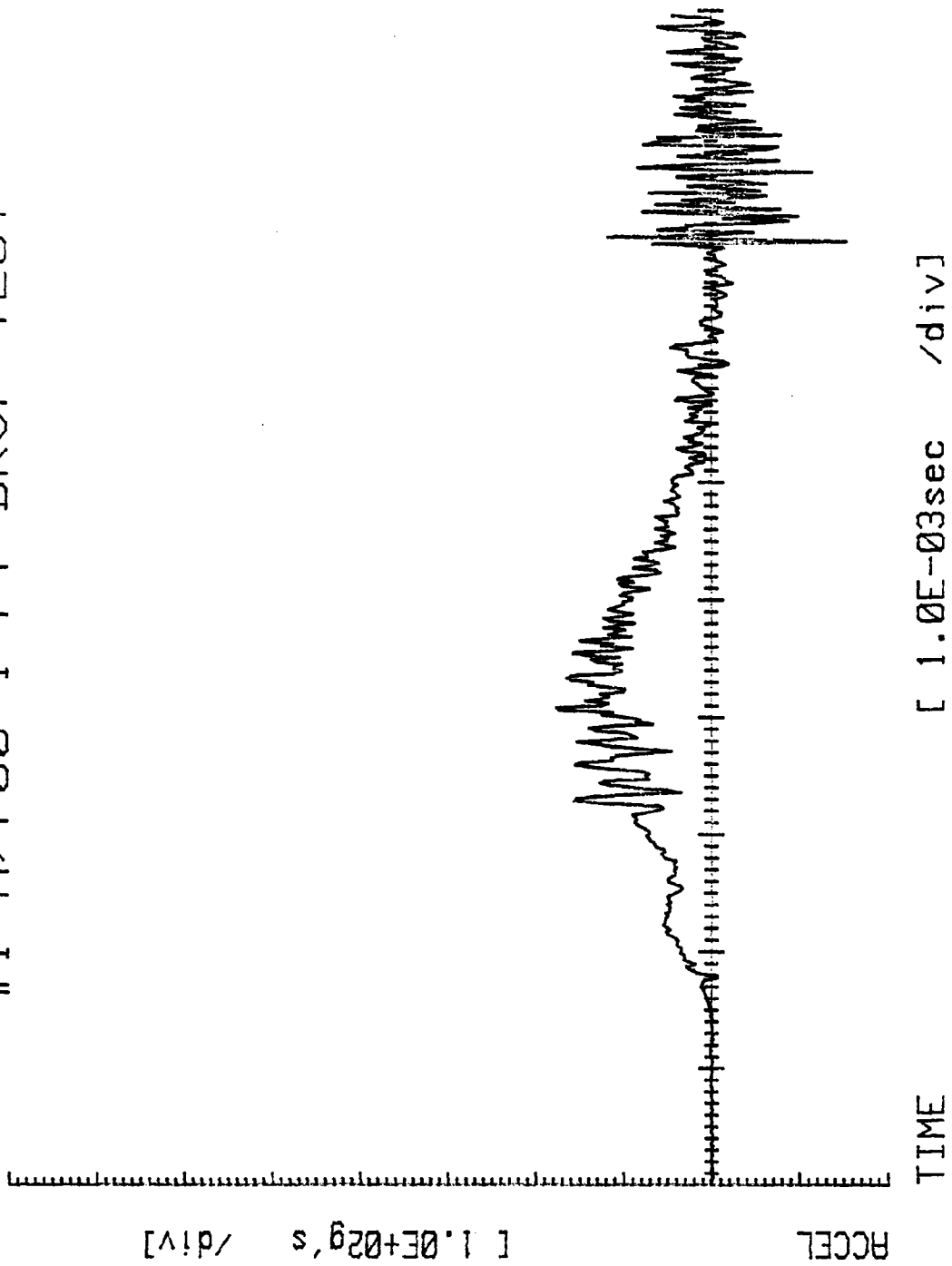
EQUIPMENT REQUIRED : M/700 ,243 WIN. rifle, serial no. B64o3926; 90 durometer mat; accelerometer no. pcb-303A025N-4780 with a sensitivity of 10.13 mV/g; charge amp; and scope.

TEST PROCEDURE : The rifle was dropped from heights of 1, 2, 3 and 4 feet a number of times. The waveforms were monitored to make sure that the measurements were consistent. Two waveforms at each height, typical of the observed waveforms, were stored and plotted. The table reflects the actual peak values observed at each drop. The graphs of the actual waveforms also accompany this report.

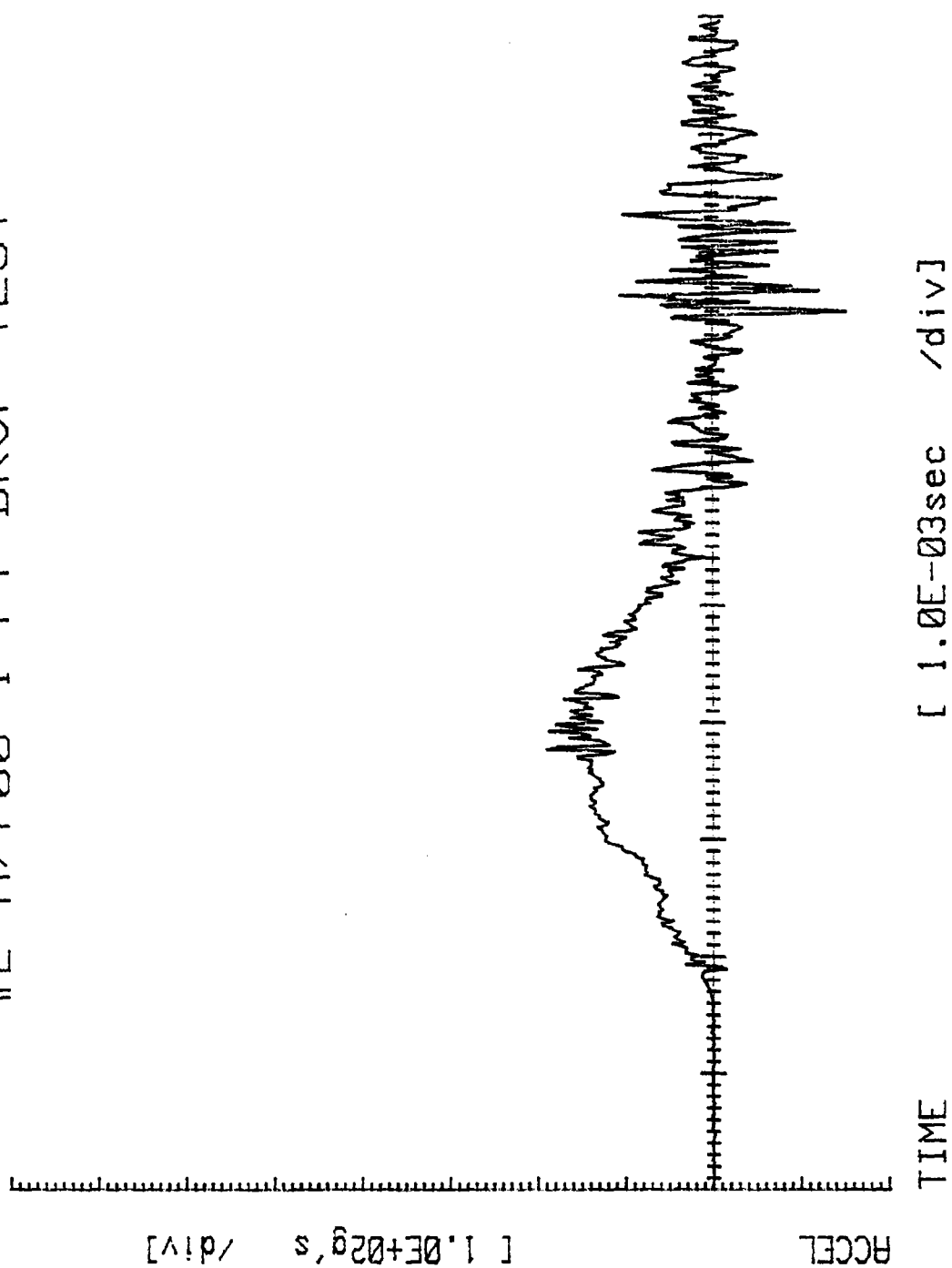
HEIGHT	DROP	ACCELERATION
<u>ft.</u>	NO.	<u>g's</u>
1 -----	1 -----	176
	2 -----	188
2 -----	1 -----	382
	2 -----	323
* 3 -----	1 -----	539
	2 -----	521
* 4 -----	1 -----	620
	2 -----	622

* The accuracy of the drops from 3 and 4 feet are suspect due to the guage limitations of the accelerometer being 500 g's

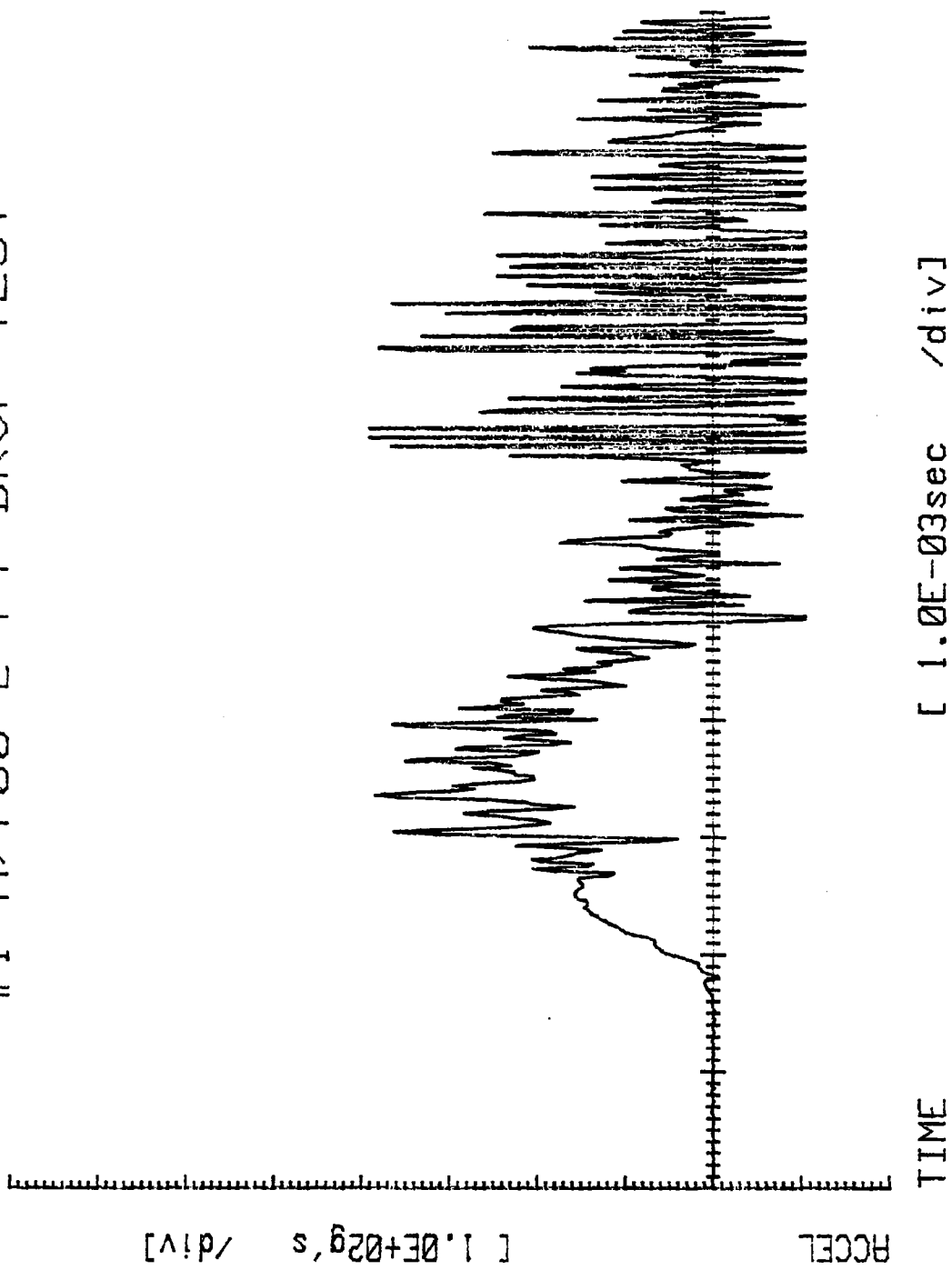
#1 M/700 1 FT DROP TEST



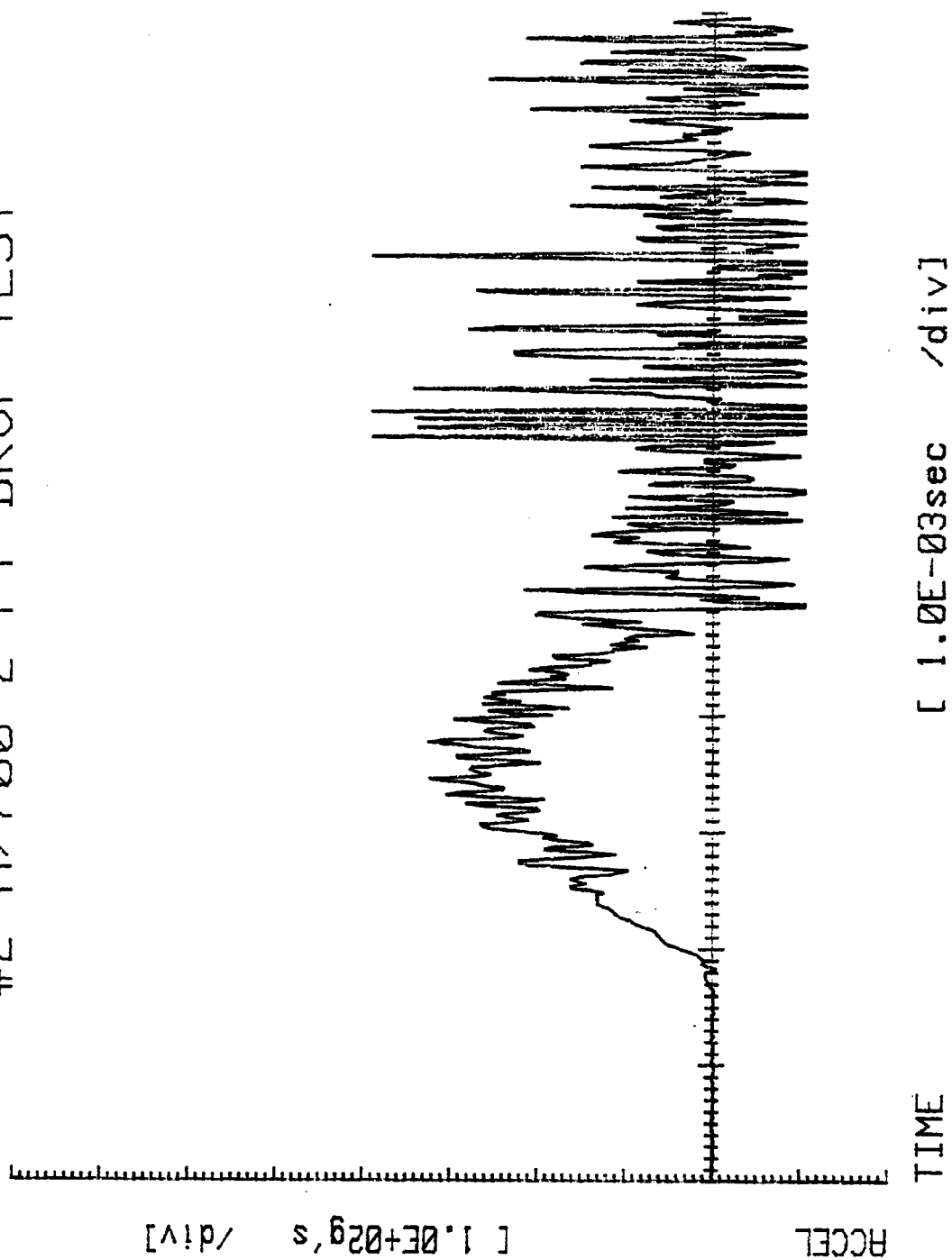
#2 M/700 1 FT DROP TEST



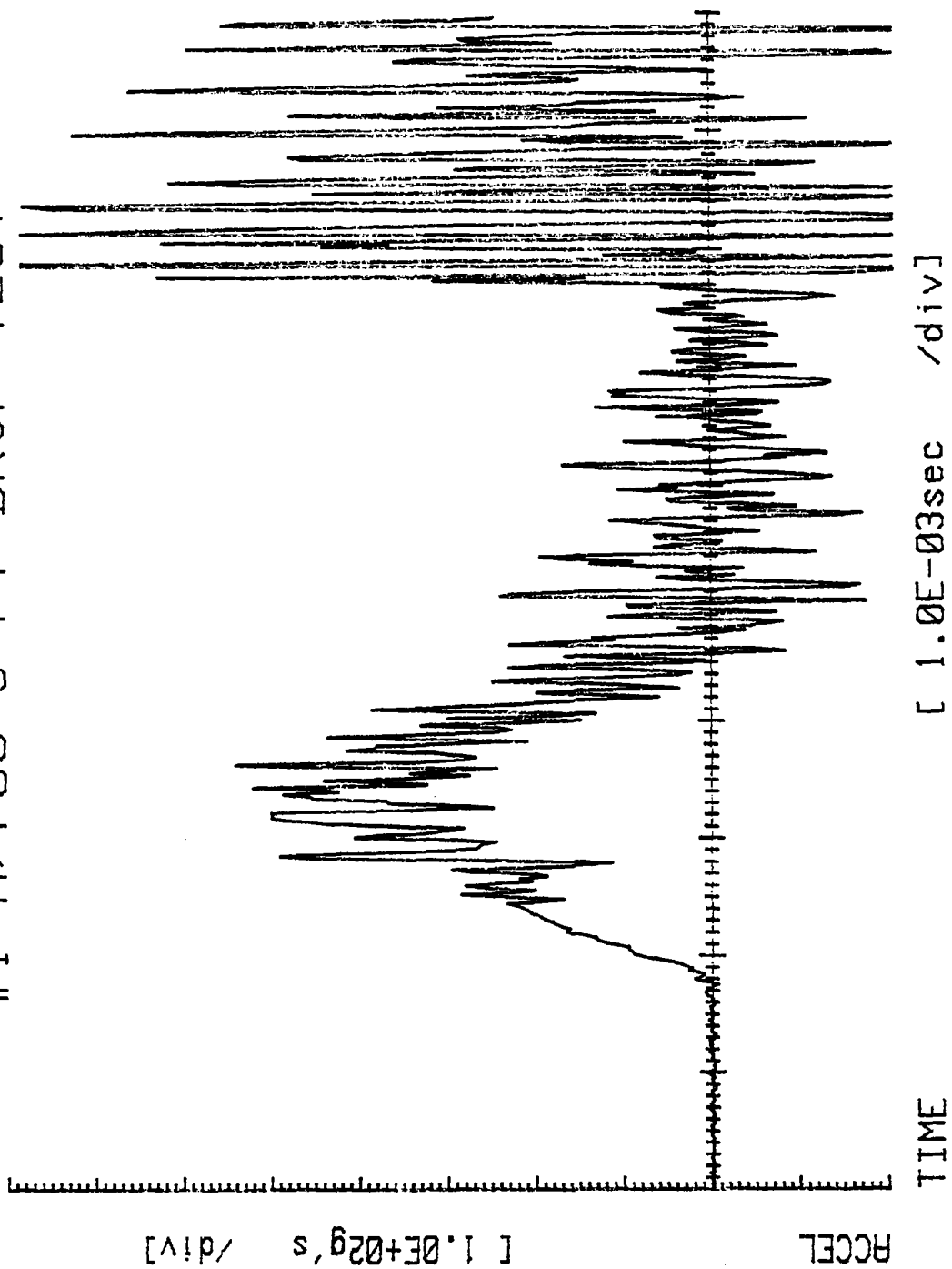
#1 M/700 2 FT DROP TEST



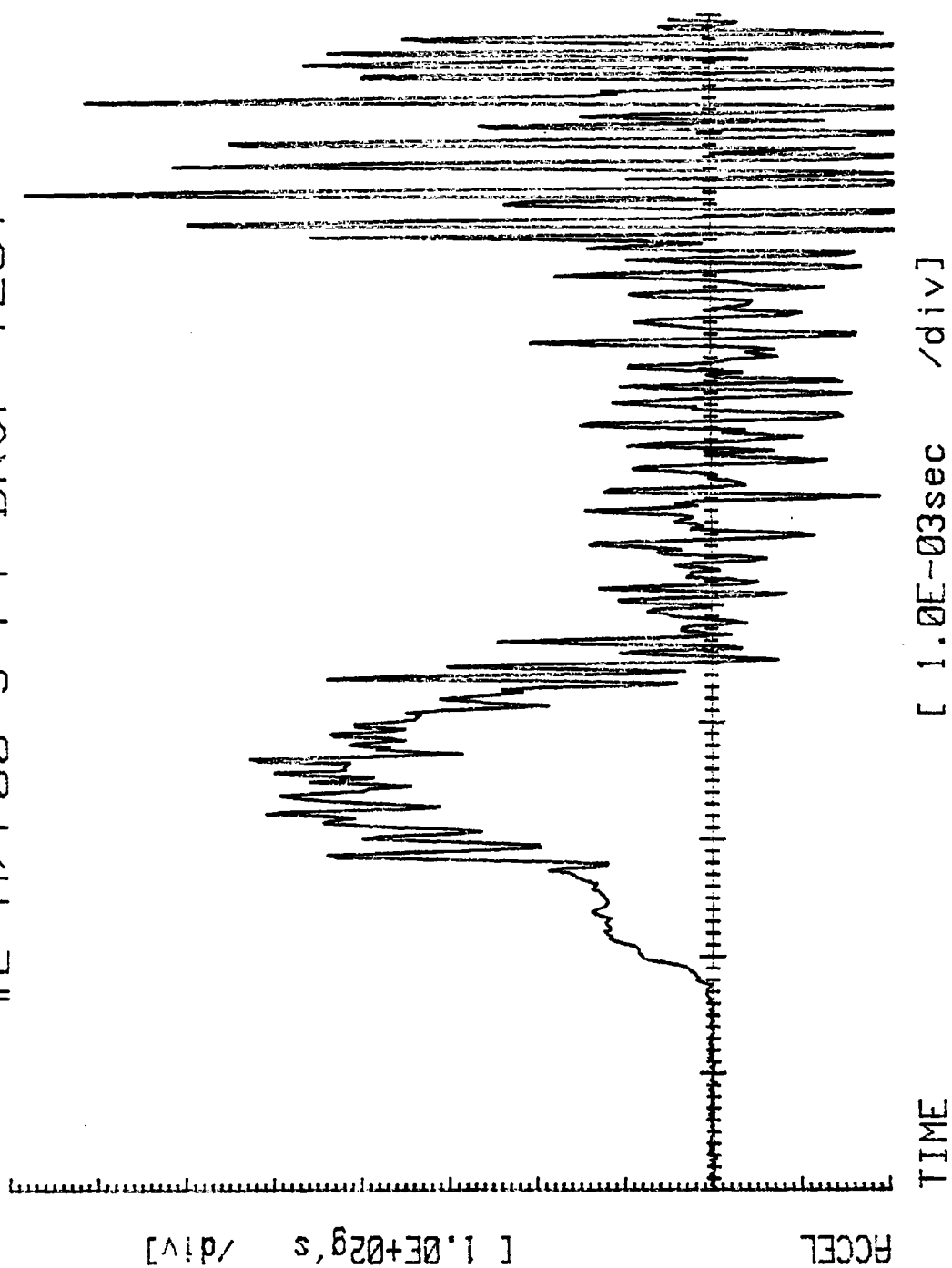
#2 M/700 2 FT DROP TEST



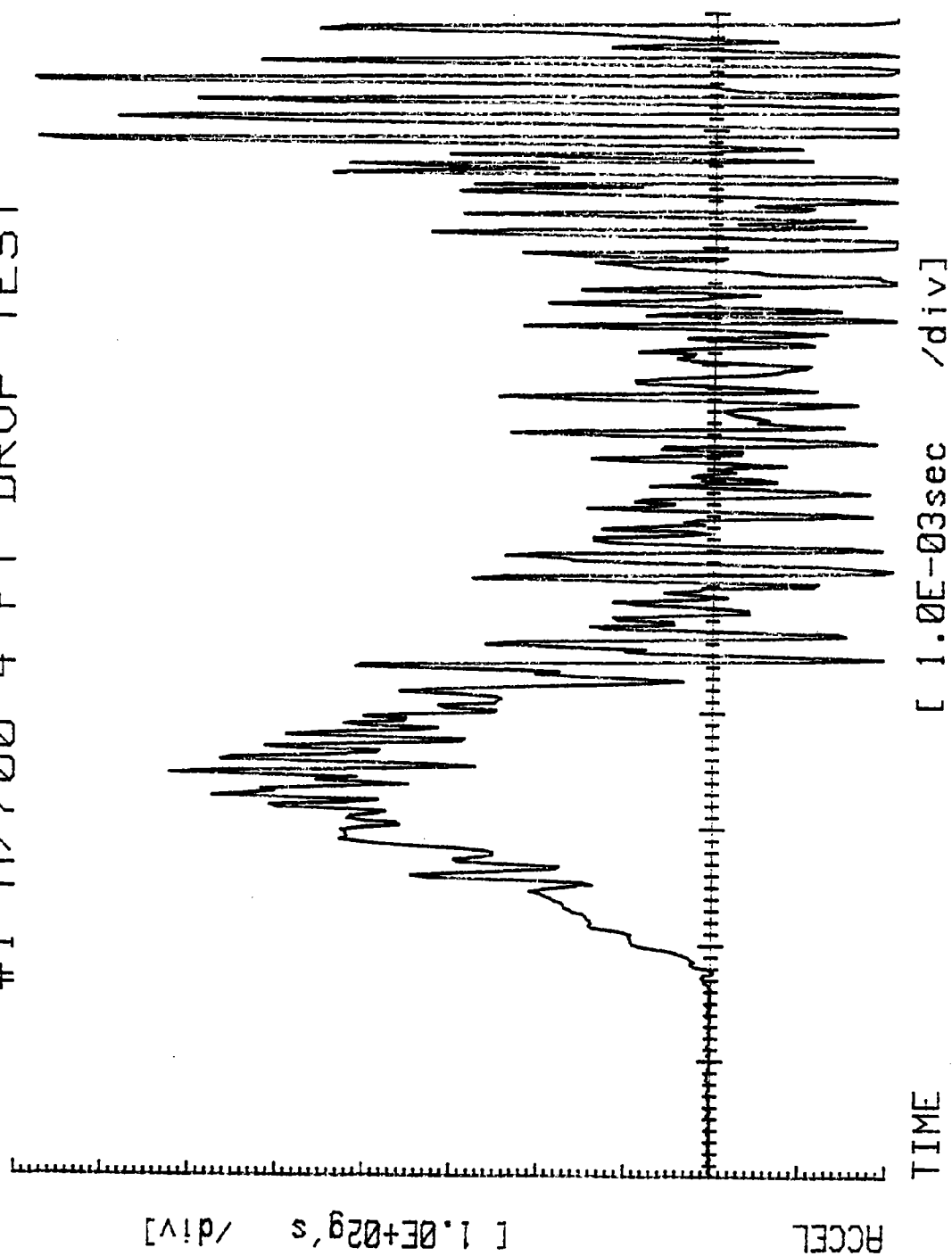
#1 M/700 3 FT DROP TEST



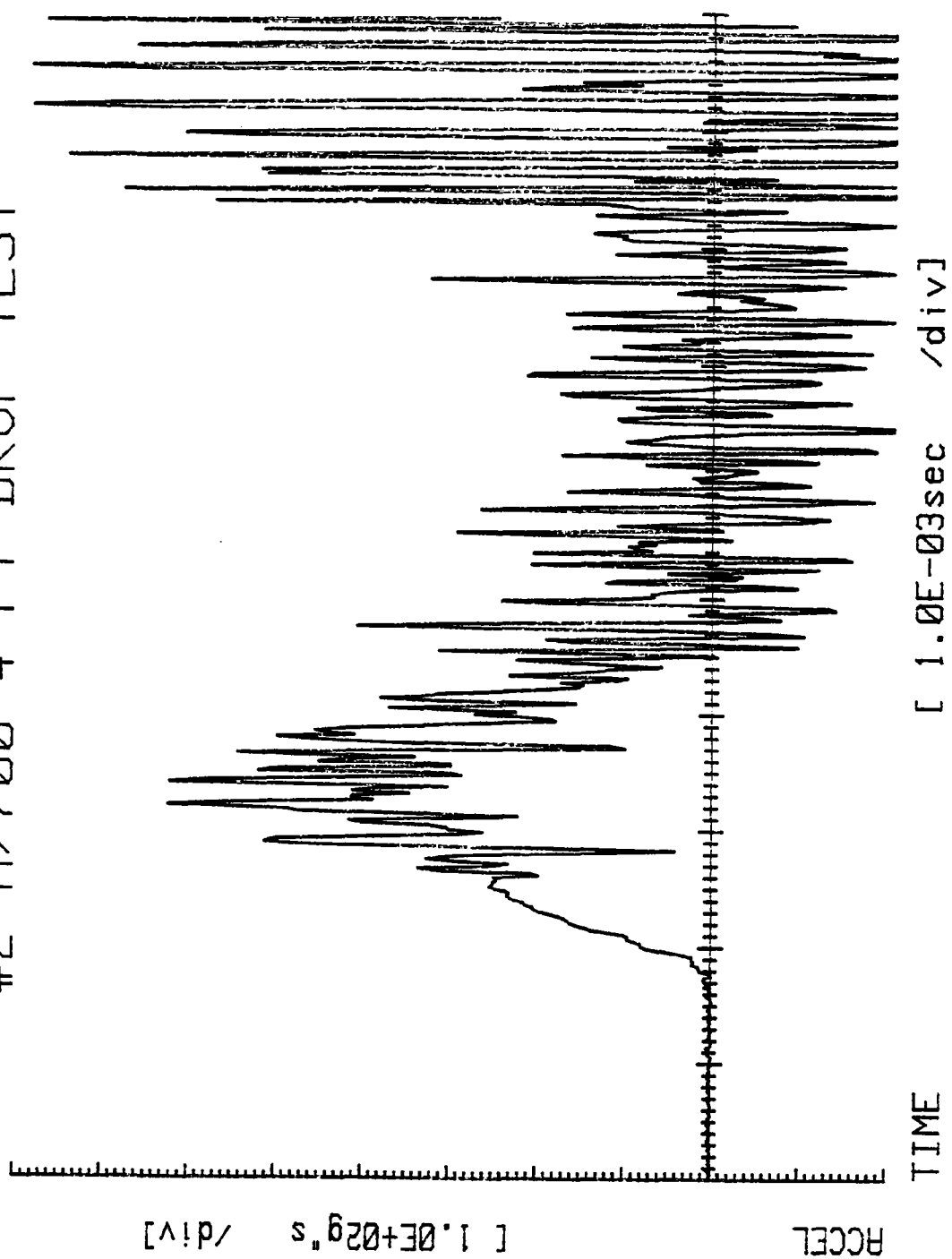
#2 M/700 3 FT DROP TEST



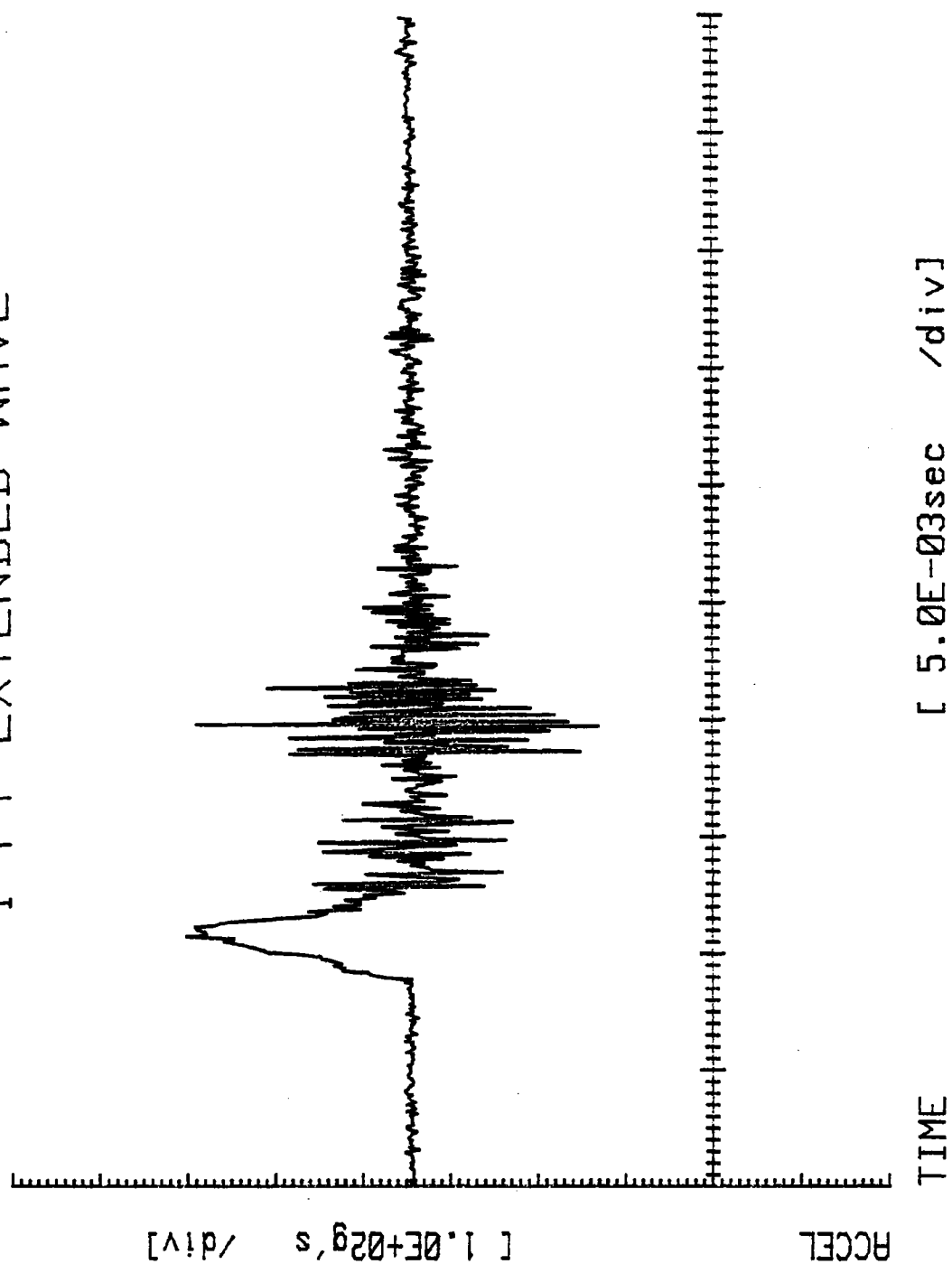
#1 M/700 4 FT DROP TEST

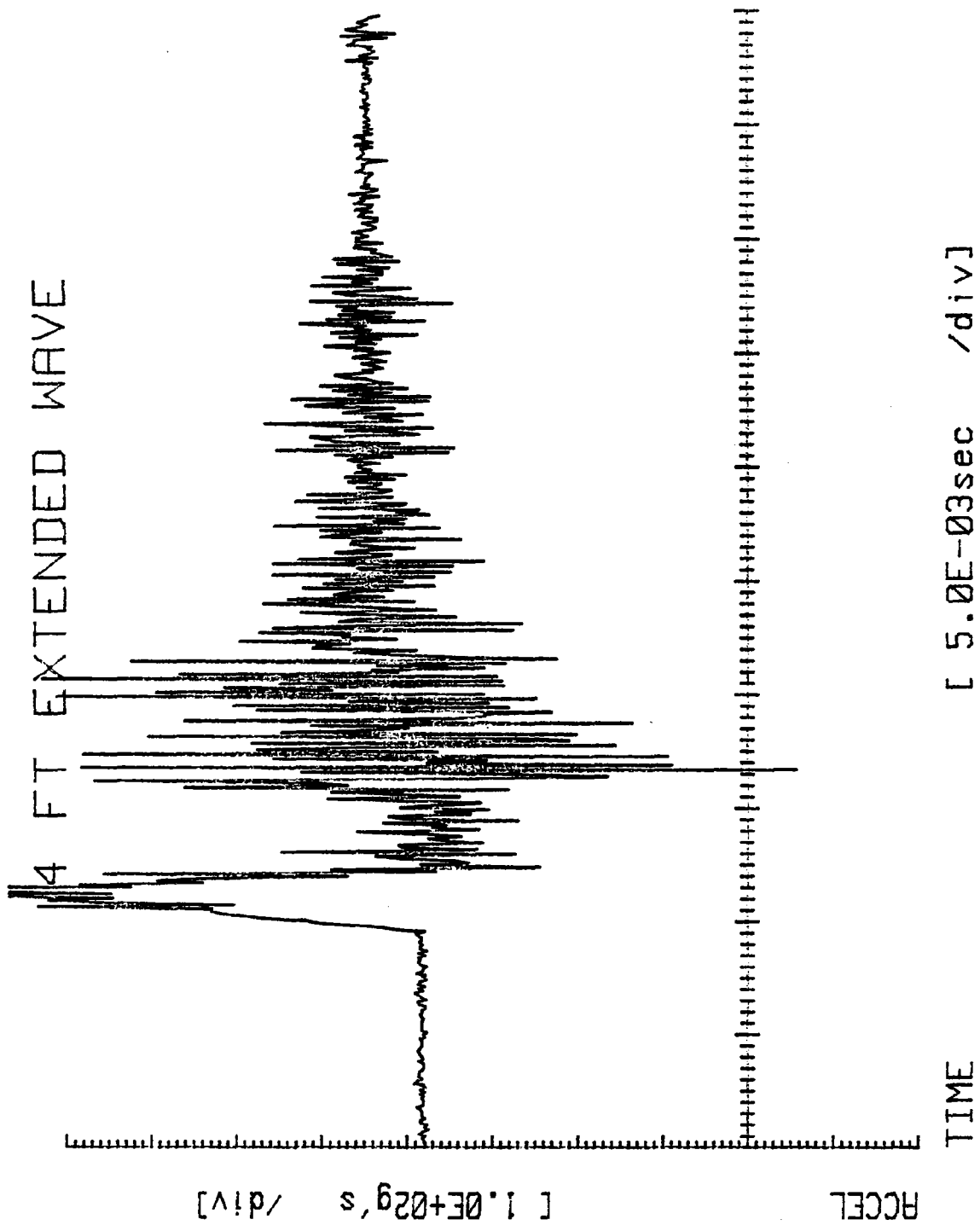


#2 M/700 4 FT DROP TEST



1 FT EXTENDED WAVE





Report No. 85 1121

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☒ New Design ☐ Cost Reduction ☐ Design Change ☐ Stakes ☐ Plant Assistance ☐ Other	
<u>FIREARM STAT'S.</u> MODEL: <u>700</u> CAL. or GAGE: _____ BARREL TYPE: _____ PROOFED: YES _____ NO _____	<u>REPORT REQ'D.</u> FORMAL _____ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>4-22-85</u> DATE NEEDED BY: <u>ASAP</u> REQUESTED BY: <u>R. S. Murphy</u> WORK ORDER NO: <u>C-3004-</u>

<u>TEST TYPE</u>			
☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other <u>Drop Test</u>
☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

What accelerations does a M/700 receiver see on impact from 1, 2, 3 and 4 foot drops when dropped on an 90 durometer mat?

-GUNS REQUIRED:

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 4/24/85TEST COMPLETED BY: P. Conrad

REPORT DATE: _____

Report No. 851231

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance		<u>AREA OF TESTING</u> ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☐ Design Change ☐ Stake _____ ☐ Plant Assistance ☐ Other _____	
<u>FIREARM STAT'S.</u> MODEL: <u>700</u> CAL or GAGE: <u>30.06</u> BARREL TYPE: _____ PROOFED: YES ☒ NO ☐		<u>REPORT REQ'D.</u> FORMAL ☐ TEST RESULTS ONLY ☐	DATE REQUESTED: <u>5-1-85</u> DATE NEEDED BY: _____ REQUESTED BY: <u>L.B. Florence</u> WORK ORDER NO: <u>9253-1/100</u>

TEST TYPE

☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other _____
☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	_____

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

To determine the suitability of 1717 alloy as a substitute for the specified 1020 alloy in the fabrication of 25/700 firing pin leads.

START DRY-CYCLE - 10,000 cycles 2 experimental, 1 control

1 SAMPLE OF EACH RUN TO 25,000 + CYCLES - O.K.

ALL REMAINING SAMPLES RUN TO 10,000 + CYCLES - O.K.

GUNS REQUIRED:

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 5-31-85
 TEST COMPLETED BY: R.W. Howe
 REPORT DATE: _____

MEASUREMENT LAB TEST RESULTS

REQUESTER: R. S. Murphy TESTER: P. Conant DATE: 09/05/85
REPORT NO.: 851483 WORK ORDER NO.: C-9054-315
TEST TYPE: Pre-Pilot

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: 7MM REM EXP
BARREL TYPE: _____ PROOFED: YES * NO _____

REASON FOR TEST : To shoot two M/700 7MM REM EXP rifles for accuracy. Five - five shot groups with each of the guns is required using ammo lot # D-6721. This ammo had been qualified prior to testing.

EQUIPMENT REQUIRED : To M/700 rifles Ser# A6879934 and A6874599, 12X scope.

TEST PROCEDURE : The rifles were shot for accuracy as required with gun serial number A6879934 shot by Paul Conant, and gun serial number A6874599 shot by Chuck Stephens.

TEST RESULTS : The extreme spread for five shot groups is listed below:

Ser # A6879934	5 shot - 2.676 inches
Ser # A6874599	5 shot - 2.744 inches

* Group results and graphics accompany this report.

28 Aug 1985

13:53:45

PATTERN # 1

NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	1.792	-1.122
MINIMUM X & Y	:	1.264	-1.333
CENTROID X & Y	:	-.214	-.432
POA TO CENTROID RAD	:	.4817	
MIN RADIUS	:	.6483	
MEAN RADIUS	:	1.2945	
MAX RADIUS	:	2.0145	
HORIZONTAL SPREAD	:	2.9140	
VERTICAL SPREAD	:	2.5970	
EXTREME SPREAD	:	2.9643	

NUMBER IN ONE INCH CIRCLE	=	0
NUMBER IN TWO INCH CIRCLE	=	2
NUMBER IN THREE INCH CIRCLE	=	3

AHEAD

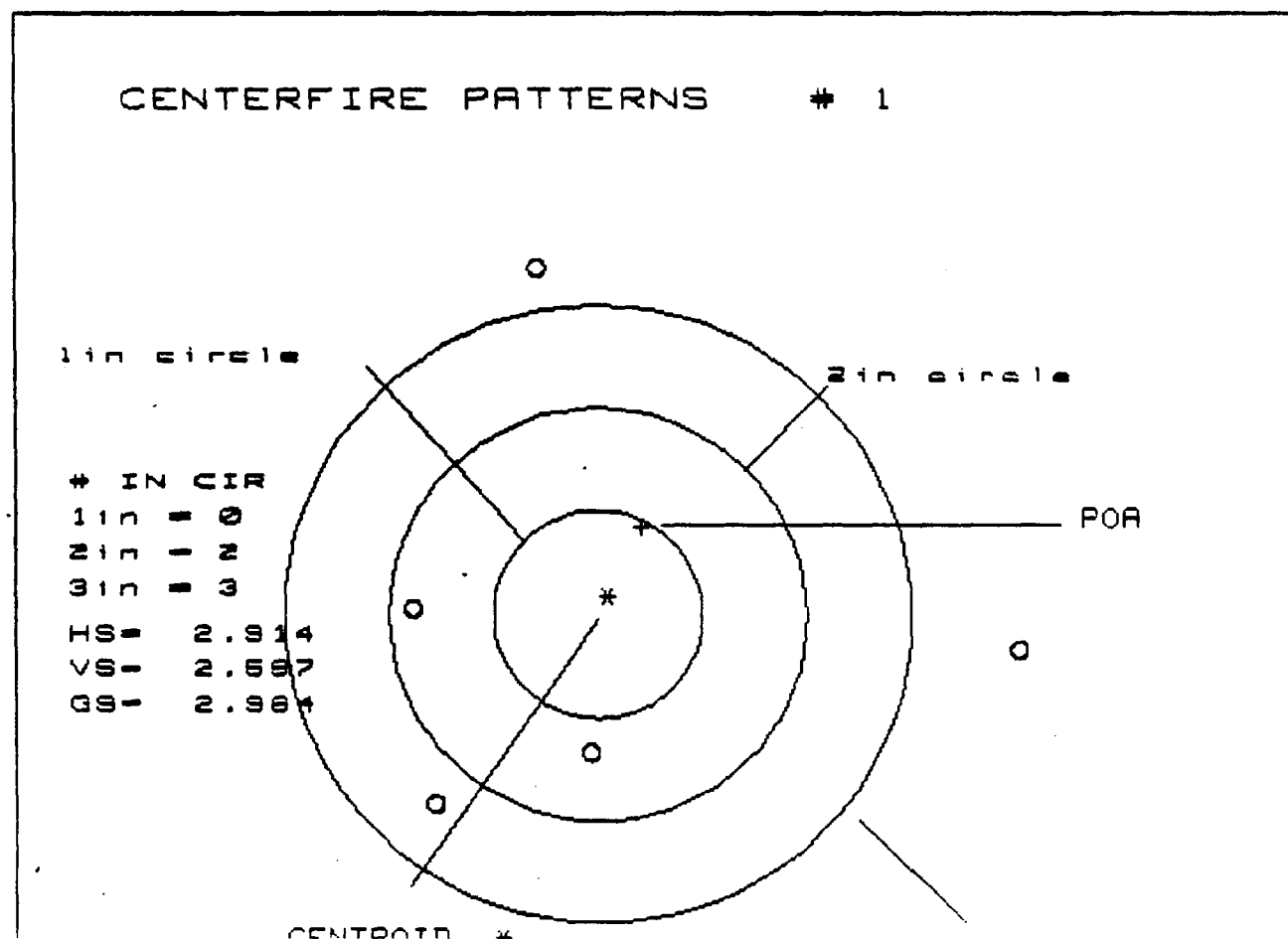
BACK

DISPLAY
RESULTS

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MENU



PC A6879934

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PATTERN # 1

NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	-0.015	-1.026
MINIMUM X & Y	:	1.966	.002
CENTROID X & Y	:	-0.552	.823
POA TO CENTROID RAD:		.9908	
MIN RADIUS	:	.0052	
MEAN RADIUS	:	.6265	
MAX RADIUS	:	1.2375	
HORIZONTAL SPREAD	:	1.0110	
VERTICAL SPREAD	:	1.9640	
EXTREME SPREAD	:	2.2089	

NUMBER IN ONE	INCH CIRCLE	=	2
NUMBER IN TWO	INCH CIRCLE	=	4
NUMBER IN THREE	INCH CIRCLE	=	5

AHEAD

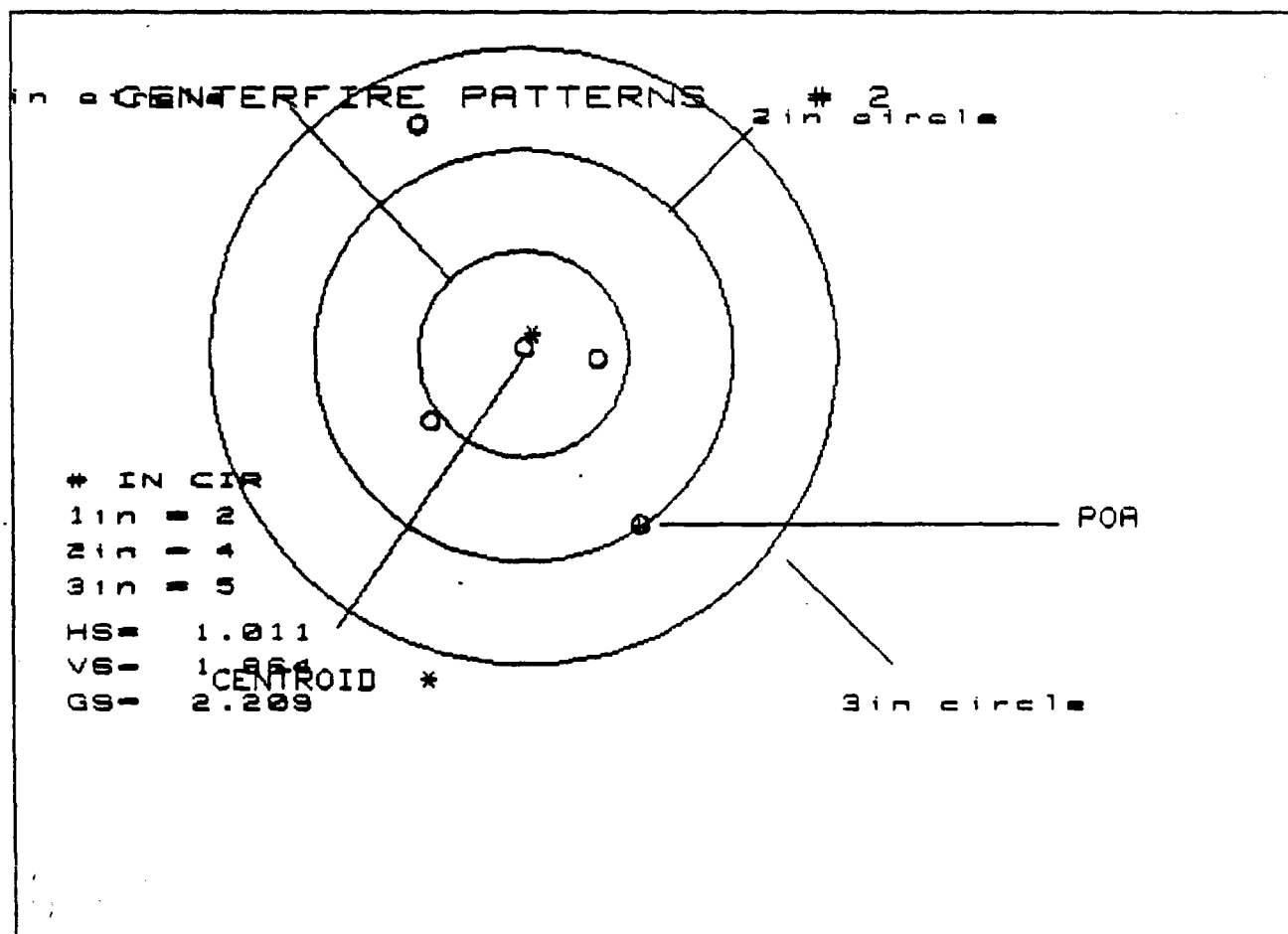
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PC A6879934

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PATTERN # : ████

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .567 -.147

MINIMUM X & Y : 2.277 -1.903

CENTROID X & Y : .892 .565

POA TO CENTROID RAD: .5724

MIN RADIUS : 1.0372

MEAN RADIUS : 1.5711

MAX RADIUS : 2.5133

HORIZONTAL SPREAD : .7140

VERTICAL SPREAD : 4.1800

EXTREME SPREAD : 4.2257

NUMBER IN ONE INCH CIRCLE = 0

NUMBER IN TWO INCH CIRCLE = 0

NUMBER IN THREE INCH CIRCLE = 3

AHEAD

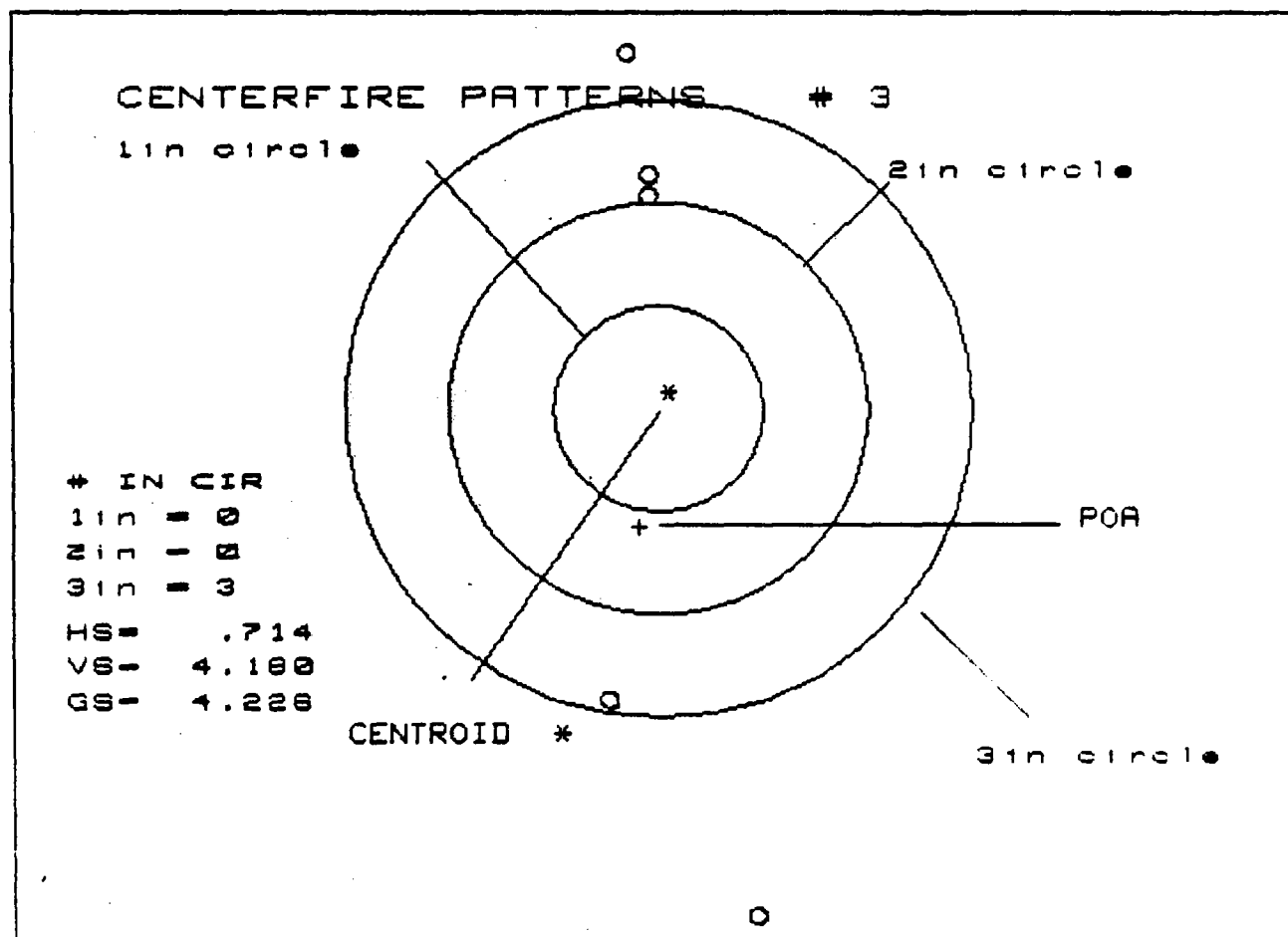
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PC A6879934

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PATTERN #           :      4
NUMBER OF SHOTS      :      5
MAXIMUM X & Y        :      .816      -.602
MINIMUM X & Y        :      .619      -.719
CENTROID X & Y       :      .088      -.146
POA TO CENTROID RAD:      .1661
MIN RADIUS           :      .2214
MEAN RADIUS          :      .6419
MAX RADIUS           :      .8986
HORIZONTAL SPREAD    :      1.4180
VERTICAL SPREAD      :      1.3380
EXTREME SPREAD       :      1.7265

NUMBER IN ONE INCH CIRCLE =      2
NUMBER IN TWO INCH CIRCLE =      5
NUMBER IN THREE INCH CIRCLE =      5
  
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HEAD

BACK

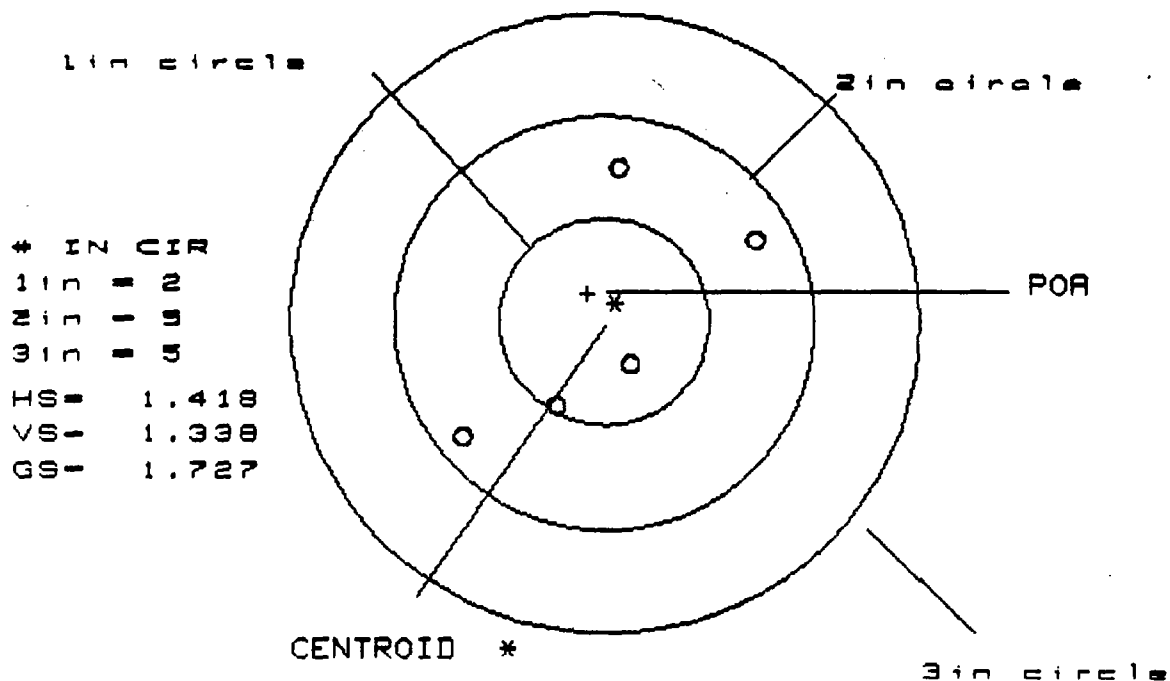
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CENTERFIRE PATTERNS # 4



PC A6879934

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PATTERN #	:	5	
NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	1.254	-1.001
MINIMUM X & Y	:	.246	-.158
CENTROID X & Y	:	-.225	.100
POA TO CENTROID RAD:	:	.2467	
MIN RADIUS	:	.1566	
MEAN RADIUS	:	.6258	
MAX RADIUS	:	1.4799	
HORIZONTAL SPREAD	:	2.2550	
VERTICAL SPREAD	:	.4040	
EXTREME SPREAD	:	2.2550	
NUMBER IN ONE INCH CIRCLE	=		3
NUMBER IN TWO INCH CIRCLE	=		4
NUMBER IN THREE INCH CIRCLE	=		5

AHEAD

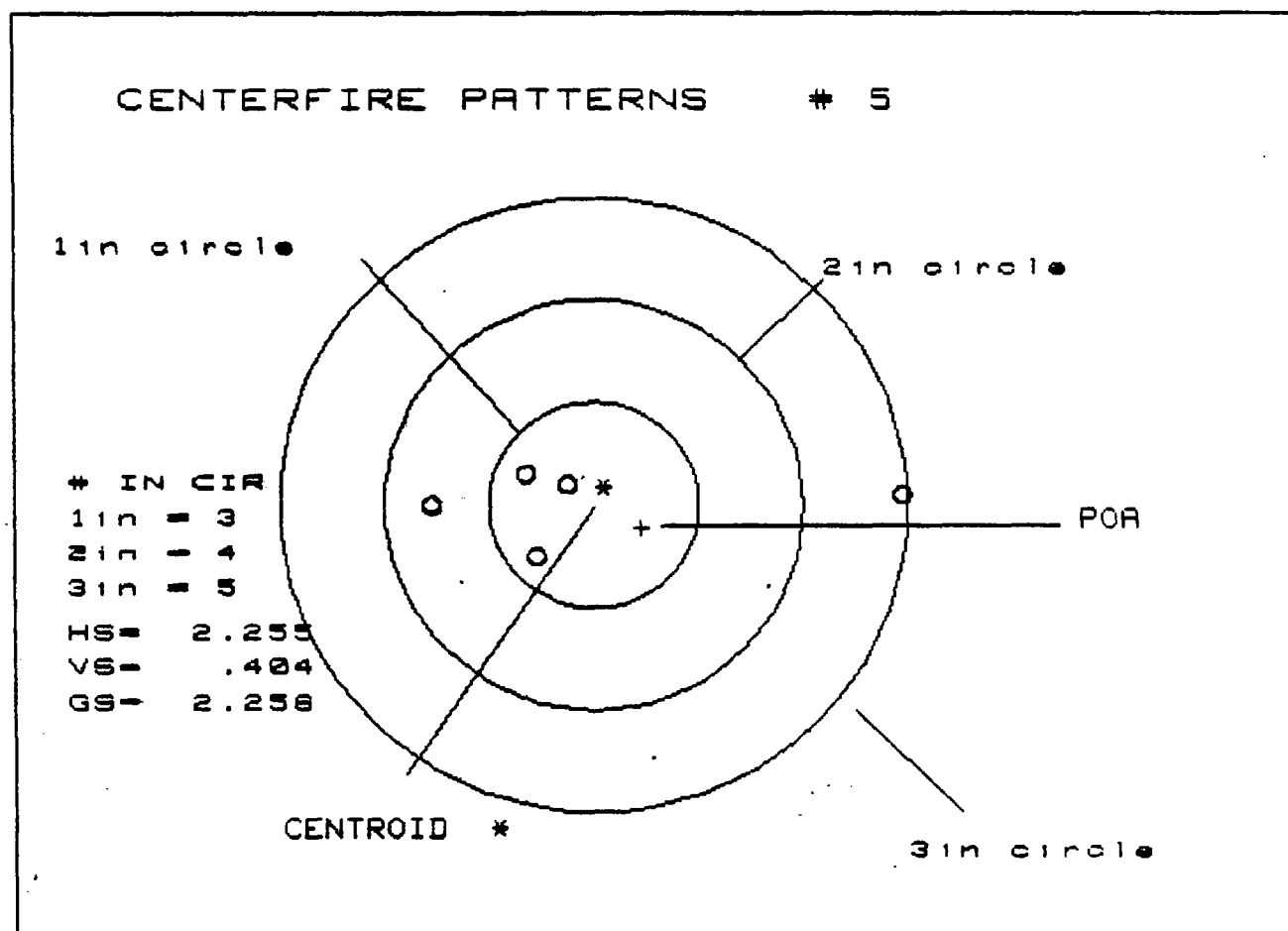
BACK

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PATTERN # : 1

NUMBER OF SHOTS : 5

MAXIMUM X & Y : 1.120 -.940

MINIMUM X & Y : .950 -.419

CENTROID X & Y : .090 .131

POA TO CENTROID RAD: .1584

MIN RADIUS : .1728

MEAN RADIUS : .7271

MAX RADIUS : 1.1671

HORIZONTAL SPREAD : 2.0600

VERTICAL SPREAD : 1.3690

EXTREME SPREAD : 2.0607

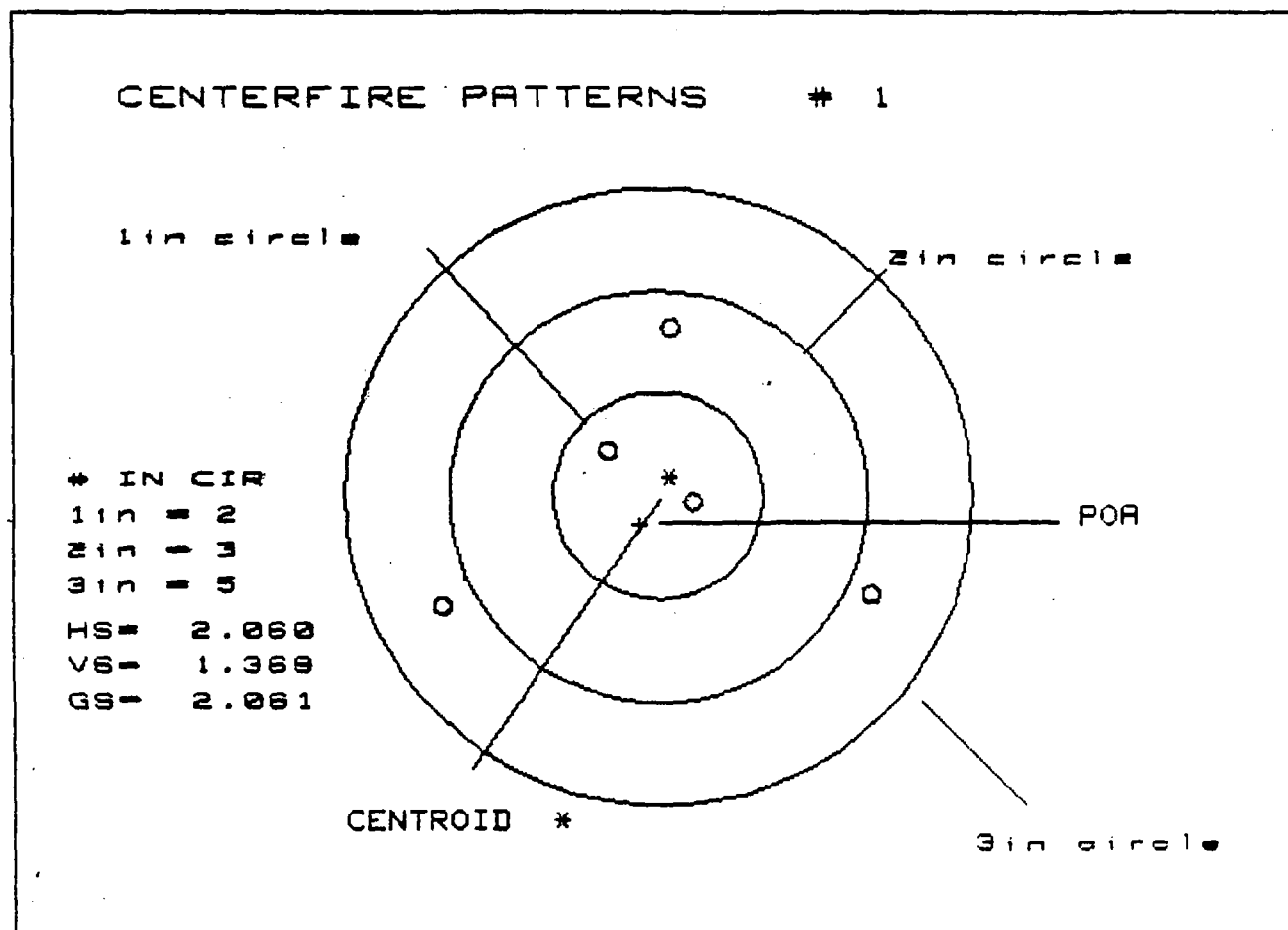
NUMBER IN ONE INCH CIRCLE = 2

NUMBER IN TWO INCH CIRCLE = 3

NUMBER IN THREE INCH CIRCLE = 5

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PATTERN # 2

NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	1.100	-.786
MINIMUM X & Y	:	1.089	-.854
CENTROID X & Y	:	.005	-.009
POA TO CENTROID RAD:	:	.0098	
MIN RADIUS	:	.5648	
MEAN RADIUS	:	.9442	
MAX RADIUS	:	1.2376	
HORIZONTAL SPREAD	:	1.9860	
VERTICAL SPREAD	:	1.9430	
EXTREME SPREAD	:	2.3456	

NUMBER IN ONE INCH CIRCLE	=	0
NUMBER IN TWO INCH CIRCLE	=	3
NUMBER IN THREE INCH CIRCLE	=	5

AHEAD

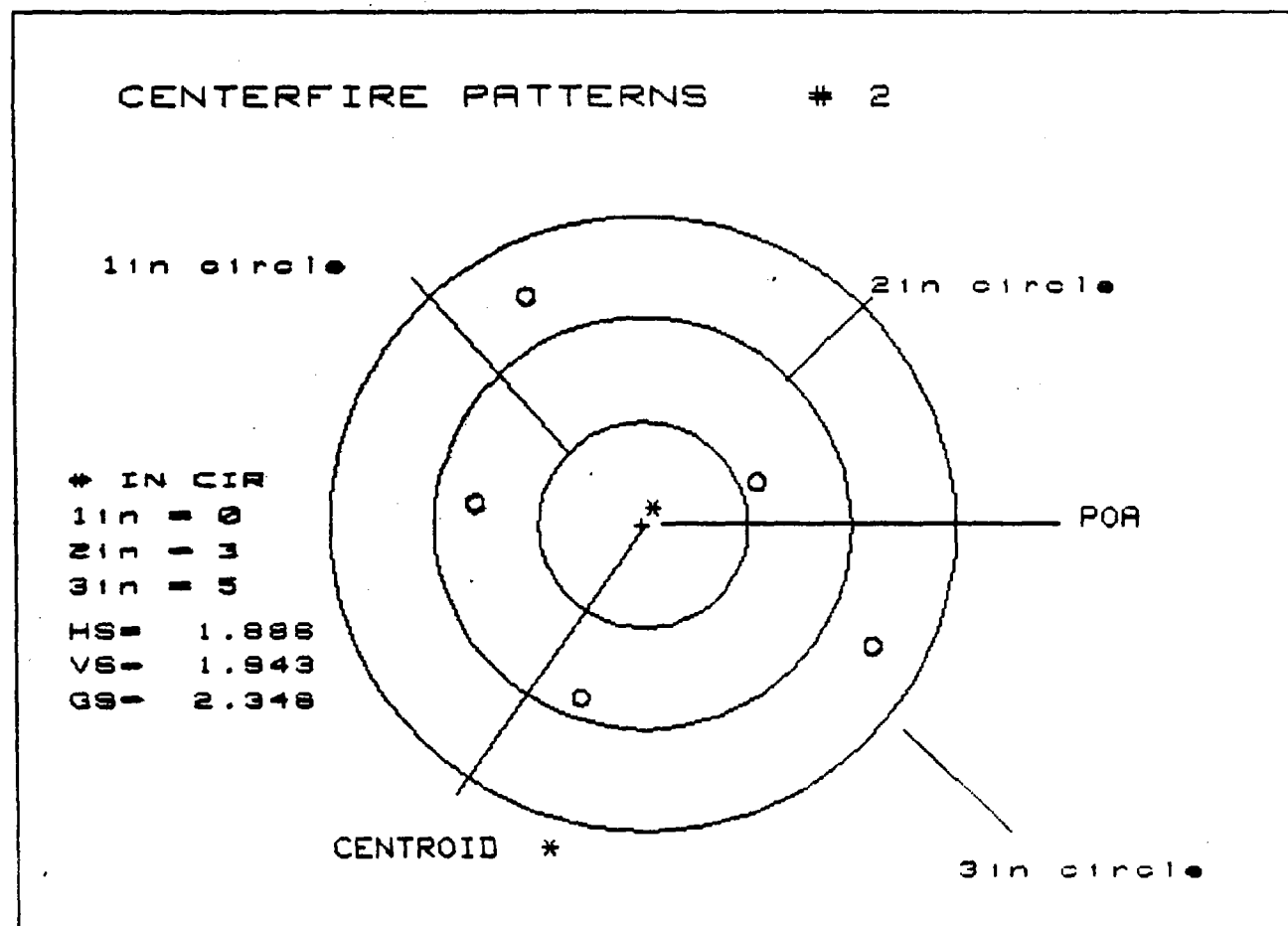
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PATTERN # : ████

NUMBER OF SHOTS : 5

MAXIMUM X & Y : 1.982 -1.924

MINIMUM X & Y : 1.231 -1.158

CENTROID X & Y : .778 -.067

POA TO CENTROID RAD: .7731

MIN RADIUS : .5568

MEAN RADIUS : 1.4594

MAX RADIUS : 2.6967

HORIZONTAL SPREAD : 3.9868

VERTICAL SPREAD : 2.3818

EXTREME SPREAD : 3.9835

NUMBER IN ONE INCH CIRCLE = 0

NUMBER IN TWO INCH CIRCLE = 1

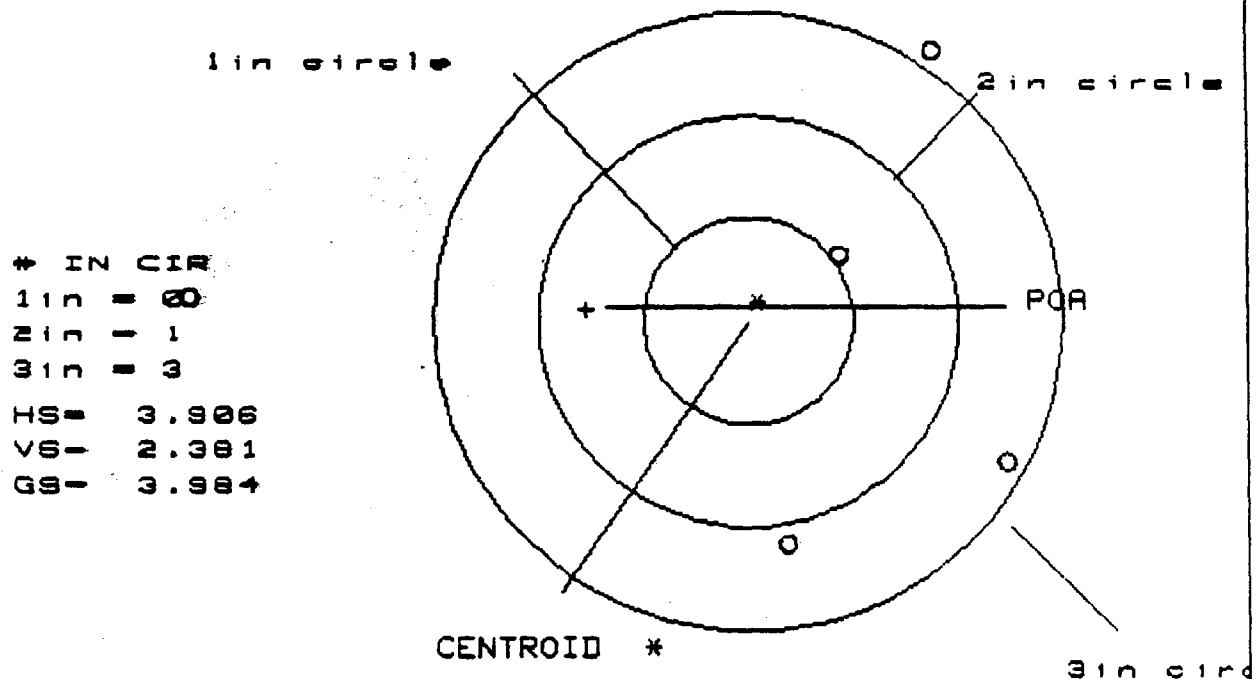
NUMBER IN THREE INCH CIRCLE = 3

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CENTERFIRE PATTERNS # 3



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PATTERN # : 1
NUMBER OF SHOTS : 5
MAXIMUM X & Y : 1.012 -1.077
MINIMUM X & Y : .986 -1.222
CENTROID X & Y : .139 -.514
POA TO CENTROID RAD: .5324
MIN RADIUS : .7566
MEAN RADIUS : 1.0978
MAX RADIUS : 1.9308
HORIZONTAL SPREAD : 2.0890
VERTICAL SPREAD : 2.2000
EXTREME SPREAD : 2.9617

NUMBER IN ONE INCH CIRCLE = 0
NUMBER IN TWO INCH CIRCLE = 3
NUMBER IN THREE INCH CIRCLE = 4
  
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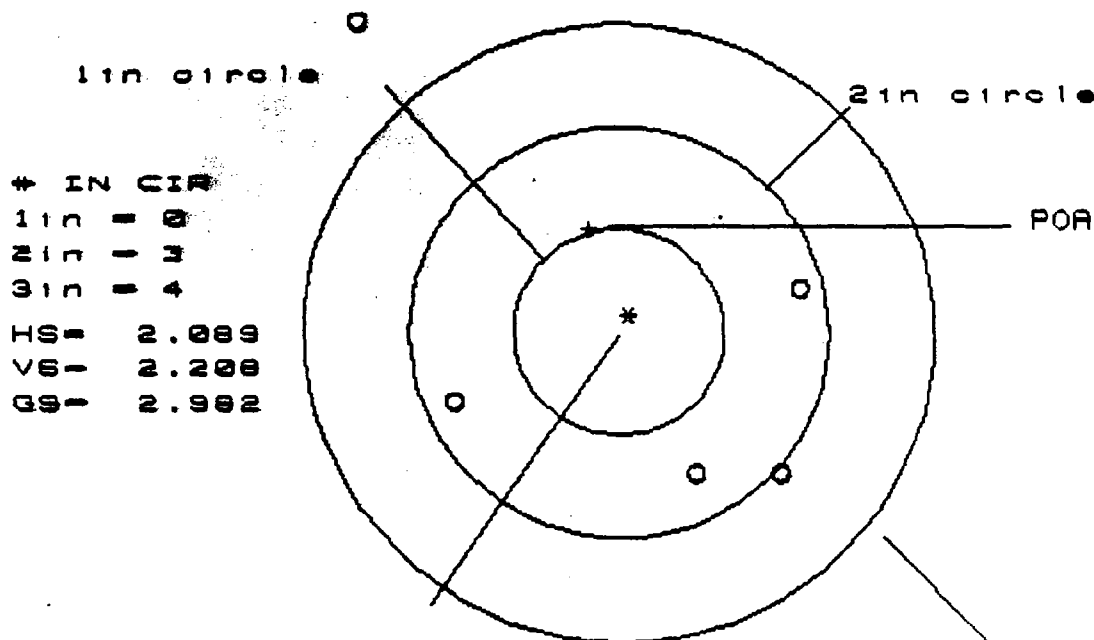
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CENTERFIRE PATTERNS # 4



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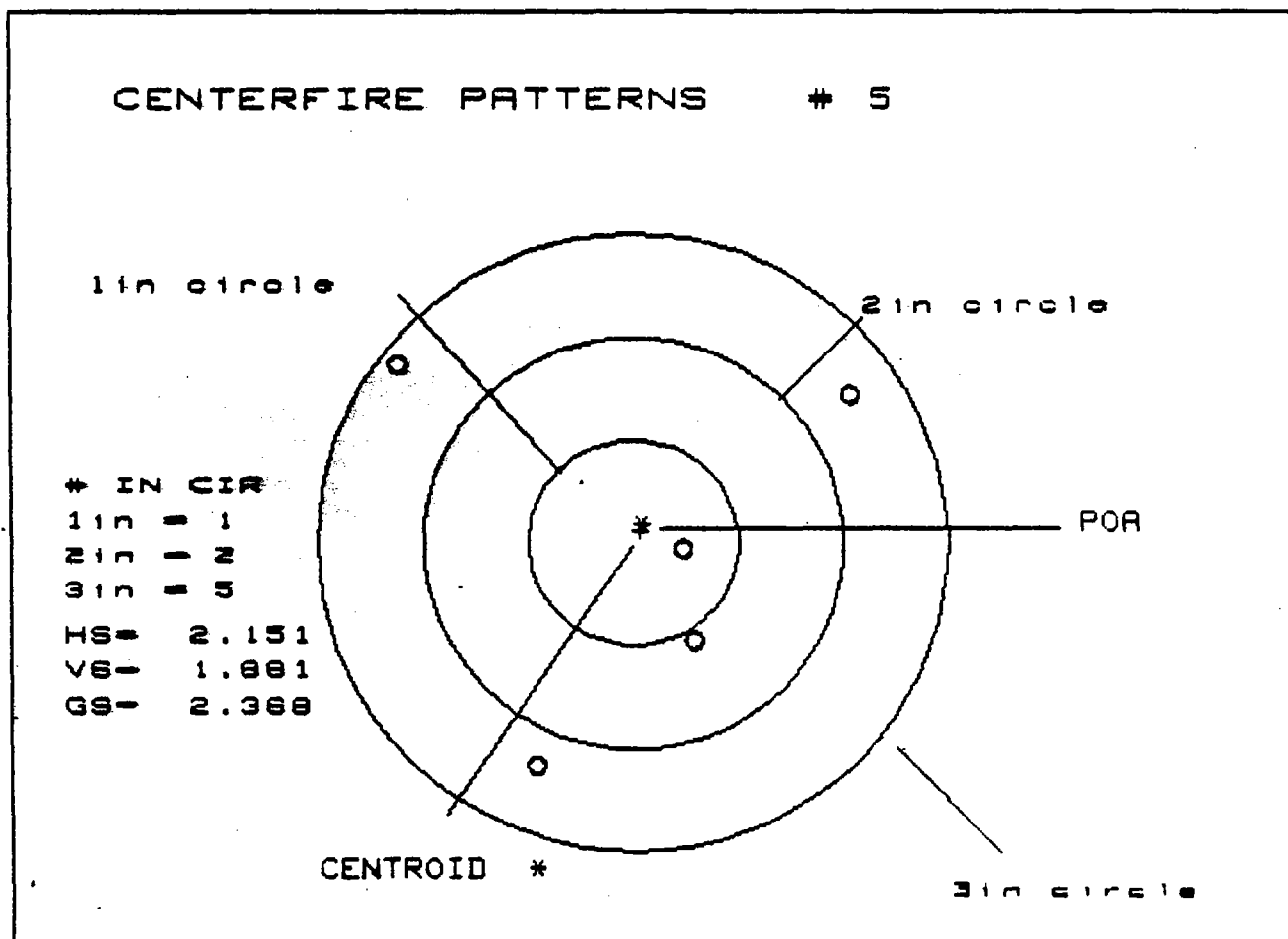
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PATTERN #           :
NUMBER OF SHOTS      :      5
MAXIMUM X & Y        :      1.014      -1.137
MINIMUM X & Y        :      .814      -1.167
CENTROID X & Y       :     -.034      -.070
POA TO CENTROID RAD:      .0781
MIN RADIUS           :      .2478
MEAN RADIUS          :      .9394
MAX RADIUS           :      1.4139
HORIZONTAL SPREAD    :      2.1510
VERTICAL SPREAD      :      1.9810
EXTREME SPREAD       :      2.3683

NUMBER IN ONE INCH CIRCLE =      1
NUMBER IN TWO INCH CIRCLE =      2
NUMBER IN THREE INCH CIRCLE =      5
    
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AHEAD BACK DISPLAY DISPLAY WRITE MAIN
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entire ✓

Report No. 851483

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☒ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> ☐ Safety Related ☐ Competitive Evaluation ☐ New Design ☐ Design Change ☐ Plant Assistance ☐ Litigation ☐ Warehouse Audit ☐ Cost Reduction Stake <u>ALOT</u> ☒ Other	
<u>FIREARM STAT'S.</u> MODEL: <u>700</u> CAL. or GAGE: <u>7mm Exp. Rem.</u> BARREL TYPE: _____ PROOFED: YES ☒ NO ☐	<u>REPORT REQ'D.</u> FORMAL _____ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>5-28-85</u> DATE NEEDED BY: <u>6-14-85</u> REQUESTED BY: <u>R.S. MURPHY</u> WORK ORDER NO: <u>C-954-314</u>

<u>TEST TYPE</u>			
☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other _____
☒ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	_____

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

(.280 cal.)
SHOOT - 2 - M/700 7mm Exp. Rem.'s FOR ACCURACY
(5 - 5 SHOT GROUPS WITH EACH GUN). USE AMMO
LOT # D-6721.

GUNS REQUIRED: - 2 - M/700 ADL'S SUPPLIED BY ENGINEERING

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 9/5/85
TEST COMPLETED BY: P. Conant
REPORT DATE: _____

MEASUREMENT LAB TEST RESULTS

REQUESTER: W.A. Warren JR. TESTER: P. Conant DATE: 06/05/85

REPORT NO.: 851562 WORK ORDER NO.: 82938-903

TEST TYPE: Plant Assistance

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: 350 REM MAG

BARREL TYPE: Exp. Steel PROOFED: YES * NO

REASON FOR TEST : This test was initiated to find out if maximum down-bore pressure is achieved when testing with Proof loads. Standard loads will be compared to the proof loads using strain gages mounted circumferentially 1 in. from the end of the muzzle and 9 in. from the end of the muzzle.

EQUIPMENT REQUIRED : Model 700 in 350 REM MAG, Ser # B6679288. 2 Strain gages w/resistance of 120 ohms and gage factor of 2.05. 350 REM MAG standard load with 200 grain bullet and 250 grain bullet and 350 REM MAG proof loads.

TEST PROCEDURE : The gun was discharged and strain measurements taken from the gages located on the gun barrel. Five shots were taken using each of the three ammo types. The waveforms were captured on the 7854 oscilloscope and stored in the computer.

TEST RESULTS : The data found on the following pages was derived using calculations that find pressure from strain. The formula is included.

Standard load with 200 grain bullet

shot	9 in. in from	1 in. in from
	muzzle	muzzle
1	23.8 k psi	17.3 k psi
2	29.9 k psi	14.6 k psi
3	22.3 k psi	17.5 k psi
4	25.0 k psi	19.0 k psi
5	20.5 k psi	16.0 k psi
Mean	24.3 k psi	16.9 k psi
Min	20.5 k psi	14.6 k psi
Max	29.9 k psi	19.0 k psi

Standard load with 250 grain bullet

shot	9 in. in from	1 in. in from
	muzzle	muzzle
1	29.1 k psi	21.5 k psi
2	27.0 k psi	19.6 k psi
3	33.4 k psi	16.8 k psi
4	27.7 k psi	15.4 k psi
5	30.7 k psi	20.2 k psi
Mean	29.6 k psi	18.7 k psi
Min	27.0 k psi	15.4 k psi
Max	33.4 k psi	21.5 k psi

Proof load with 200 grain bullet

shot	9 in. in from muzzle	1 in. in from muzzle
1	26.9 k psi	18.5 k psi
2	27.5 k psi	17.7 k psi
3	22.0 k psi	17.0 k psi
4	29.7 k psi	19.5 k psi
5	29.8 k psi	13.2 k psi
Mean	27.2 k psi	17.2 k psi
Min	22.0 k psi	13.2 k psi
Max	29.8 k psi	19.5 k psi

Formula for finding pressure from strain.

$$P = \frac{(r_2^2 - r_1^2) * E t}{2 * r_1^2}$$

where: r1 = inside barrel radius and r2 =
outside barrel radius and E = 30 and
t = strain

Report No. 551562

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance		<u>AREA OF TESTING</u> ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☐ Design Change ☐ Stake _____ ☒ Plant Assistance ☐ Other _____	
<u>FIREARM STAT'S.</u> MODEL: <u>700</u> CAL or GAGE: <u>350 REM MAG</u> BARREL TYPE: <u>EXP STEEL</u> PROOFED: YES ☒ NO _____		<u>REPORT REQ'D.</u> FORMAL _____ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>6/5/85</u> DATE NEEDED BY: <u>6/7/85</u> REQUESTED BY: <u>WA, WARREN JR</u> WORK ORDER NO: <u>02938-903</u>

<u>TEST TYPE</u> ☐ Strength Test ☐ Ammunition Test ☐ Dry Cycle Test ☐ Photo/Video ☐ Function Test ☐ Environmental Test ☐ Measurements ☒ Other <u>STRAIN GAGE</u> ☐ Accuracy Test ☐ Customer Complaint ☐ Endurance Test <u>+ PRESSURE EVAL</u>			
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EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

- one strain gage between two front screw holes (or area where screw holes would be)
- another 8 inches back from 1st (toward Breach).

Determine pressure level with:

- 5 proof rounds (see Charlie Smith gallery for rounds)
- 5 rounds (200 grain bullet)
- 5 rounds (any other bullet weight if available)

GUNS REQUIRED:

Bill Warren
EX 389

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 6/8/85
 TEST COMPLETED BY: P. Corant
 REPORT DATE: _____

MEASUREMENT LAB TEST RESULTS

REQUESTOR: B. Warren TESTER: P. Conant DATE: 06/13/85
REPORT NO.: 851621 WORK ORDER NO.: 82938-903

TEST TYPE: Plant Assistance, strength test

FIREARM STAT'S : MODEL: 700 & 7600 CAL or GAUGE: 350 REM. Mag & 30-06

REASON FOR TEST : This test was conducted to determine if the tolerance toward catastrophic failure, or worst-case handloader abuse, remains the same when using barrel steel showing indications at Magnaflux and no indications at Liquid Penetrant inspection. Guns meeting this criteria are stamped 

EQUIPMENT REQUIRED : Three M/700 rifles in 350 REM Mag with the following Serial Numbers: B6717702, B6715659 and B6718143. Three M/7600 rifles in 30-06 with the following Serial Numbers: 8321603, 8321834 and 8321835.

TEST PROCEDURE : Headspace was checked on all 6 guns with the results listed below.

M/700	Serial # B6717702: min + .002
	Serial # B6715659: min + .002
	Serial # B6718143: min + .002
M/7600	Serial # 8321603: min + .002
	Serial # 8321834: min + .002
	Serial # 8321835: min + .002

Both the M/700 in 350 Rem Mag and the M/7600 in 30-06 were chosen for the test because they had the largest bore diameter for their respective calibers. This meant that the wall size was the thinnest possible for each model. The M/700 rifles were plugged with a 250 grain copper jacketed bullet just ahead of the live round. This was done to increase the mass of the projectile. They were then secured one at a time in the "iron lung" safety device and chambered with the special high pressure handloads.

The handloads were made to the following specifications. The 350 REM Mag was loaded to 38.2 grains of 800x powder with a 250 grain bullet. The 30-06 was loaded to 50 grains of 4198 powder with a 220 grain bullet. The estimated pressure of the loads was 129,000 to 135,000 psi. The rifles were then discharged and evaluated as to component failure. This was repeated until all 3 guns were tested.

The M/7600's were not plugged. They were loaded with the special high pressure load and discharged in the same manner as the M/700 rifles. Witnesses to the test were T. Douglas and S. Franz. All the rifles were taken to the photo lab for layout work and documentation.

TEST RESULTS : There was no damage to the M/700 rifles. The bolts however, locked closed on all the guns and had to be hammered open. The brass from the shell casing expanded into the shroud and had to be hammered from the bolt face. The headspace remained the same on all the M/700 rifles. The M/7600 rifles locking systems failed in a normal expected manner. The fire controls were totally destroyed as were the bolts and fore-ends. The barrels however, sustained no damage.

TEST AND MEASUREMENT LAB - TEST RESULTS

REQUESTER: J.W. BOWER TESTER: TEST LAB DATE: 02/11/87
REPORT NO.: 851973 WORK ORDER NO.: C-1803
WRITTEN BY: F.L. SUPRY

TEST TYPE: 100 YARD ACCURACY (223 REM vs 5.56 MILITARY)

FIREARM STAT'S : MODEL: 700 BDL CAL or GAUGE: 223
BARREL TYPE: STD PROOFED: YES X NO

REASON FOR TEST :

To compare the 100 yard accuracy of the Model 700 chambered in the 223 Rem caliber, before and after the barrels were rechambered to the 5.56 mm Military caliber.

EQUIPMENT REQUIRED :

Six Model 700 rifles chambered in the 223 Rem caliber, the 100 yard range, 223 Rem and 5.56 mm Military ammunition, chambering tools, scope, HP 9000 computer and digitizing tablet, and personnel.

TEST PROCEDURE :

Three 5 shot groups were shot with each 223 Rem caliber rifle, as received. Then, the rifles were sent to the custom shop and rechambered to the 5.56 mm Military caliber. The 100 yard accuracy test was repeated. All the accuracy work was done by J. Selan, at the 100 yard range located in 52-1A. The targets were digitized and analyzed using the HP 9000 computer and digitizing tablet.

TEST RESULTS :

RIFLE SERIAL #	AVERAGE GROUP SIZE (in inches)	
	223 REM CAL	5.56 mm MILITARY CAL
B6430318	1.307	2.467
B6429112	1.065	3.690
B6429801	1.517	2.342
B6428889	1.450	1.913
B6430148	1.073	1.850
B6429055	1.173	2.446

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> ☐ Safety Related ☐ Competitive Evaluation ☐ New Design ☐ Design Change ☐ Plant Assistance ☐ Litigation ☐ Warehouse Audit ☐ Cost Reduction ☐ Stake <u>IMPROVED ACCURACY</u> ☒ Other	
<u>FIREARM STAT'S.</u> MODEL: <u>.700</u> CAL or GAGE: <u>308</u> BARREL TYPE: <u>VARMIT</u> PROOFED: YES ☐ NO ☒	<u>REPORT REQ'D.</u> FORMAL ☒ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>7-29-85</u> DATE NEEDED BY: <u>8-15-85</u> REQUESTED BY: <u>F.H. SMITH</u> WORK ORDER NO: <u>C-1804-314</u>

<u>TEST TYPE</u>			
☐ Strength Test ☐ Function Test ☒ Accuracy Test	☐ Ammunition Test ☐ Environmental Test ☐ Customer Complaint	☐ Dry Cycle Test ☒ Measurements ☐ Endurance Test	☐ Photo/Video ☐ Other _____

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

USING QUALIFIED AMMO, LOT #C13T, SHOOT -4-
 M/700 BUTTON-RIFLED VARMIT RIFLES FOR:

- ACCURACY - 5 - 5-SHOT GROUPS EACH GUN
- VELOCITIES

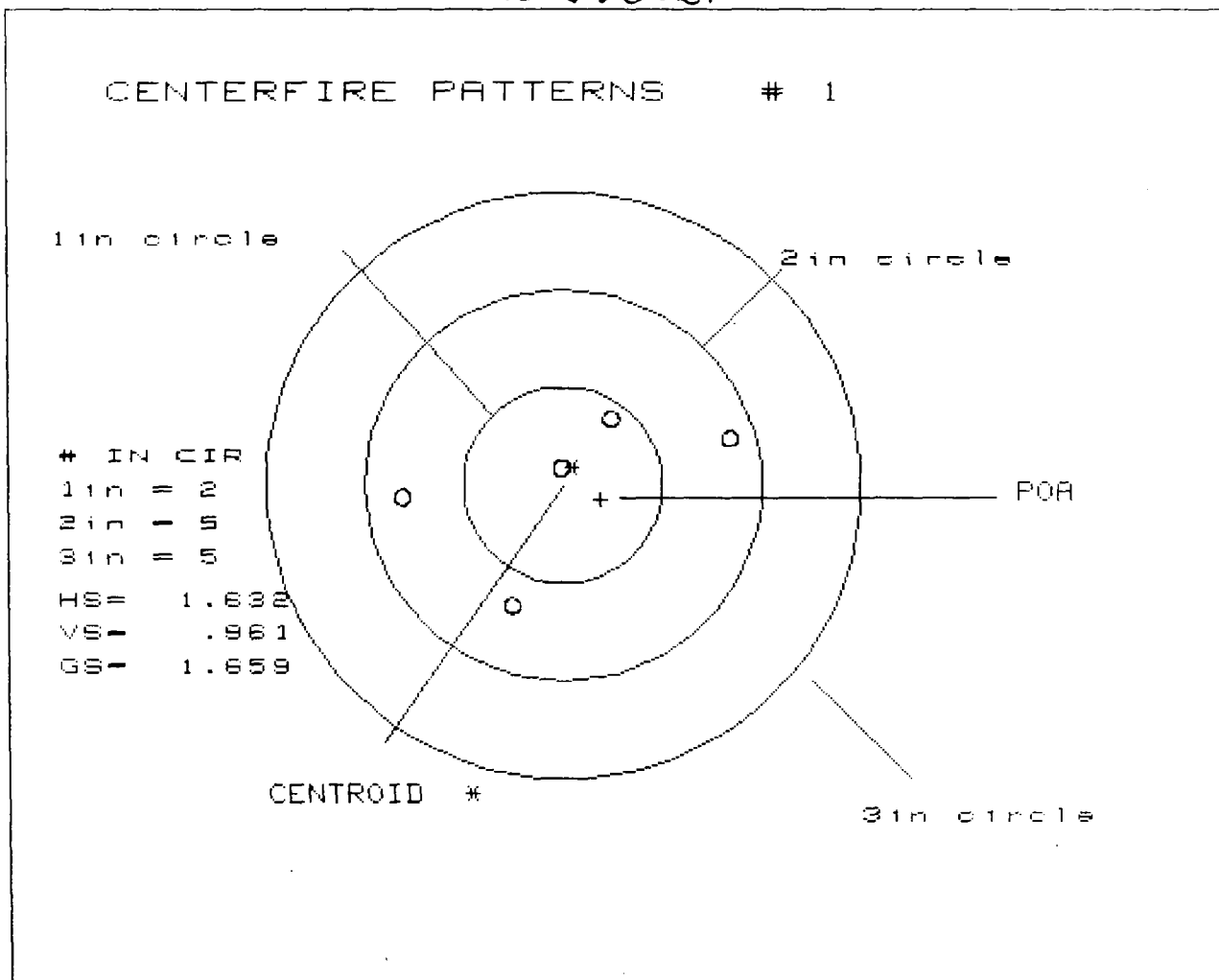
GUNS REQUIRED: M/700 BUTTON-RIFLED VARMIT SPECIALS:

SERIAL # B6685290
 B6685229
 B6684886
 B6685203

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 11/22/85
 TEST COMPLETED BY: T. SELAN.
 REPORT DATE: _____

B-6685290



PATTERN # : 1

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .636 - .996

MINIMUM X & Y : .423 - .538

CENTROID X & Y : -.191 .066

POA TO CENTROID RAD: .2018

MIN RADIUS : .1081

MEAN RADIUS : .5746

MAX RADIUS : .8553

HORIZONTAL SPREAD : 1.6320

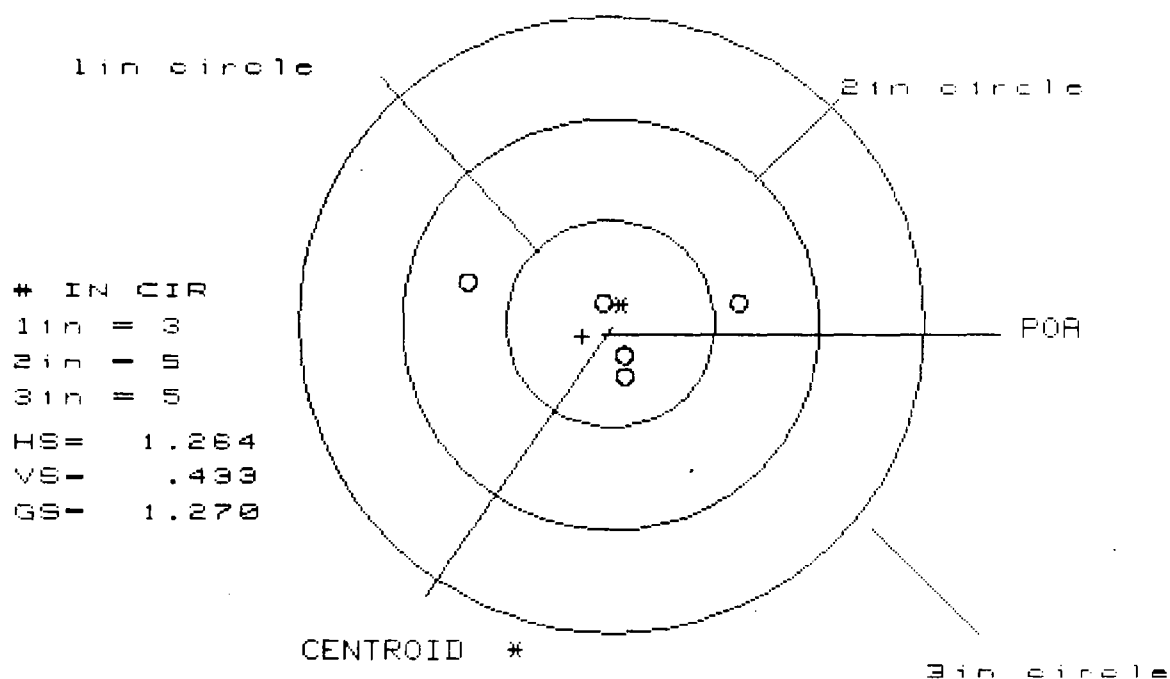
VERTICAL SPREAD : .9610

EXTREME SPREAD : 1.6588

.308 WIN.
 VRT. BBL BUTTON RIFLED
 Ammo: REM 180 GR PSP
 LET C-13-T
 RANGE - 100 YDS.

NUMBER IN ONE INCH CIRCLE = 2
 NUMBER IN TWO INCH CIRCLE = 5
 NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 2



PATTERN # : 2

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .725 -.539

MINIMUM X & Y : .257 -.176

CENTROID X & Y : .134 .050

POR TO CENTROID RAD: .1435

MIN RADIUS : .1064

MEAN RADIUS : .3636

MAX RADIUS : .7044

HORIZONTAL SPREAD : 1.2640

VERTICAL SPREAD : .4330

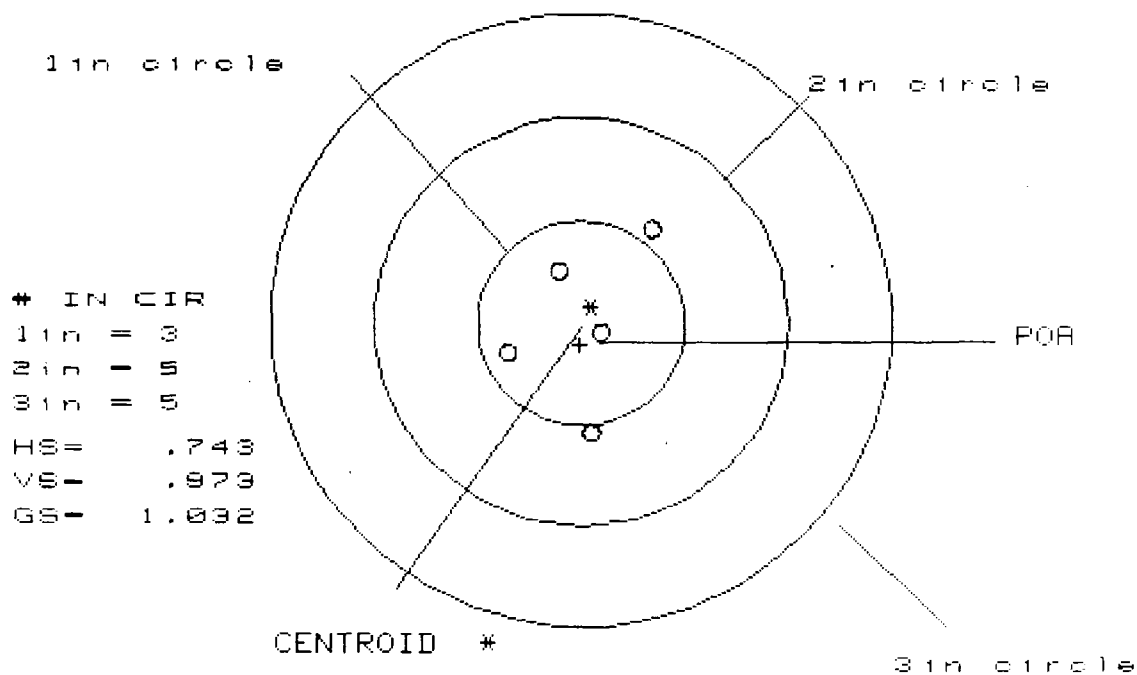
EXTREME SPREAD : 1.2698

NUMBER IN ONE INCH CIRCLE = 3

NUMBER IN TWO INCH CIRCLE = 5

NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 3



PATTERN # : 3

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .374 -.369

MINIMUM X & Y : .529 -.444

CENTROID X & Y : .006 .090

POB TO CENTROID RAD: .0898

MIN RADIUS : .1048

MEAN RADIUS : .3768

MAX RADIUS : .5733

HORIZONTAL SPREAD : .7430

VERTICAL SPREAD : .9730

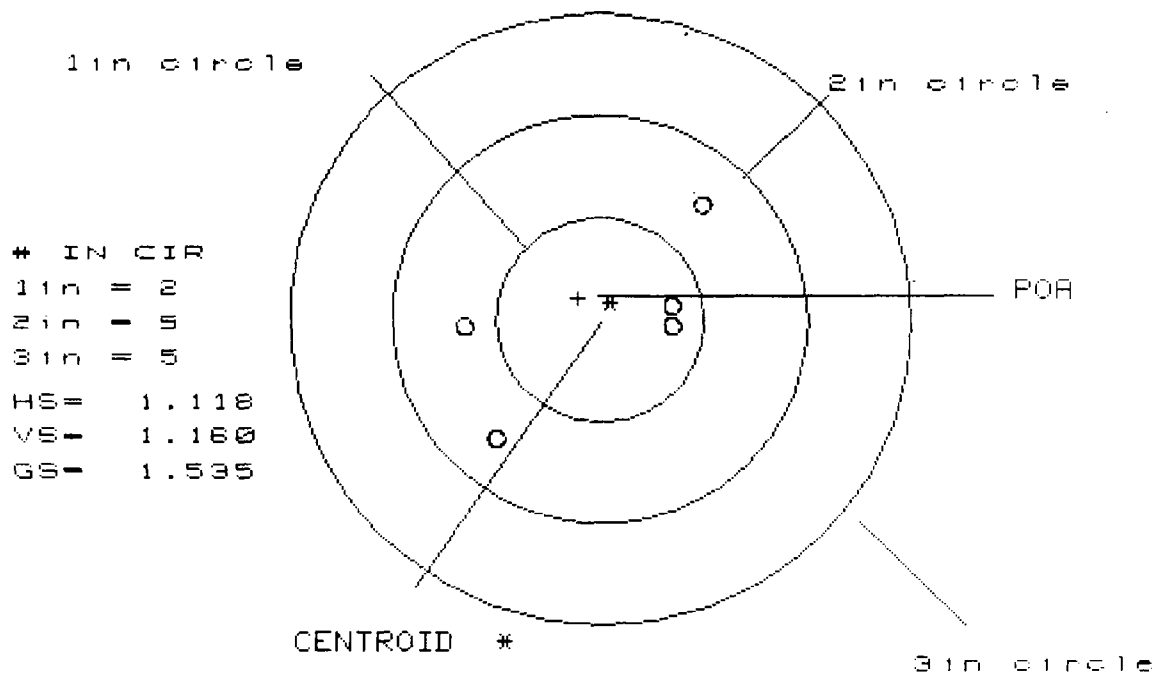
EXTREME SPREAD : 1.0320

NUMBER IN ONE INCH CIRCLE = 3

NUMBER IN TWO INCH CIRCLE = 5

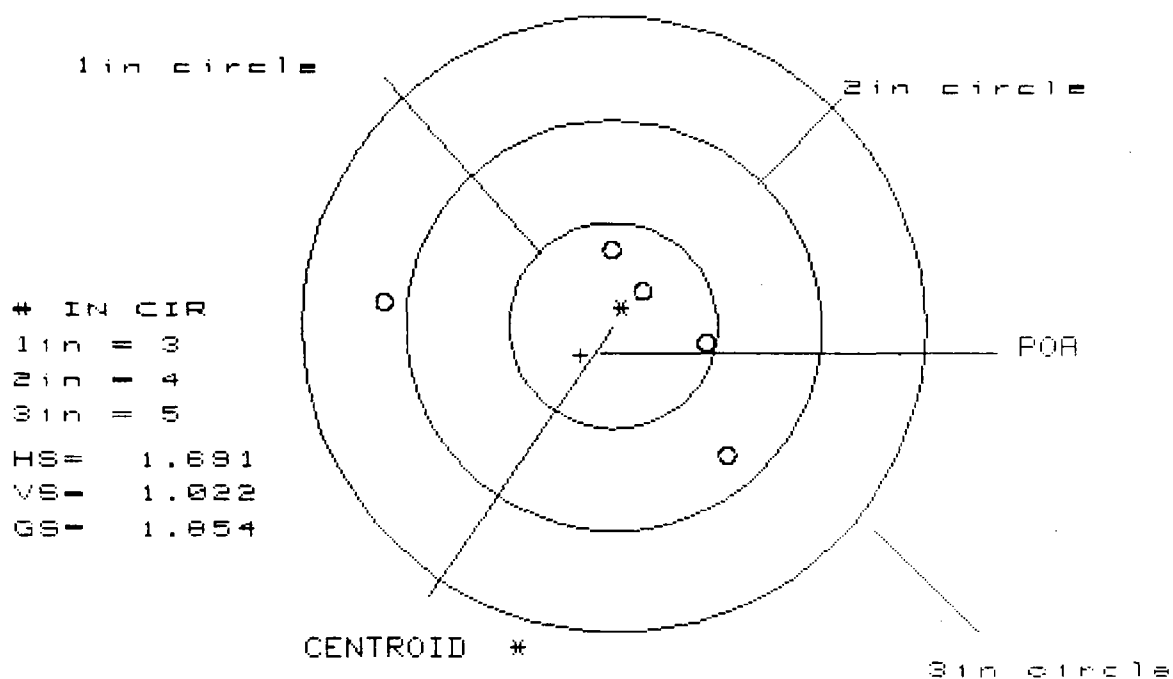
NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 4



PATTERN #	:	4	
NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	.581	-.537
MINIMUM X & Y	:	.441	-.719
CENTROID X & Y	:	.103	-.117
POA TO CENTROID RAD:	:	.1563	
MIN RADIUS	:	.3433	
MEAN RADIUS	:	.5745	
MAX RADIUS	:	.7999	
HORIZONTAL SPREAD	:	1.1180	
VERTICAL SPREAD	:	1.1600	
EXTREME SPREAD	:	1.5348	
NUMBER IN ONE INCH CIRCLE	=	2	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

CENTERFIRE PATTERNS # 5



PATTERN # : 5

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .717 - .974

MINIMUM X & Y : .521 - .501

CENTROID X & Y : .155 .131

POA TO CENTROID RAD: .2029

MIN RADIUS : .2330

MEAN RADIUS : .6078

MAX RADIUS : 1.1362

HORIZONTAL SPREAD : 1.6910

VERTICAL SPREAD : 1.0220

EXTREME SPREAD : 1.8539

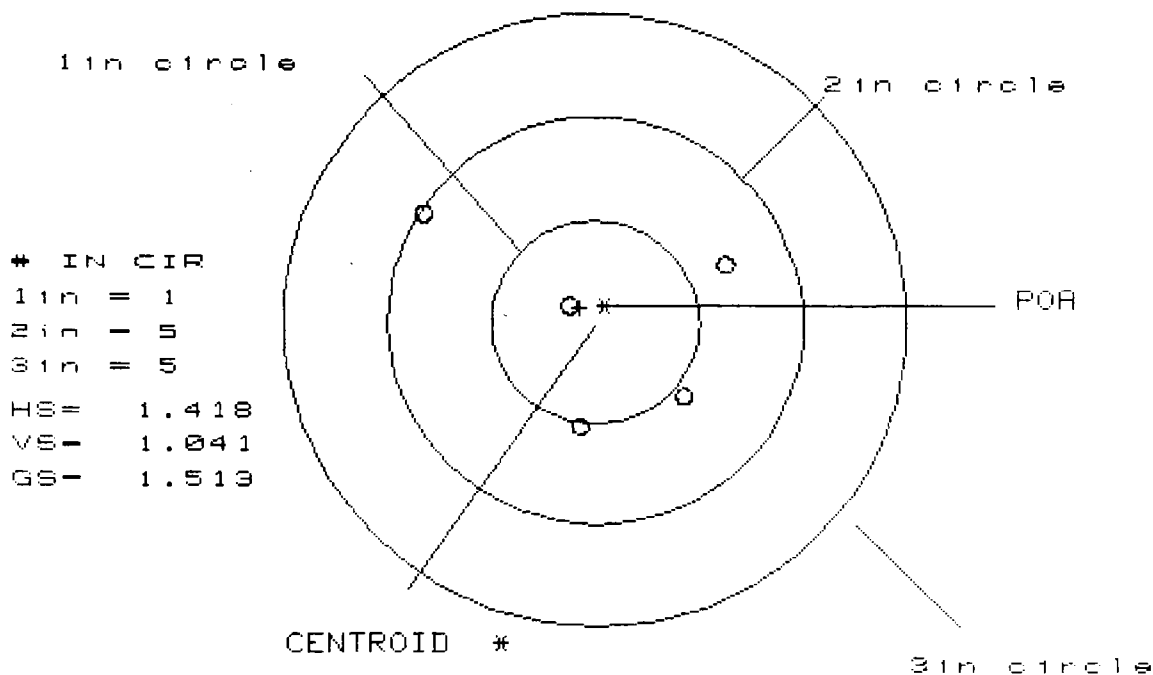
NUMBER IN ONE INCH CIRCLE = 3

NUMBER IN TWO INCH CIRCLE = 4

NUMBER IN THREE INCH CIRCLE = 5

B-6605203

CENTERFIRE PATTERNS # 1



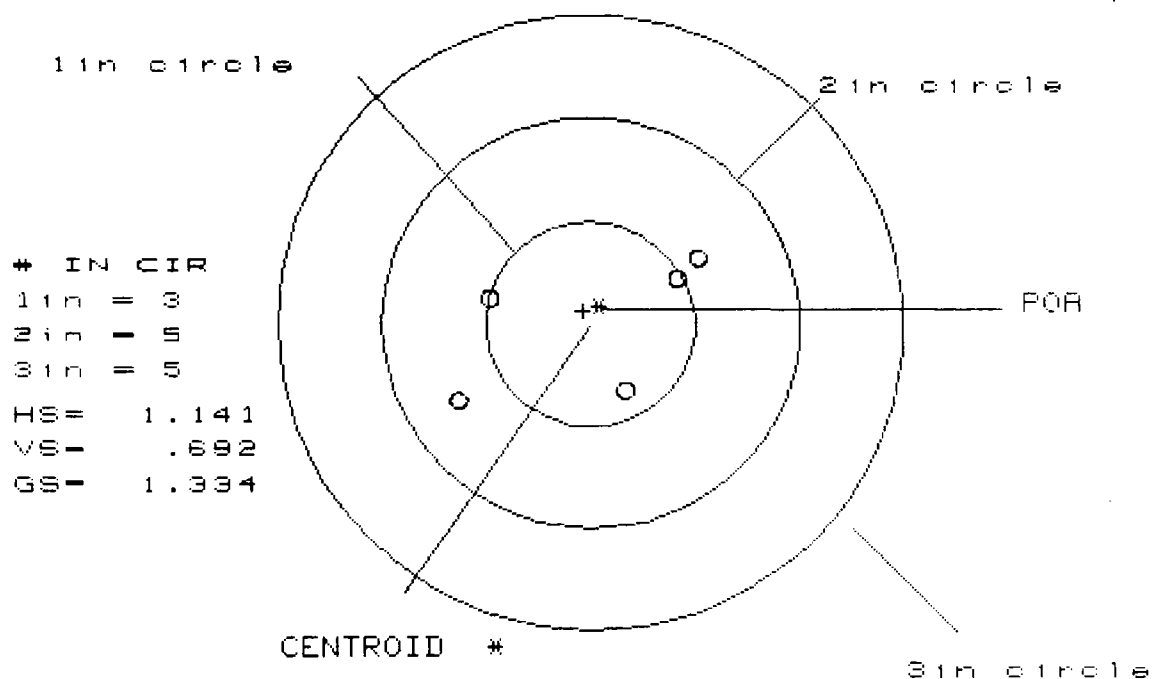
PATTERN # : 1

NUMBER OF SHOTS	:	5
MAXIMUM X & Y	:	.677
MINIMUM X & Y	:	.438
CENTROID X & Y	:	.074
POR TO CENTROID RAD:	:	.1131
MIN RADIUS	:	.1299
MEAN RADIUS	:	.5684
MAX RADIUS	:	.9688
HORIZONTAL SPREAD	:	1.4180
VERTICAL SPREAD	:	1.0410
EXTREME SPREAD	:	1.5134

308 WIN
 VRT BAL. BUTTON RIFLED
 AMMO: REM 180 GR RSP
 LOT C-13-T
 RANGE- 100 YDS.

NUMBER IN ONE	INCH CIRCLE	=	1
NUMBER IN TWO	INCH CIRCLE	=	5
NUMBER IN THREE	INCH CIRCLE	=	5

CENTERFIRE PATTERNS # 2



PATTERN # : 2

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .554 -.587

MINIMUM X & Y : .261 -.431

CENTROID X & Y : .032 -.075

POR TO CENTROID RAD: .0812

MIN RADIUS : .3523

MEAN RADIUS : .5291

MAX RADIUS : .7138

HORIZONTAL SPREAD : 1.1410

VERTICAL SPREAD : .6920

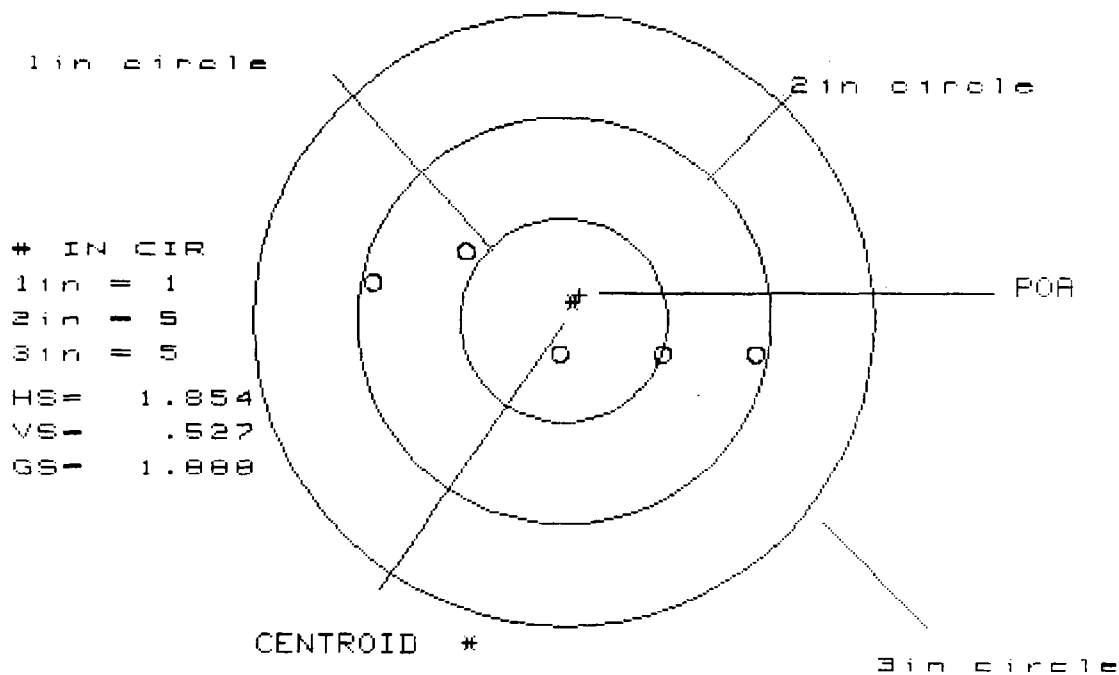
EXTREME SPREAD : 1.3344

NUMBER IN ONE INCH CIRCLE = 3

NUMBER IN TWO INCH CIRCLE = 5

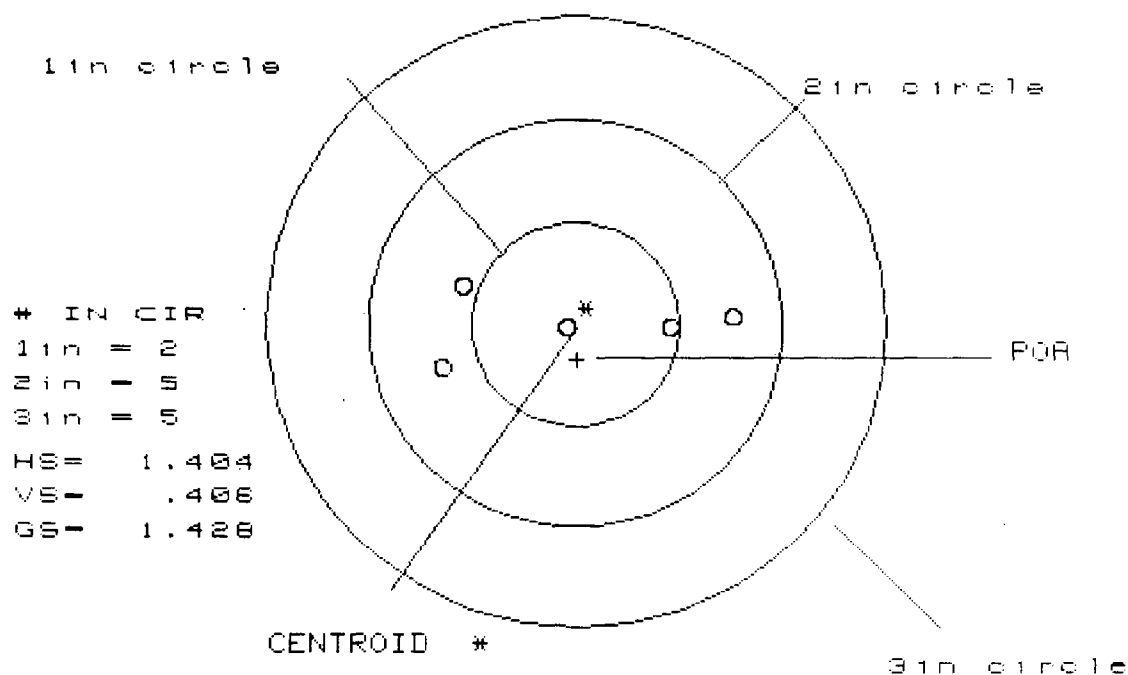
NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 3



PATTERN #	:	3	
NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	.847	-1.007
MINIMUM X & Y	:	.204	-.323
CENTROID X & Y	:	-.078	-.136
POA TO CENTROID RAD:	:	.1570	
MIN RADIUS	:	.1870	
MEAN RADIUS	:	.6366	
MAX RADIUS	:	.9475	
HORIZONTAL SPREAD	:	1.8540	
VERTICAL SPREAD	:	.5270	
EXTREME SPREAD	:	1.8879	
NUMBER IN ONE INCH CIRCLE	=	1	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

CENTERFIRE PATTERNS # 4



PATTERN # : 4

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .755 -.649

MINIMUM X & Y : .352 -.054

CENTROID X & Y : -.008 .158

POR TO CENTROID RAD: .1584

MIN RADIUS : .0312

MEAN RADIUS : .5028

MAX RADIUS : .7644

HORIZONTAL SPREAD : 1.4040

VERTICAL SPREAD : .4060

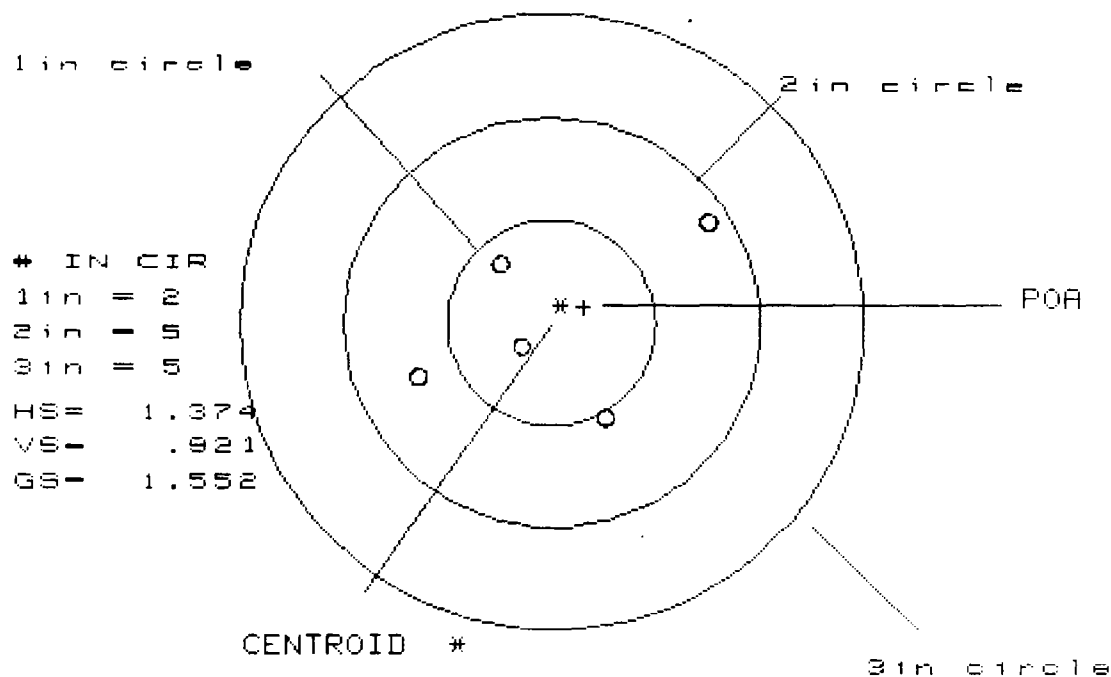
EXTREME SPREAD : 1.4275

NUMBER IN ONE INCH CIRCLE = 2

NUMBER IN TWO INCH CIRCLE = 5

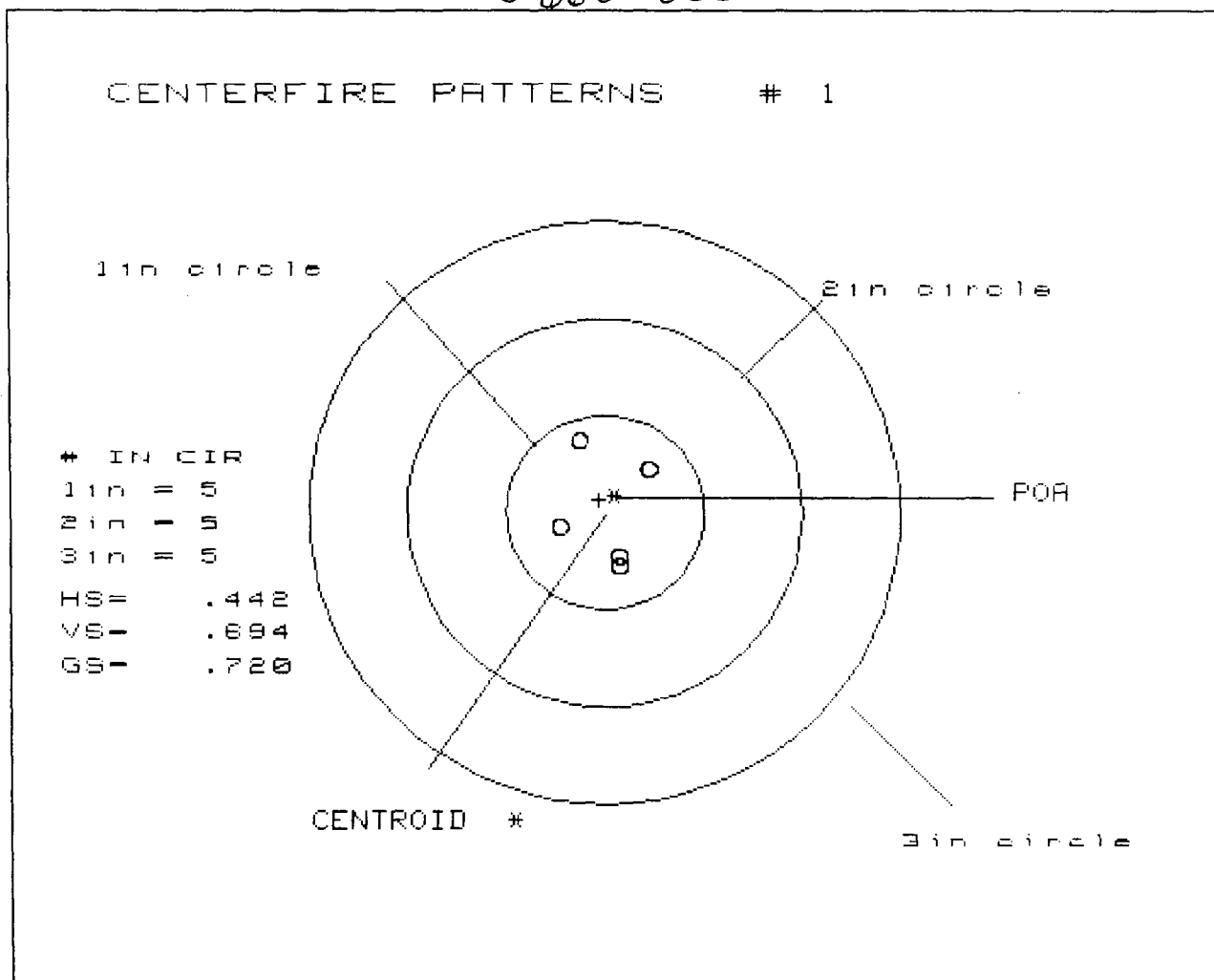
NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 5



PATTERN #	:	5	
NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	.579	-.795
MINIMUM X & Y	:	.393	-.528
CENTROID X & Y	:	-.157	-.089
POA TO CENTROID RAD:	:	.1800	
MIN RADIUS	:	.1686	
MEAN RADIUS	:	.5236	
MAX RADIUS	:	.8793	
HORIZONTAL SPREAD	:	1.3740	
VERTICAL SPREAD	:	.9210	
EXTREME SPREAD	:	1.5517	
NUMBER IN ONE INCH CIRCLE	=		2
NUMBER IN TWO INCH CIRCLE	=		5
NUMBER IN THREE INCH CIRCLE	=		5

B.6684886



PATTERN # : 1

NUMBER OF SHOTS :	5	
MAXIMUM X & Y :	.238	-.204
MINIMUM X & Y :	.320	-.374
CENTROID X & Y :	.027	-.072
POA TO CENTROID RAD:	.0765	
MIN RADIUS :	.2326	
MEAN RADIUS :	.2982	
MAX RADIUS :	.4070	
HORIZONTAL SPREAD :	.4420	
VERTICAL SPREAD :	.6940	
EXTREME SPREAD :	.7203	

NUMBER IN ONE INCH CIRCLE =	5
NUMBER IN TWO INCH CIRCLE =	5
NUMBER IN THREE INCH CIRCLE =	5

308 WIN.

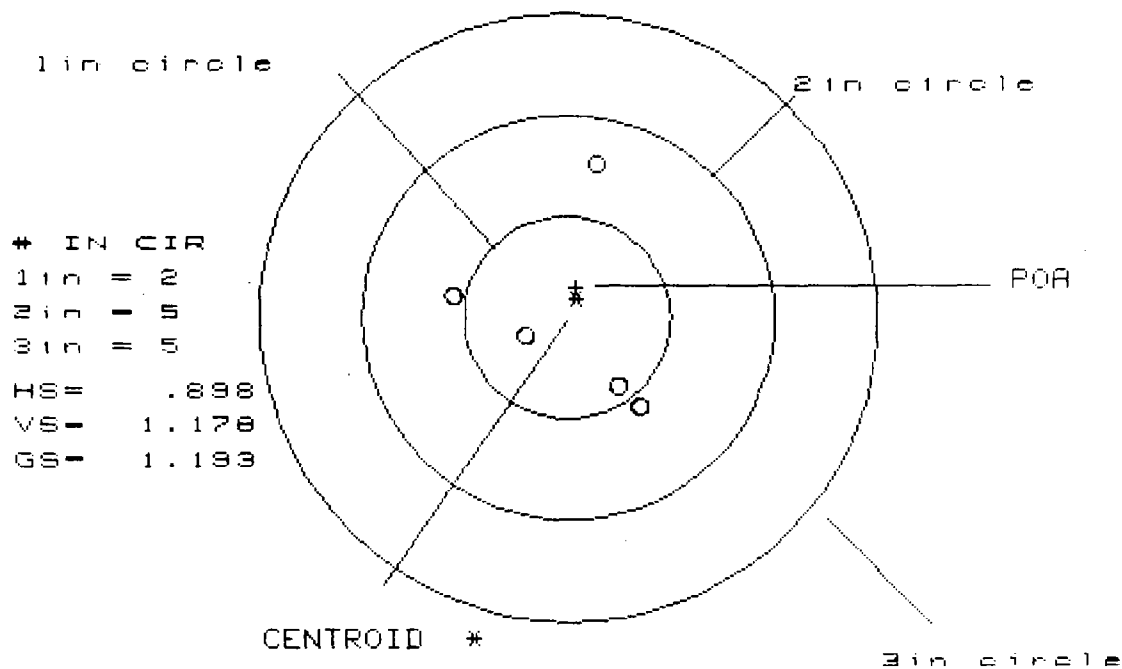
VRT. BBL. BUTTON RIFLED

Ammo: REM. 190 GR PSP

C-13-T

RANGE - 100 YDS

CENTERFIRE PATTERNS # 2



PATTERN # : 2

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .301 -.597

MINIMUM X & Y : .591 -.587

CENTROID X & Y : -.047 -.159

POA TO CENTROID RAD: .1656

MIN RADIUS : .2453

MEAN RADIUS : .5087

MAX RADIUS : .7671

HORIZONTAL SPREAD : .8980

VERTICAL SPREAD : 1.1780

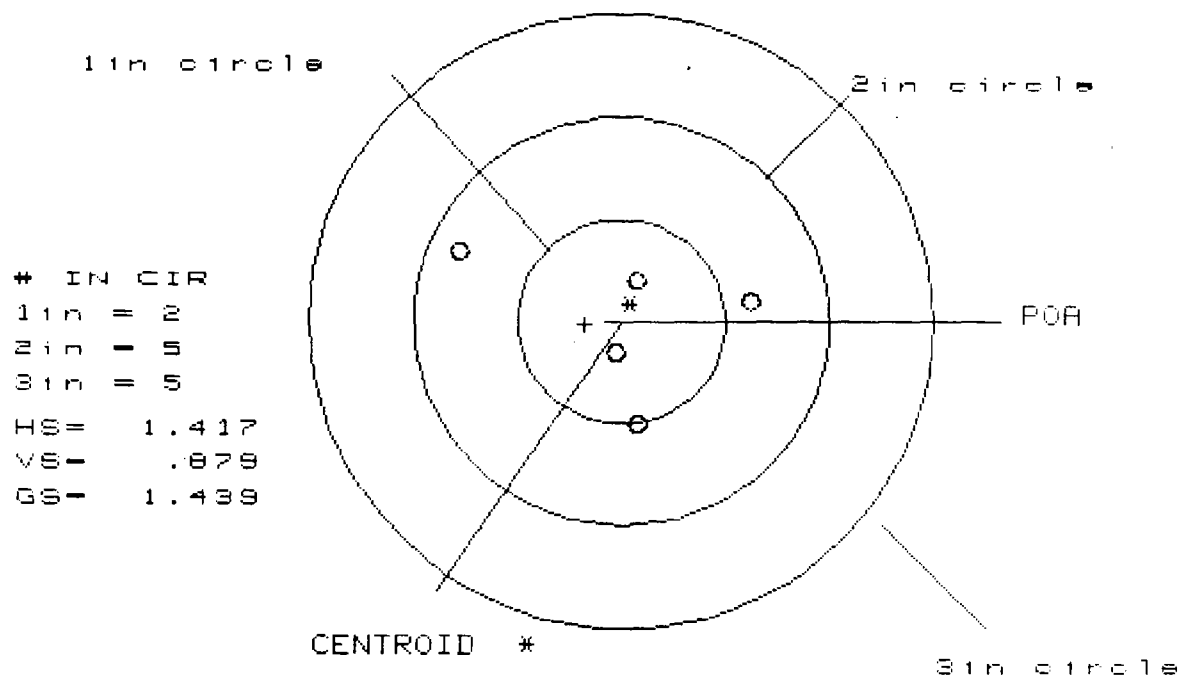
EXTREME SPREAD : 1.1926

NUMBER IN ONE INCH CIRCLE = 2

NUMBER IN TWO INCH CIRCLE = 5

NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 3



PATTERN # : 3

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .812 -.605

MINIMUM X & Y : .359 -.520

CENTROID X & Y : .176 .001

POA TO CENTROID RAD: .1764

MIN RADIUS : .1538

MEAN RADIUS : .4818

MAX RADIUS : .8597

HORIZONTAL SPREAD : 1.4170

VERTICAL SPREAD : .8790

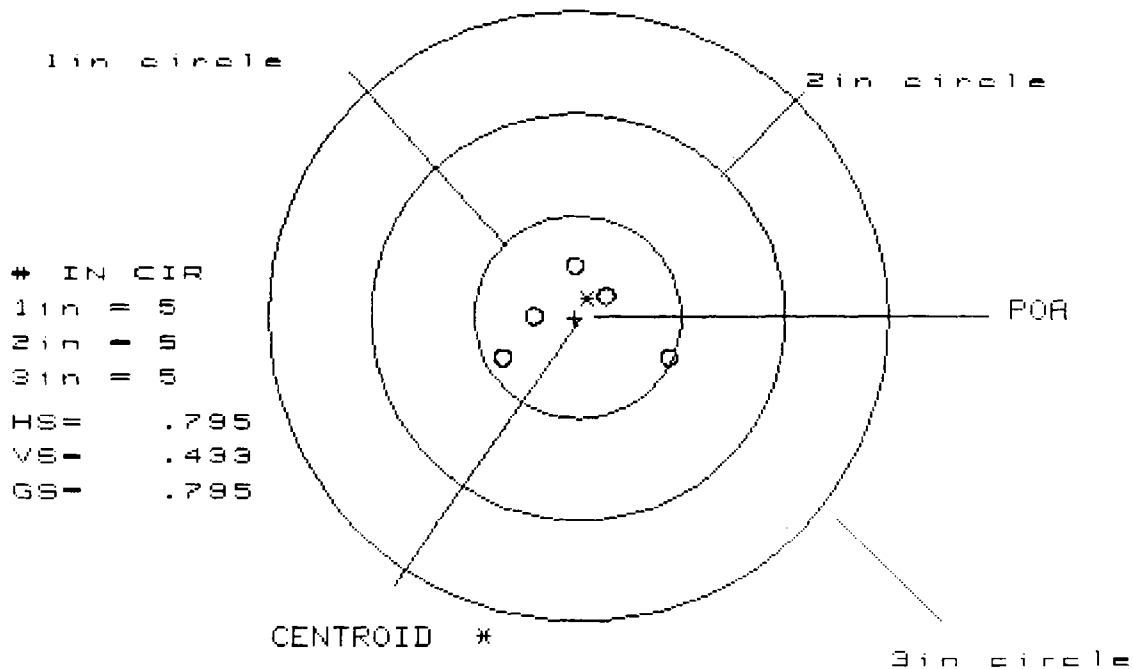
EXTREME SPREAD : 1.4385

NUMBER IN ONE INCH CIRCLE = 2

NUMBER IN TWO INCH CIRCLE = 5

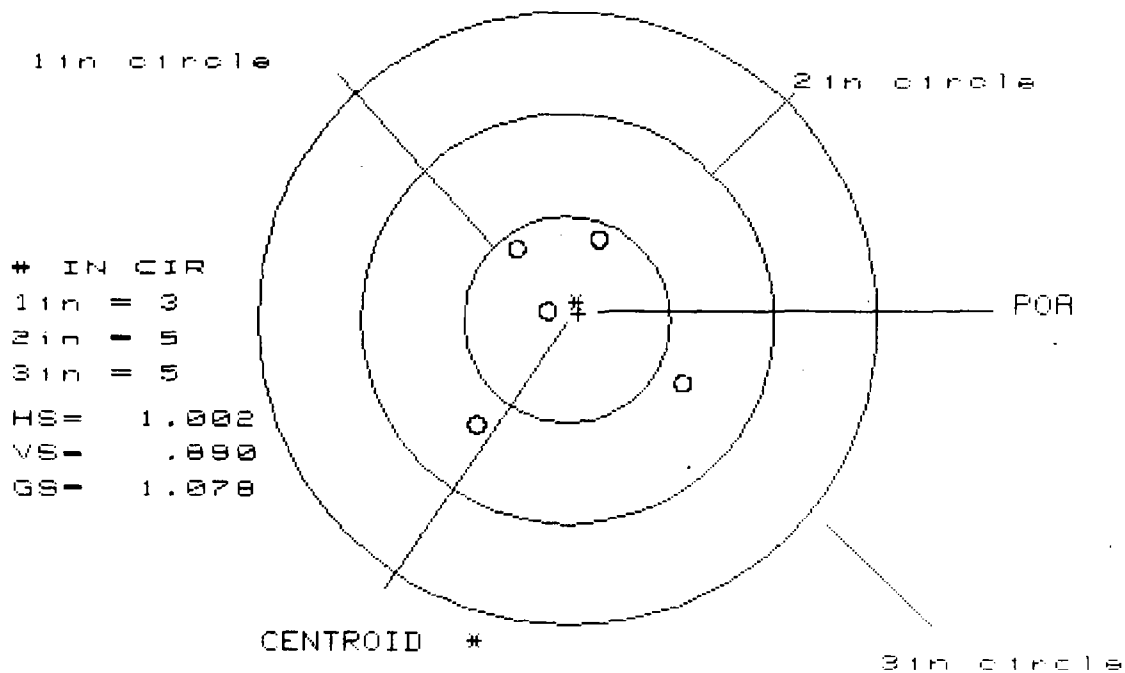
NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 4



PATTERN #	:	4	
NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	.440	-.355
MINIMUM X & Y	:	.246	-.187
CENTROID X & Y	:	.012	-.003
POA TO CENTROID RAD:	:	.0126	
MIN RADIUS	:	.1619	
MEAN RADIUS	:	.2949	
MAX RADIUS	:	.4622	
HORIZONTAL SPREAD	:	.7950	
VERTICAL SPREAD	:	.4330	
EXTREME SPREAD	:	.7951	
NUMBER IN ONE INCH CIRCLE	=	5	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

CENTERFIRE PATTERNS # 5



PATTERN # : 5

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .516 -.486

MINIMUM X & Y : .364 -.526

CENTROID X & Y : -.057 -.042

POA TO CENTROID RAD: .0704

MIN RADIUS : .0868

MEAN RADIUS : .4527

MAX RADIUS : .6558

HORIZONTAL SPREAD : 1.0020

VERTICAL SPREAD : .8900

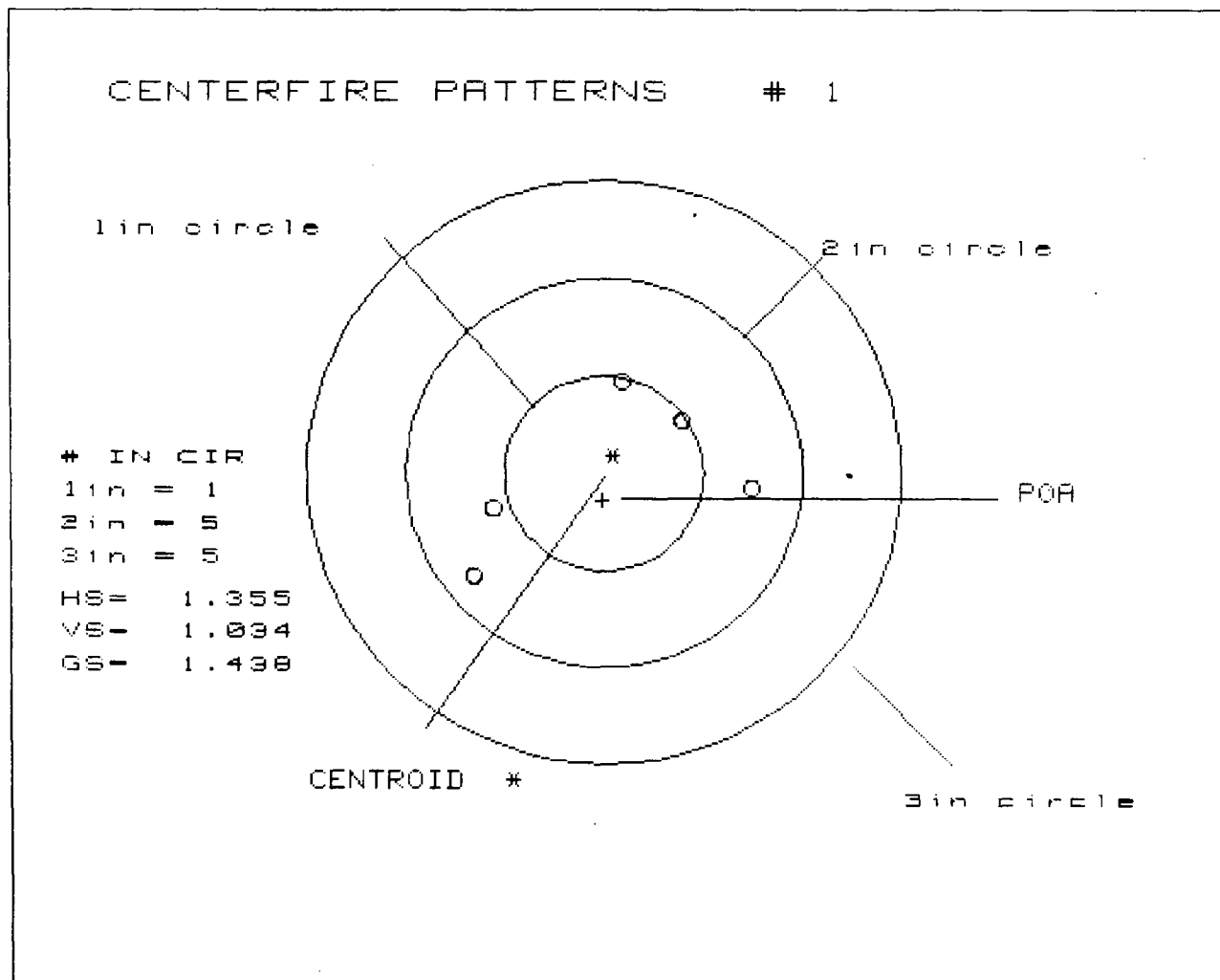
EXTREME SPREAD : 1.0784

NUMBER IN ONE INCH CIRCLE = 3

NUMBER IN TWO INCH CIRCLE = 5

NUMBER IN THREE INCH CIRCLE = 5

" 2000221



PATTERN #	:	1	
NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	.728	-.627
MINIMUM X & Y	:	.623	-.411
CENTROID X & Y	:	.008	.128
POA TO CENTROID RAD:	:	.1282	
MIN RADIUS	:	.4687	
MEAN RADIUS	:	.6189	
MAX RADIUS	:	.8329	
HORIZONTAL SPREAD	:	1.3550	
VERTICAL SPREAD	:	1.0340	
EXTREME SPREAD	:	1.4378	
NUMBER IN ONE INCH CIRCLE	=	1	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

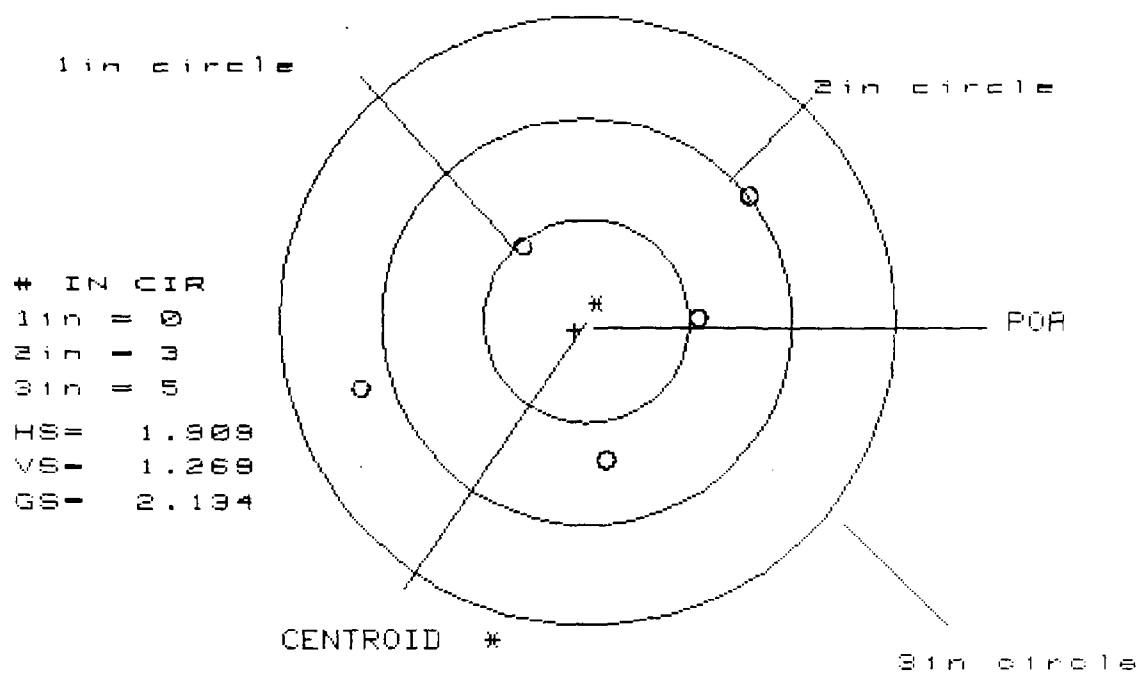
308 WIN.
VRT. BBL.S. BUTTON RIFLED

AMMO. REM. 180 GR PSP

C-13-T.

RANGE 100 YDS

CENTERFIRE PATTERNS # 2



PATTERN # : 2

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .863 -1.046

MINIMUM X & Y : .639 -.630

CENTROID X & Y : .056 .032

POA TO CENTROID RAD: .0645

MIN RADIUS : .5008

MEAN RADIUS : .7749

MAX RADIUS : 1.1551

HORIZONTAL SPREAD : 1.9090

VERTICAL SPREAD : 1.2690

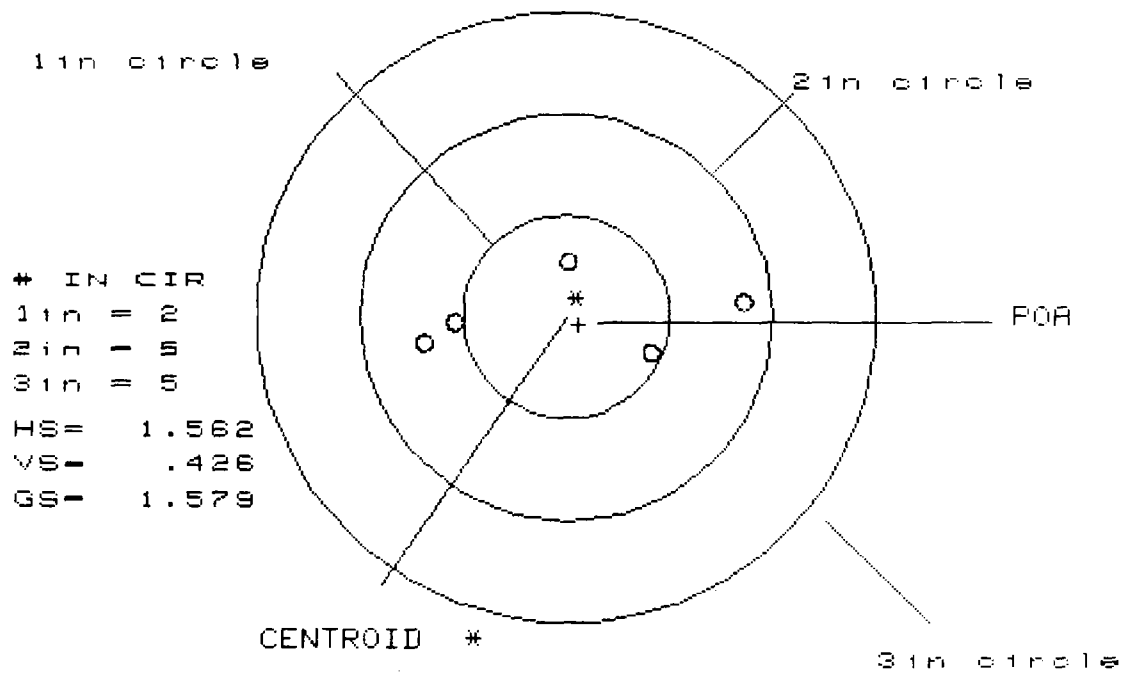
EXTREME SPREAD : 2.1337

NUMBER IN ONE INCH CIRCLE = 0

NUMBER IN TWO INCH CIRCLE = 3

NUMBER IN THREE INCH CIRCLE = 5

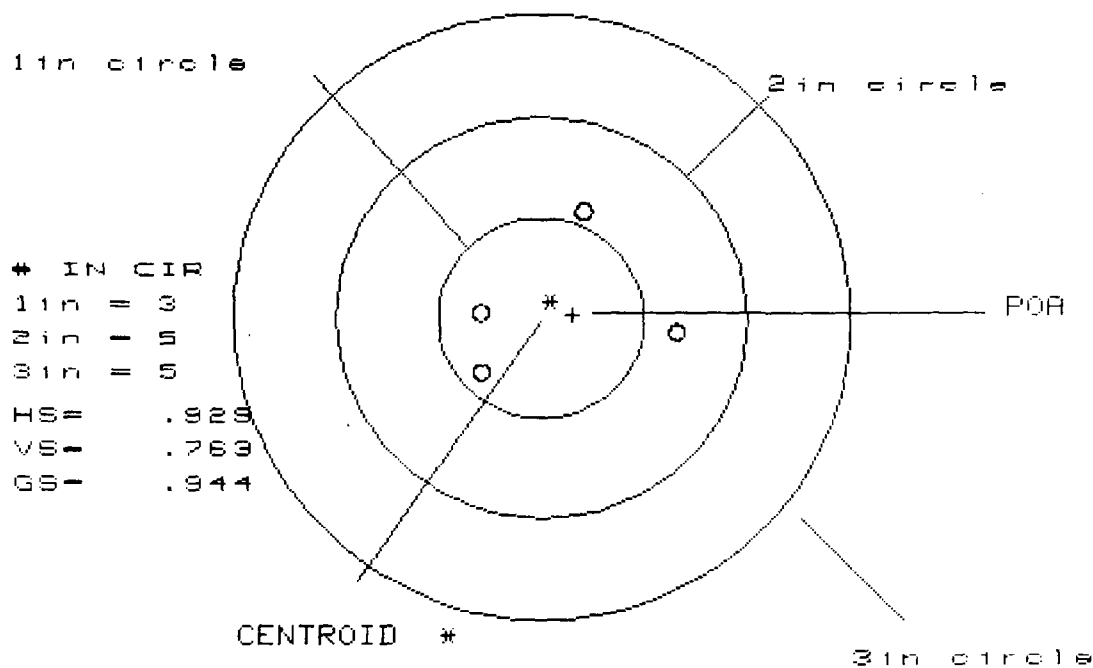
CENTERFIRE PATTERNS # 3



PATTERN # : 3

NUMBER OF SHOTS	:	5	
MAXIMUM X & Y	:	.788	-.774
MINIMUM X & Y	:	.297	-.129
CENTROID X & Y	:	-.059	.034
POA TO CENTROID RAD:	:	.0686	
MIN RADIUS	:	.2626	
MEAN RADIUS	:	.5607	
MAX RADIUS	:	.8515	
HORIZONTAL SPREAD	:	1.5620	
VERTICAL SPREAD	:	.4260	
EXTREME SPREAD	:	1.5791	
NUMBER IN ONE INCH CIRCLE	=	2	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

CENTERFIRE PATTERNS # 4



PATTERN # : 4

NUMBER OF SHOTS : 5

MAXIMUM X & Y : .480 - .449

MINIMUM X & Y : .484 - .279

CENTROID X & Y : -.158 -.033

POA TO CENTROID RAD: .1616

MIN RADIUS : .2811

MEAN RADIUS : .4470

MAX RADIUS : .6429

HORIZONTAL SPREAD : .9290

VERTICAL SPREAD : .7630

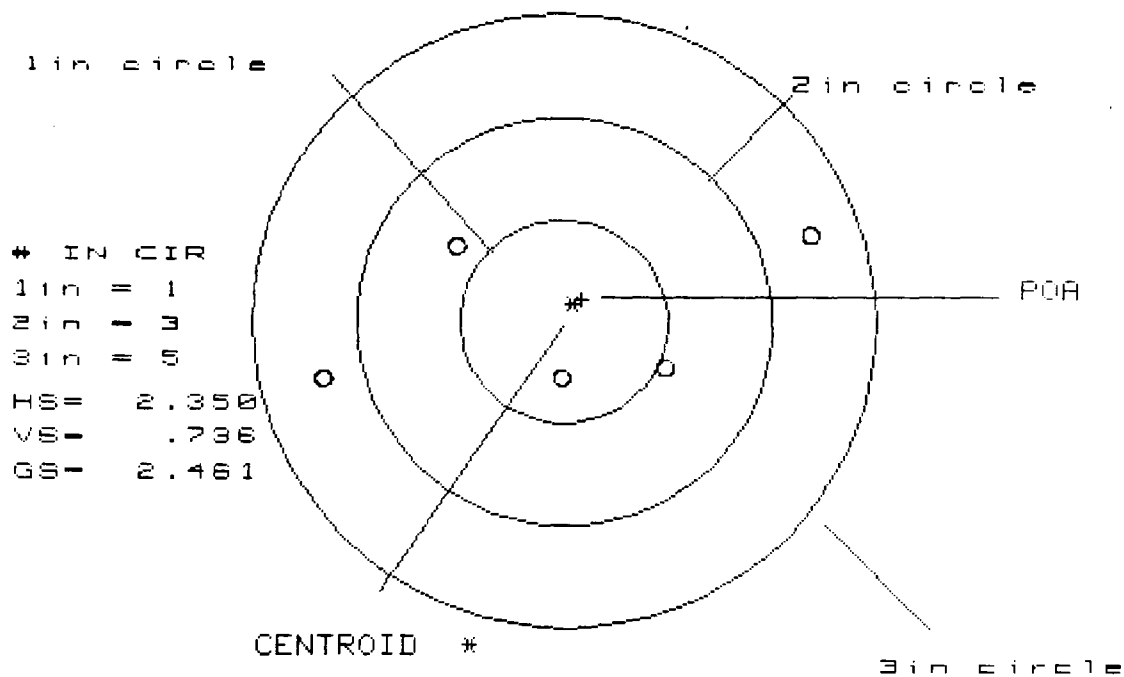
EXTREME SPREAD : .9435

NUMBER IN ONE INCH CIRCLE = 3

NUMBER IN TWO INCH CIRCLE = 5

NUMBER IN THREE INCH CIRCLE = 5

CENTERFIRE PATTERNS # 5



PATTERN # : 5

NUMBER OF SHOTS : 5

MAXIMUM X & Y : 1.105 -1.245

MINIMUM X & Y : .314 -.422

CENTROID X & Y : -.089 -.125

POA TO CENTROID RAD: .1533

MIN RADIUS : .2990

MEAN RADIUS : .7878

MAX RADIUS : 1.2721

HORIZONTAL SPREAD : 2.3500

VERTICAL SPREAD : .7360

EXTREME SPREAD : 2.4611

NUMBER IN ONE INCH CIRCLE = 1

NUMBER IN TWO INCH CIRCLE = 3

NUMBER IN THREE INCH CIRCLE = 5

OEHLER SYSTEM 82 85-11-22 10:05A SLOWFIRE...STATUS O.K. P

MINOR MODULE STATUS SUMMARY

COMMENT: 308 WIN. VRT. RBL BUTTON RIFLED

SER. # 00004000

AMMO: REM. 308 WIN. 180 GR. PSP LOT # C-13-T

FIVE 5 SHOT GROUPS 100 YDS.

	0.
	20.000
ROUND	2-VEL/TA
1	2540.
2	2503.
3	2547.
4	2535.
5	2535.9

5 VALID ROUNDS

MEAN	2532.
STD DEV	16.97
MAX	2547.
MIN	2503.
SPREAD	44.

COMMENT: GOOD GROUP

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536159

DEHLER SYSTEM 82 85-11-22 10:48A SLOWFIRE...STATUS O.K. P

MINOR MODULE STATUS SUMMARY

COMMENT: # 2 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2517.
2 2534.
3 2519.
4 2530.
5 2523.9

5 VALID ROUNDS
MEAN 2525.
STD DEV 7.02
MAX 2534.
MIN 2517.
SPREAD 16.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536160

DEHLER SYSTEM 82 85-11-22 10:56A SLOWFIRE...STATUS O.K. ? +

MINOR MODULE STATUS SUMMARY

COMMENT: # 3 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2543.
2 2533.
3 2548.
4 2499.
5 2529.5

5 VALID ROUNDS
MEAN 2531.
STD DEV 19.10
MAX 2548.
MIN 2499.
SPREAD 49.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536161

DEHLER SYSTEM 82 85-11-22 11:04A SLOWFIRE...STATUS G.R. 7 +

MINOR MODULE STATUS SUMMARY

COMMENT: # 4 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2532.
2 2528.
3 2549.
4 2542.
5 2530.9

5 VALID ROUNDS
MEAN 2536.
STD DEV 9.10
MAX 2549.
MIN 2528.
SPREAD 21.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536162

GEHLER SYSTEM 82 85-11-22 11:13A SLOWFIRE...STATUS O.K. ?

MINOR MODULE STATUS SUMMARY

COMMENT: # 5 GROUP

	0.
	20.000
ROUND	2-VEL/TA
1	2538.
2	2533.
3	2572.
4	2535.
5	2516.8

5 VALID ROUNDS	
MEAN	2539.
STD DEV	20.42
MAX	2572.
MIN	2516.
SPREAD	56.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536163

DEHLER SYSTEM 82 85-11-21 02:49P SLOWFIRE...STA US G.R. P +

MINOR MODULE STATUS SUMMARY

COMMENT: 308 VRT. BBL. BUTTON RIFLED

LOT # B6685203

AMMO: REM. 308 WIN. 180 GR. PSP LOT # C-13-T

FIVE 5 SHOT GROUPS 100 YDS.

	0.
	20.000
ROUND	2-VEL/TA
1	2542.
2	2527.
3	2531.
4	2486.
5	2521.8

5 VALID ROUNDS

MEAN	2521.
STD DEV	21.32
MAX	2542.
MIN	2486.
SPREAD	56.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536164

OEHLER SYSTEM 82 85-11 22 08:24A SLOWFIRE...STATUS O.K. 7 +

MINOR MODULE STATUS SUMMARY

COMMENT: 2 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2513.
2 2517.
3 2525.
4 2486.
5 2532.9

5 VALID ROUNDS
MEAN 2515.
STD DEV 17.65
MAX 2532.
MIN 2486.
SPREAD 46.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536165

DEHLER SYSTEM 82 85-11-22 08:36A SLOWFIRE...STATUS O.K. F

MINOR MODULE STATUS SUMMARY

COMMENT: # 3 GROUP

4.
20.000
ROUND 2-VEL/TA
1 2522.
2 2523.
3 2544.
4 2542.
5 2536.9

5 VALID ROUNDS
MEAN 2533.
STD DEV 10.44
MAX 2544.
MIN 2522.
SPREAD 22.

COMMENT: HORIZONTAL SPREAD

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536166

DEHLER SYSTEM 82 85-11-22 08:47A SLOWFIRE...STATUS O.K. ?

MINOR MODULE STATUS SUMMARY

COMMENT: # 4 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2507.
2 2520.
3 2519.
4 2524.
5 2505.5

5 VALID ROUNDS
MEAN 2515.
STD DEV 8.48
MAX 2524.
MIN 2505.
SPREAD 19.

COMMENT: HORIZONTAL SPREAD

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536167

GEHLER SYSTEM 82 85-11-22 09:57A 51004 REL...STATUS O.K. 7 +

MINOR MODULE STATUS SUMMARY

COMMENT: H 5 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2531.
2 2535.
3 2543.
4 2540.
5 2499.5

5 VALID ROUNDS
MEAN 2529.
STD DEV 17.93
MAX 2543.
MIN 2499.
SPREAD 45.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536168

DEHLER SYSTEM 82 85-11-21 01:17P SLOWFIRE...STATUS O.K. ?

MINOR MODULE STATUS SUMMARY

COMMENT: 300 WIN. VART. BBL. BUTTON RIFLED

SER. # B6685290

AMMO: 180 GR. REM "POMDER POWER -LOKT" PSP LOT # C-13-1

FIVE 5 SHOT GROUPS

	0.
	20.000
ROUND	2-VEL/TA
1	2522.
2	2523.
3	2561.
4	2521.
5	2551.9

5 VALID ROUNDS

MEAN	2536.
STD DEV	19.05
MAX	2561.
MIN	2521.
SPREAD	40.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER

KINZER V. REMINGTON

R2536169

DEHLER SYSTEM 85-11-21 01:11 P SLOWFIRE...STATUS O.K. P

INDR MODULE STATUS SUMMARY

COMMENT: # 2 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2535.
2 2548.
3 2526.
4 2542.
5 2528.9

5 VALID ROUNDS
MEAN 2536.
STD DEV 9.51
MAX 2548.
MIN 2526.
SPREAD 23.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536170

GEHLER SYSTEM 92 65-11-21 02:07P SLOWFIRE...STATUS O.K. ? *

MINOR MODULE STATUS SUMMARY

COMMENT: #3 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2565.
2 2563.
3 2545.
4 2498.
5 2534.5

5 VALID ROUNDS
MEAN 2541.
STD DEV 27.32
MAX 2565.
MIN 2498.
SPREAD 67.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536171

DEHLER SYSTEM 82 85-11-21 02:31P SLOWFIRE...STATUS O.K. ? +

MINOR MODULE STATUS SUMMARY

COMMENT: #4 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2539.
2 2535.
3 2536.
4 2543.
5 2541.S

5 VALID ROUNDS
MEAN 2539.
STD DEV 3.43
MAX 2543.
MIN 2535.
SPREAD 8.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536172

CHLER SYSTEM 15-11 21 01:38F SLOWFIRE...STATUS O.K. Y

MINOR MODULE STATUS SUMMARY

COMMENT: # 5 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2551.
2 2568.
3 2512.
4 2559.
5 2575.9

5 VALID ROUNDS
MEAN 2553.
STD DEV 24.73
MAX 2575.
MIN 2512.
SPREAD 63.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536173

DEHLER SYSTEM 82 85-11-21 10:48A SLOWFIRE...STATUS O.K. ?

MINOR MODULE STATUS SUMMARY

COMMENT: 308 WIN. UPT. BBL. COTTON RIFLED

SER #B6685229

AMMO: REM. 308 WIN. 180 GR. "CORE-LOKT" PSP LOT#C-13-T

SEQUENCE:5 5SHOT GROUPS 100 YDS.

	0.
	20.000
ROUND	2-VEL/TA
1	2559.
2	2535.
3	2532.
4	2528.
5	2554.8

5 VALID ROUNDS

MEAN	2542.
STD DEV	14.25
MAX	2559.
MIN	2528.
SPREAD	32.

COMMENT: #2GROUP

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536174

DEHLER SYSTEM #2 85-11 2.1 : LA SLOWFIRE...STATUS O.K. ? *

MINOR MODULE STATUS SUMMARY

COMMENT: # 2 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2534.
2 2537.
3 2554.
4 2519.
5 2540.8

5 VALID ROUNDS
MEAN 2537.
STD DEV 12.47
MAX 2554.
MIN 2519.
SPREAD 35.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536175

DEHLER SYSTEM R2 85-11-21 11:30A SLOWFIRE...STATUS O.K. ? *

MINOR MODULE STATUS SUMMARY

COMMENT: # 3GROUP

0.
20.000
ROUND 1-VEL/TA
1 2559.
2 2571.
3 2528.
4 2511.
5 2523.5

5 VALID ROUNDS
MEAN. 2539.
STD DEV 25.38
MAX 2571.
MIN 2511.
SPREAD 60.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536176

OEHLER SYSTEM 82 85-11-21 11:36A SLOWFIRE...STATUS O.K. ? *

MINOR MODULE STATUS SUMMARY

COMMENT: # 4 GROUP

0.
20.000
ROUND 2-VEL/TA
1 2529.
2 2505.
3 2499.
4 2499.
5 2535.6

5 VALID ROUNDS
MEAN 2513.
STD DEV 17.39
MAX 2535.
MIN 2499.
SPREAD 36.

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER
KINZER V. REMINGTON

R2536177

DEHLER SYSTEM 82 85-11-21 01:11P SLOWFIRE...STATUS O.K. ? +

MINOR MODULE STATUS SUMMARY

COMMENT: # 5 GROUP

	0.
	20.000
ROUND	2-VEL/TA
1	2537.
2	2527.
3	2541.
4	2505.
5	2498.5
5	VALID ROUNDS
MEAN	2522.
STD DEV	19.07
MAX	2541.
MIN	2498.
SPREAD	42.

COMMENT:

DEHLER SYSTEM 82 85-11-21 01:15P SLOWFIRE...STATUS O.K. ? +

MINOR MODULE STATUS SUMMARY

COMMENT:

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER

KINZER V. REMINGTON

R2536178

MEASUREMENT LAB TEST RESULTS

REQUESTER: R. S. Murphy TESTER: P. Conant DATE: 09/06/85
REPORT NO.: 852482 WORK ORDER NO.: C-9054-315
TEST TYPE: Developmental, Design Change.

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: 7MM REM EXP
BARREL TYPE: _____ PROOFED: YES * NO _____

REASON FOR TEST : To shoot two M/700 7MM REM EXP rifles for accuracy. Five -
three shot groups with each of the guns is required using ammo lot # D-6721.
This ammo had been qualified prior to testing.

EQUIPMENT REQUIRED : To M/700 rifles Ser# A6879934 and A6874599, 12X scope.

TEST PROCEDURE : The rifles were shot for accuracy as required with gun
serial number A6879934 and gun serial number A6874599 shot by Paul Conant.

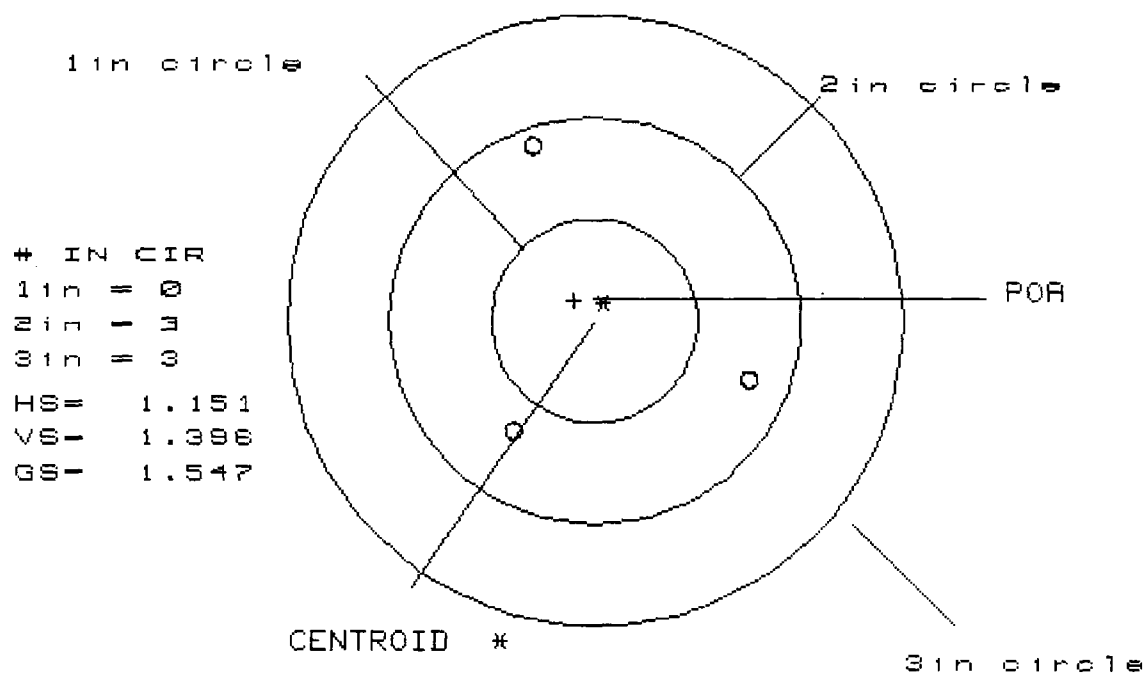
TEST RESULTS : The averages of the extreme spread for three shot groups is
listed below:

Ser # A6879934	3 shot - 1.510 inches
Ser # A6874599	3 shot - 1.042 inches

* Group results and graphics accompany this report.

Ser # A6879934

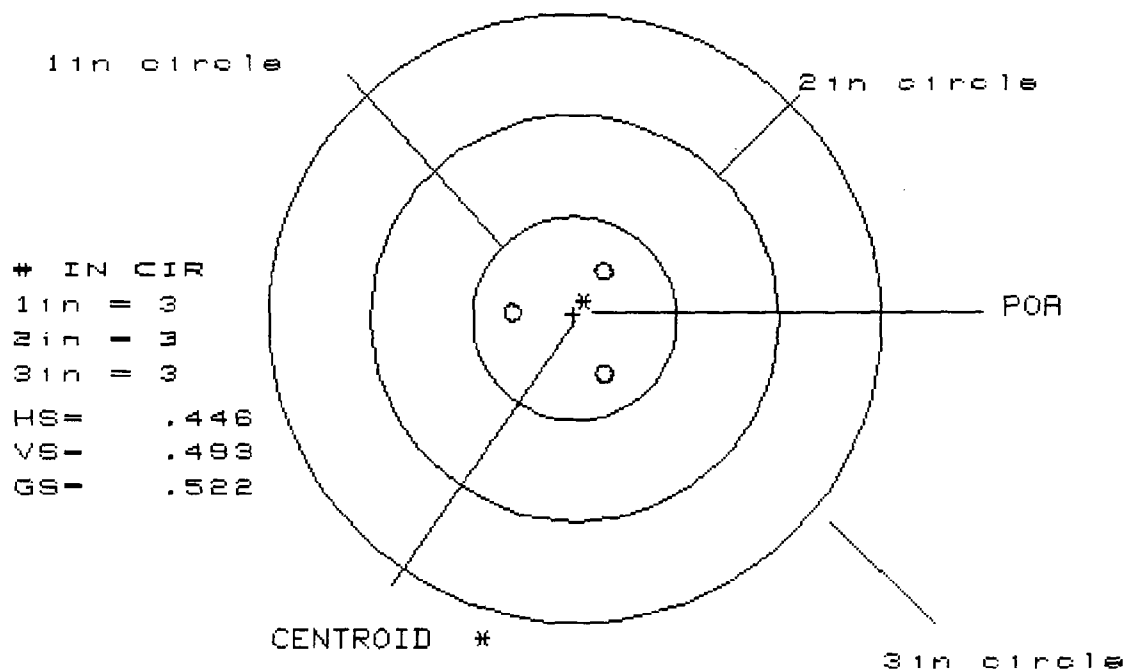
CENTERFIRE PATTERNS # 1



PATTERN #	:	1	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.833	-.318
MINIMUM X & Y	:	.733	-.663
CENTROID X & Y	:	.898	-.110
POA TO CENTROID RAD:	:	.1471	
MIN RADIUS	:	.6923	
MEAN RADIUS	:	.7944	
MAX RADIUS	:	.9010	
HORIZONTAL SPREAD	:	1.1510	
VERTICAL SPREAD	:	1.3960	
EXTREME SPREAD	:	1.5467	
NUMBER IN ONE INCH CIRCLE	=		0
NUMBER IN TWO INCH CIRCLE	=		3
NUMBER IN THREE INCH CIRCLE	=		3

Ser # A6879934

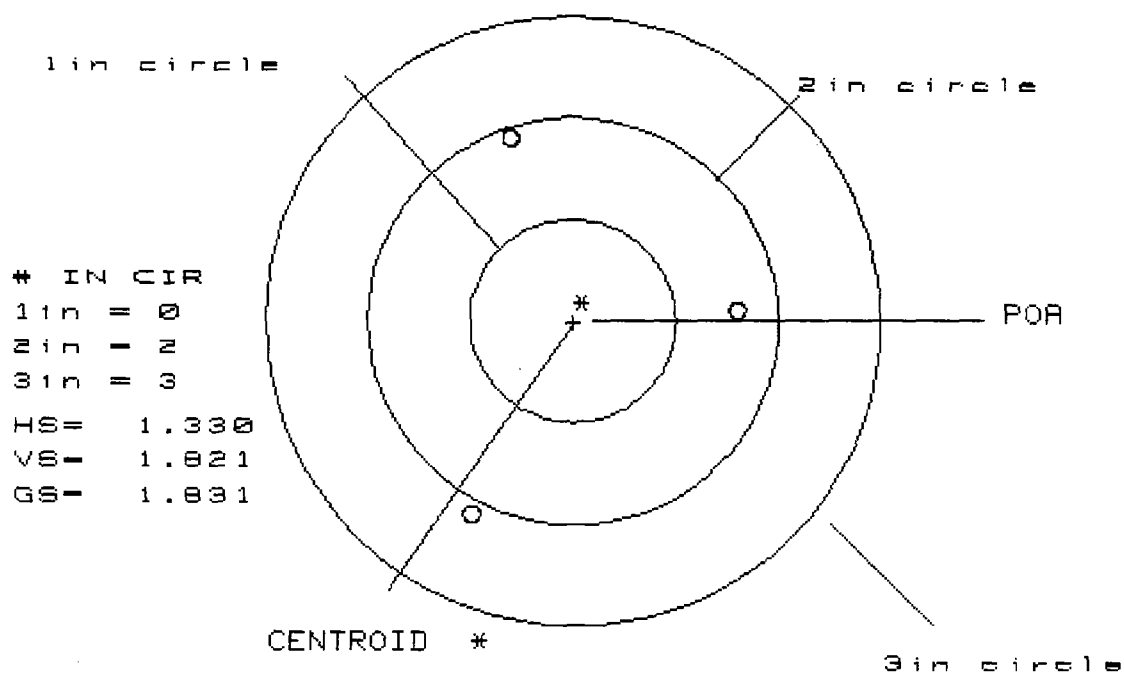
CENTERFIRE PATTERNS # 2



PATTERN #	:	2	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.161	-.285
MINIMUM X & Y	:	.198	-.295
CENTROID X & Y	:	.006	-.031
POA TO CENTROID RAD:	:	.0320	
MIN RADIUS	:	.2766	
MEAN RADIUS	:	.2890	
MAX RADIUS	:	.2970	
HORIZONTAL SPREAD	:	.4460	
VERTICAL SPREAD	:	.4930	
EXTREME SPREAD	:	.5215	
NUMBER IN ONE INCH CIRCLE	=		3
NUMBER IN TWO INCH CIRCLE	=		3
NUMBER IN THREE INCH CIRCLE	=		3

Ser # A6879934

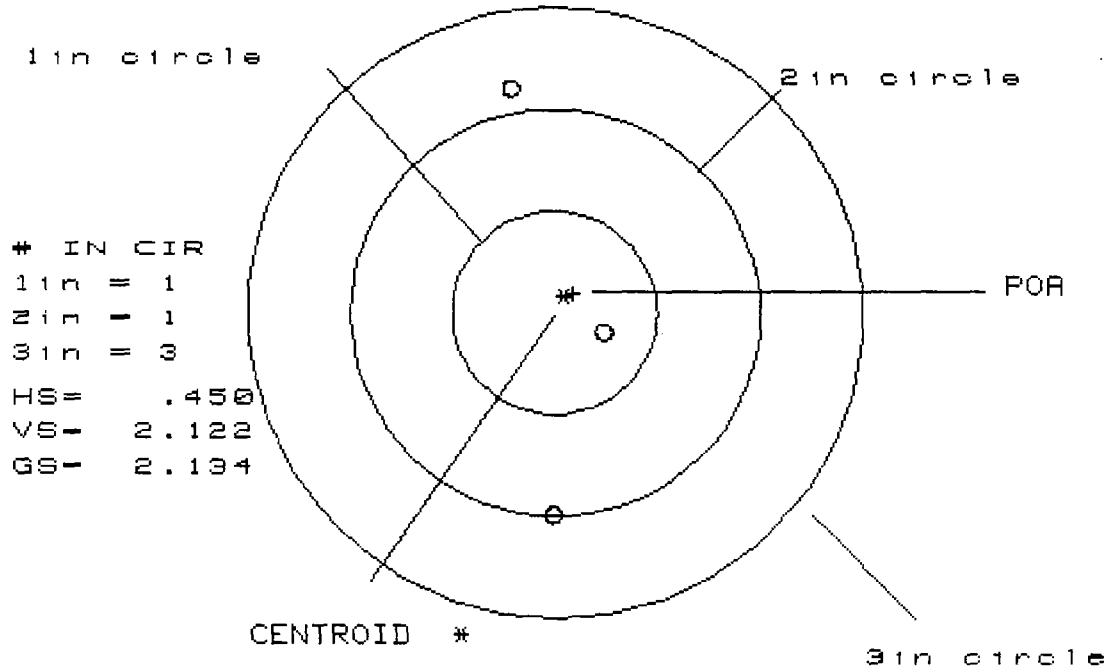
CENTERFIRE PATTERNS # 3



PATTERN #	:	3	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.822	-.508
MINIMUM X & Y	:	.888	-.933
CENTROID X & Y	:	-.002	-.002
POA TO CENTROID RAD:	:	.0033	
MIN RADIUS	:	.8253	
MEAN RADIUS	:	.9434	
MAX RADIUS	:	1.0592	
HORIZONTAL SPREAD	:	1.3300	
VERTICAL SPREAD	:	1.8210	
EXTREME SPREAD	:	1.8306	
NUMBER IN ONE INCH CIRCLE	=	0	
NUMBER IN TWO INCH CIRCLE	=	2	
NUMBER IN THREE INCH CIRCLE	=	3	

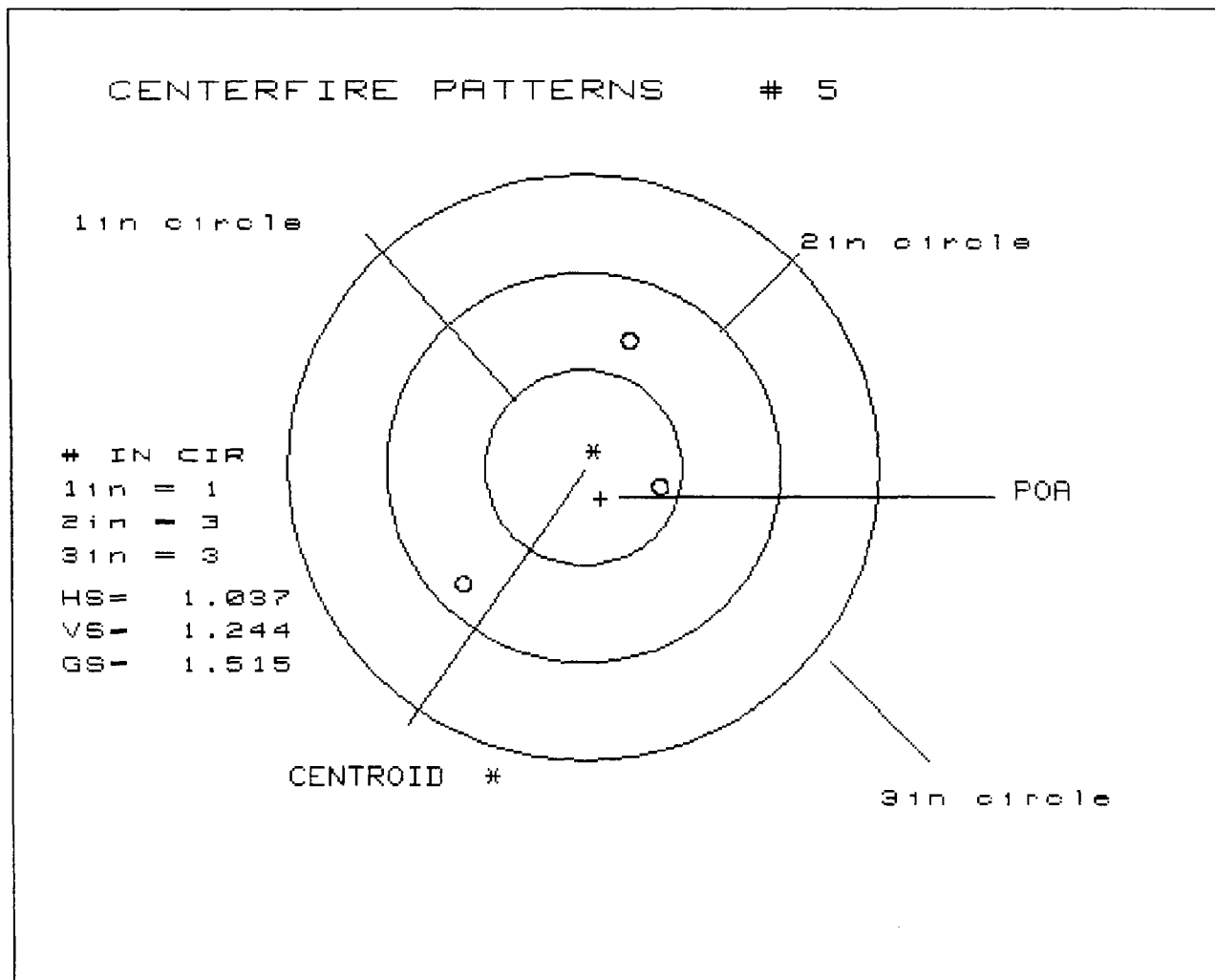
SER # A6879937

CENTERFIRE PATTERNS # 4



PATTERN #	:	4	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.133	-.317
MINIMUM X & Y	:	1.006	-1.116
CENTROID X & Y	:	-.091	-.106
POA TO CENTROID RAD:	:	.1397	
MIN RADIUS	:	.2461	
MEAN RADIUS	:	.7970	
MAX RADIUS	:	1.1347	
HORIZONTAL SPREAD	:	.4500	
VERTICAL SPREAD	:	2.1220	
EXTREME SPREAD	:	2.1342	
NUMBER IN ONE INCH CIRCLE	=	1	
NUMBER IN TWO INCH CIRCLE	=	1	
NUMBER IN THREE INCH CIRCLE	=	3	

Ser # A6879934



PATTERN # : 5

NUMBER OF SHOTS : 3

MAXIMUM X & Y : .317 -.720

MINIMUM X & Y : .815 -.429

CENTROID X & Y : -.086 .147

POA TO CENTROID RAD: .1706

MIN RADIUS : .4132

MEAN RADIUS : .6588

MAX RADIUS : .8568

HORIZONTAL SPREAD : 1.0370

VERTICAL SPREAD : 1.2440

EXTREME SPREAD : 1.5152

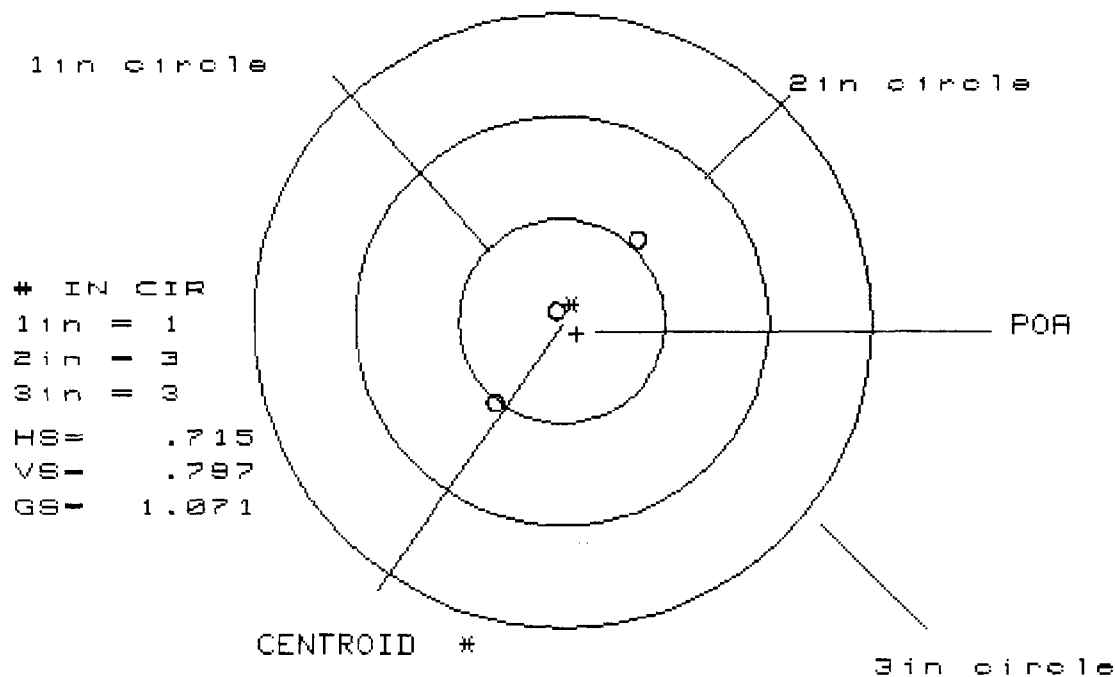
NUMBER IN ONE INCH CIRCLE = 1

NUMBER IN TWO INCH CIRCLE = 3

NUMBER IN THREE INCH CIRCLE = 3

See # A6874599

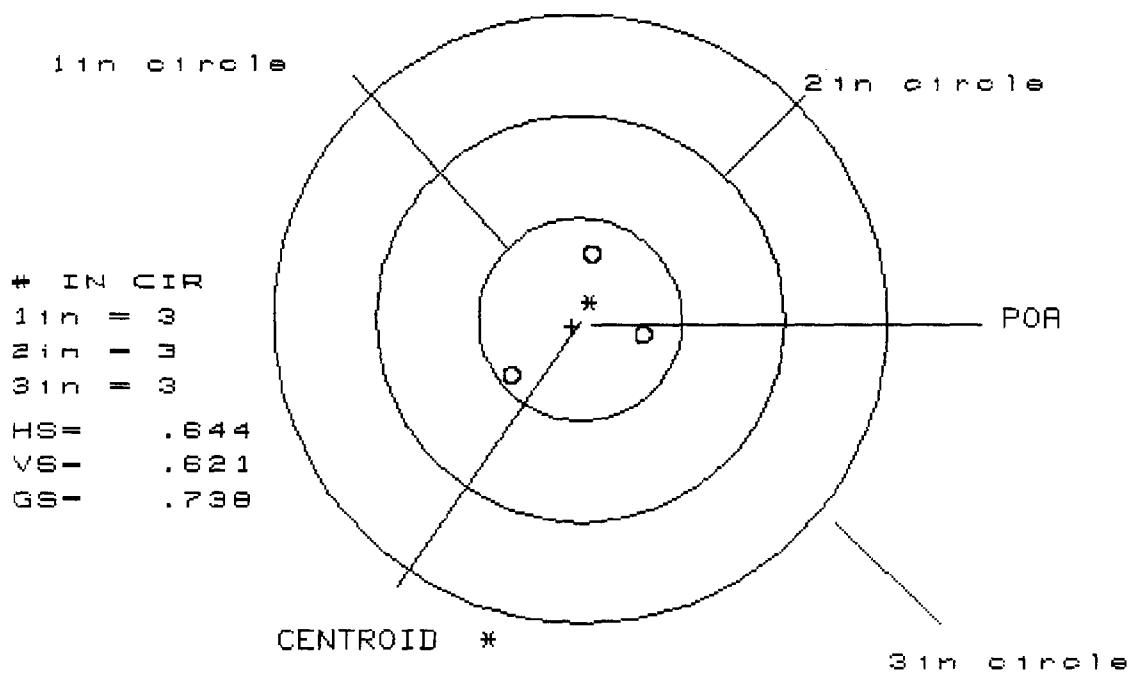
CENTERFIRE PATTERNS # 1



PATTERN #	:	1	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.296	-.419
MINIMUM X & Y	:	.428	-.369
CENTROID X & Y	:	-.073	.049
POA TO CENTROID RAD:	:	.0882	
MIN RADIUS	:	.0456	
MEAN RADIUS	:	.3724	
MAX RADIUS	:	.5424	
HORIZONTAL SPREAD	:	.7150	
VERTICAL SPREAD	:	.7970	
EXTREME SPREAD	:	1.0707	
NUMBER IN ONE INCH CIRCLE	=	1	
NUMBER IN TWO INCH CIRCLE	=	3	
NUMBER IN THREE INCH CIRCLE	=	3	

SER# A6874599

CENTERFIRE PATTERNS # 2



PATTERN # : 2

NUMBER OF SHOTS : 3

MAXIMUM X & Y : .336 -.308

MINIMUM X & Y : .371 -.250

CENTROID X & Y : .039 .025

POA TO CENTROID RAD: .0464

MIN RADIUS : .3052

MEAN RADIUS : .3660

MAX RADIUS : .4428

HORIZONTAL SPREAD : .6440

VERTICAL SPREAD : .6210

EXTREME SPREAD : .7376

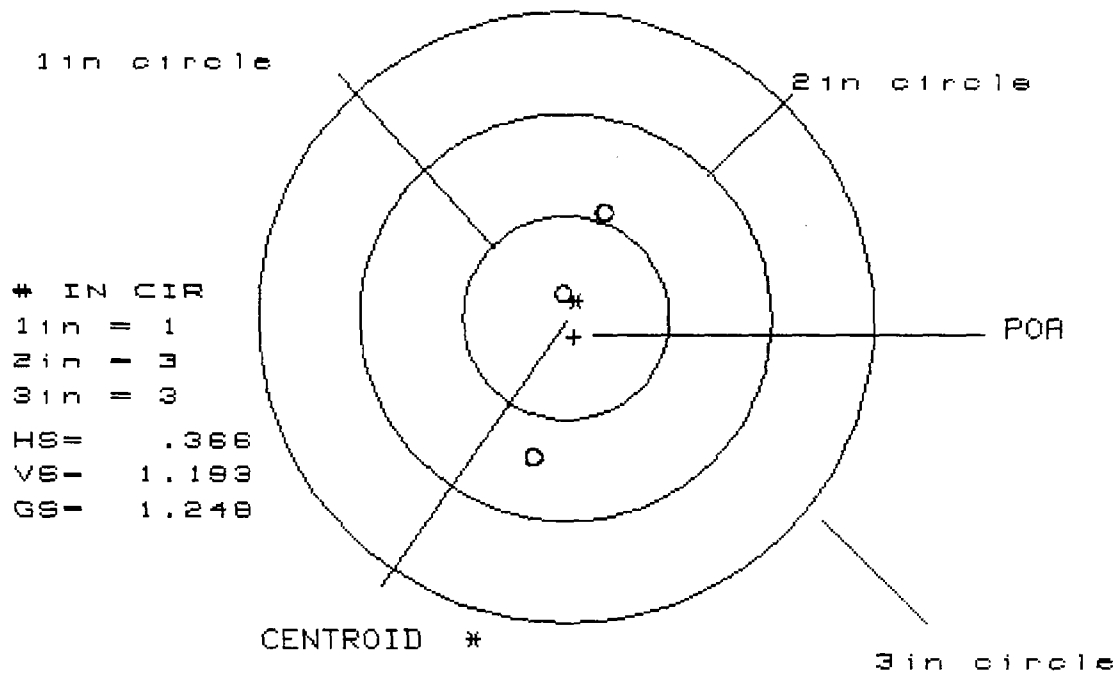
NUMBER IN ONE INCH CIRCLE = 3

NUMBER IN TWO INCH CIRCLE = 3

NUMBER IN THREE INCH CIRCLE = 3

Ser # A 6874599

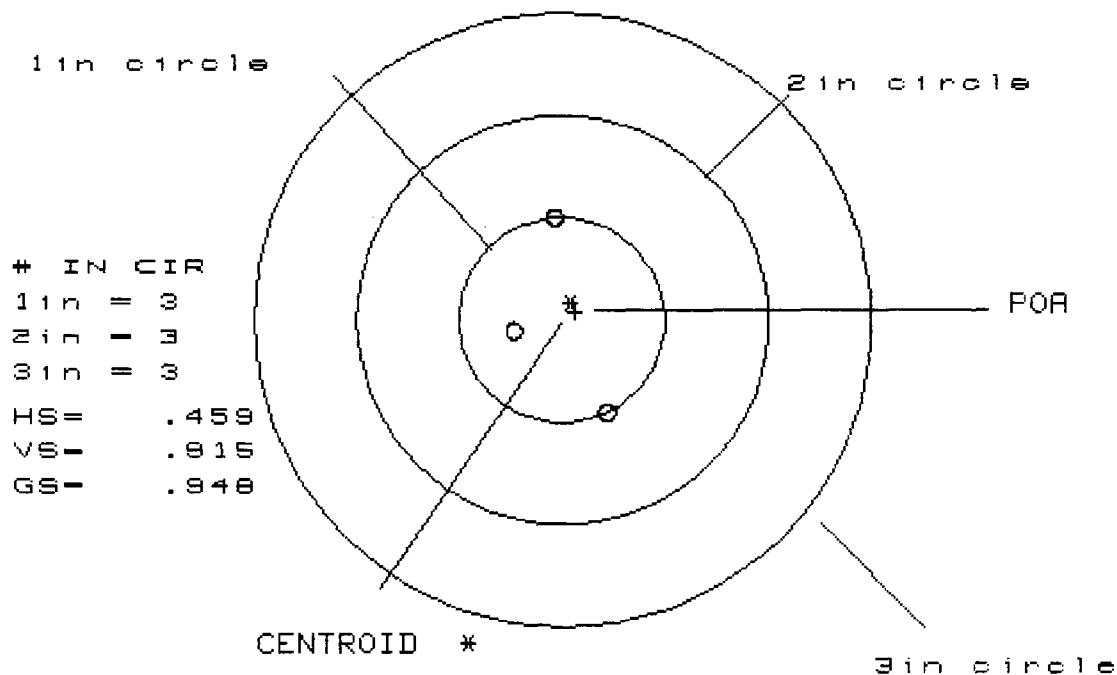
CENTERFIRE PATTERNS # 3



PATTERN #	:	3	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.158	-.208
MINIMUM X & Y	:	.616	-.577
CENTROID X & Y	:	-.039	.082
POA TO CENTROID RAD:	:	.0910	
MIN RADIUS	:	.1286	
MEAN RADIUS	:	.4594	
MAX RADIUS	:	.6807	
HORIZONTAL SPREAD	:	.3660	
VERTICAL SPREAD	:	1.1930	
EXTREME SPREAD	:	1.2479	
NUMBER IN ONE INCH CIRCLE	=	1	
NUMBER IN TWO INCH CIRCLE	=	3	
NUMBER IN THREE INCH CIRCLE	=	3	

SER # A6874599

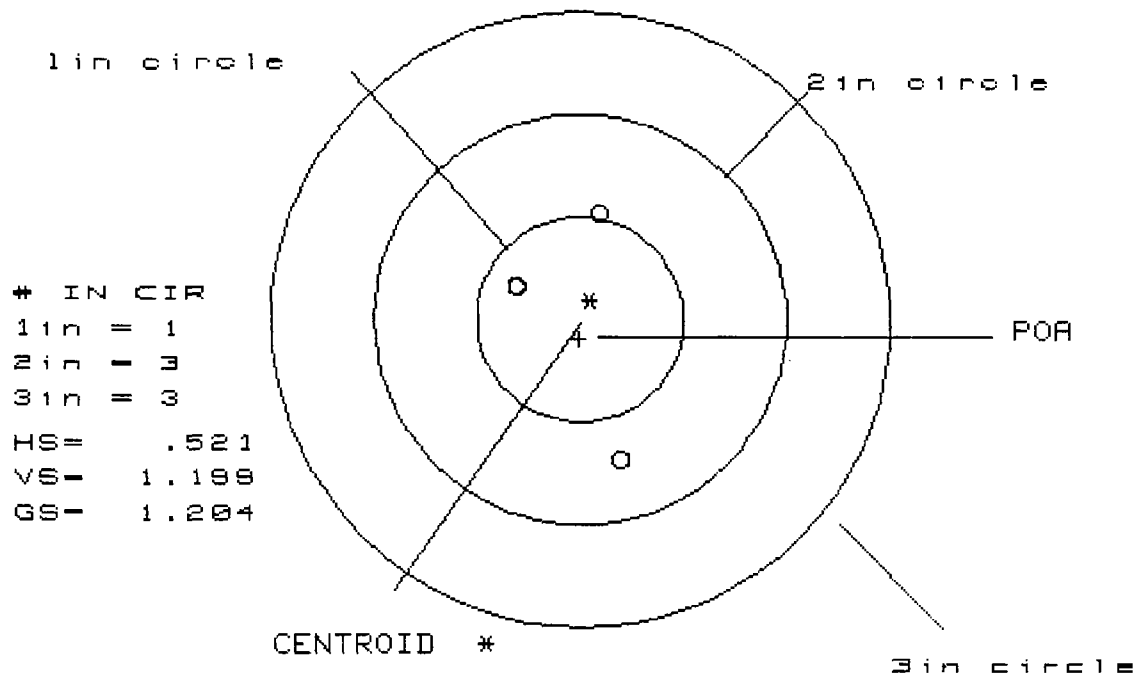
CENTERFIRE PATTERNS # 4



PATTERN #	:	4	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.168	-.291
MINIMUM X & Y	:	.438	-.477
CENTROID X & Y	:	-.067	-.050
POA TO CENTROID RAD:	:	.0841	
MIN RADIUS	:	.2320	
MEAN RADIUS	:	.4026	
MAX RADIUS	:	.4885	
HORIZONTAL SPREAD	:	.4590	
VERTICAL SPREAD	:	.9150	
EXTREME SPREAD	:	.9478	
NUMBER IN ONE INCH CIRCLE	=	3	
NUMBER IN TWO INCH CIRCLE	=	3	
NUMBER IN THREE INCH CIRCLE	=	3	

SER # A6874599

CENTERFIRE PATTERNS # 5



PATTERN #	:	5	
NUMBER OF SHOTS	:	3	
MAXIMUM X & Y	:	.217	-.304
MINIMUM X & Y	:	.600	-.599
CENTROID X & Y	:	.007	.084
POA TO CENTROID RAD:	:	.0843	
MIN RADIUS	:	.3533	
MEAN RADIUS	:	.5312	
MAX RADIUS	:	.7145	
HORIZONTAL SPREAD	:	.5210	
VERTICAL SPREAD	:	1.1990	
EXTREME SPREAD	:	1.2039	
NUMBER IN ONE INCH CIRCLE	=	1	
NUMBER IN TWO INCH CIRCLE	=	3	
NUMBER IN THREE INCH CIRCLE	=	3	

Report No. 852482

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	AREA OF TESTING ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☒ Design Change ☐ Stake _____ ☐ Plant Assistance ☐ Other _____	
FIREARM STAT'S MODEL: <u>700 ADL</u> CAL. or GAGE: <u>.280</u> BARREL TYPE: <u>24"</u> PROOFED: YES ☒ NO ☐	REPORT REQ'D. FORMAL ☐ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>9-5-85</u> DATE NEEDED BY: _____ REQUESTED BY: <u>RS MURPHY</u> WORK ORDER NO: <u>C-9054-314</u>

TEST TYPE			
☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other _____
☒ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	_____

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Shoot 2 M/700 .280's for accuracy
5-3 shot groups with each gun
Use ammo lot # D-6721

GUNS REQUIRED:

700 ADL # A 6879934
A 6874599

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 9/6/85
TEST COMPLETED BY: P. Corradi
REPORT DATE: _____

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☒ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance		AREA OF TESTING ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☒ Design Change ☐ Stake _____ ☐ Plant Assistance ☐ Other _____	
FIREARM STAT'S. MODEL: <u>700 Bolt Action</u> CAL. or GAGE: _____ BARREL TYPE: _____ PROOFED: YES ☐ NO ☐		REPORT REQ'D. FORMAL ☐ TEST RESULTS ONLY ☐	DATE REQUESTED: <u>02-OCT-1985</u> DATE NEEDED BY: <u>ASAP</u> REQUESTED BY: <u>J. A. McClary</u> WORK ORDER NO: <u>R-3109-306</u>

TEST TYPE ☐ Strength Test ☐ Ammunition Test ☐ Dry Cycle Test ☐ Photo/Video ☐ Function Test ☐ Environmental Test ☐ Measurements ☐ Other _____ ☐ Accuracy Test ☐ Customer Complaint ☐ Endurance Test _____			
--	--	--	--

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

trigger housings used to manufacture the fire control units provided for testing were assembled on the Flexible Small Parts Assembly system. Two design changes were employed in their manufacture: First, the rivets used have light chamfer and length increase. Second, the front and rear spacers have light chamfers around the two through holes in each, on both sides.

Because these assemblies were made on the Assembly System, the rivets were headed using a Taumel Orbital riveter, rather than the standard production Denison Press. Orbital riveting was previously investigated in report #840171, dated January 16, 1984. The use of orbital riveting to make an equal or better performance assembly should be investigated again during this test.

GUNS REQUIRED:

M/700 Trigger Housings in completed fire control assemblies have been provided.

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 11-20-85
 TEST COMPLETED BY: R.W. Howe
 REPORT DATE: _____

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: J.A. McCLARY TESTER: R.W. HOWE DATE: 11/20/85
REPORT NO.: 852971 WORK ORDER NO.: R-3109-306
WRITTEN BY: F.L. SUPRY
TEST TYPE: DRY CYCLE AND LIVE ROUND FIRING

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: 30.06
 BARREL TYPE: STD. PROOFED: YES X NO

REASON FOR TEST :

These Trigger Housings were assembled on the flexible small parts assembly system, and had two design changes. First, the rivets used have a slight chamfer and length increase. Second, the front and rear spacers have slight chamfers around the two through holes in each, on both sides.

There was also a process change. The rivets were headed using a Tammel Orbital Riveter, rather than the standard Denison Press.

EQUIPMENT REQUIRED :

Model 700 actions, Dry Cycle cock and fire simulators, and shooting jacks.

TEST PROCEDURE :

Fifteen of the fire controls were randomly selected for Dry Cycle Testing. In turn, each was assembled into a Model 700 action and 20,000 cycles completed on each fire control. At the completion of the Dry Cycle phase of the testing four (4) of the fire control, at 20,000 cycles, were randomly selected for additional testing. The additional testing was to consist of 500 rounds of 150 grain Remington 30.06 ammunition being fired through rifles assembled with the test fire controls. Four (4) Model 700 actions were used: #B6690451, #B6695696, #B6693627, and #B6694196. All shooting was done in the Research shooting room using shooting jacks.

At the completion of each phase of the test, the test fire controls were inspected by R.W. Howe, Research Technician.

TEST RESULTS :

The Model 700 Trigger Housings assembled in completed Fire Control Assemblies were found to be acceptable in each phase of the testing conducted.

There were no malfunctions, and all the test assemblies riveting remained tight. At the completion of the test, all Fire Controls were returned to J.A. McClary.

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: F. Smith TESTER: Stephens DATE: 12/12/85
REPORT NO.: 853392 WORK ORDER NO.: C-5003
WRITTEN BY: C. Stephens
TEST TYPE: Test Results

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: 7MM Exp. Rem
BARREL TYPE: _____ PROOFED: YES X NO _____

REASON FOR TEST :

To determine recoil force on the recoil lug of a
Model 700

EQUIPMENT REQUIRED :

1 Model 700	Computer
1 Transducer (#1281)	Plotter
1 Power Supply	Three weight Bullets (125gr, 150gr, 165gr.)
Scope.	

TEST PROCEDURE :

Transducer is placed so that it will pick up the force placed on the recoil lug. Information is fed through the power supply to the scope, where it is changed so that the results are in pounds. The waveform is then transferred to the computer and then plotted out.

TEST RESULTS :

Results for three weights of bullets indicate that the force will be between 1500 to 1600 pounds regardless of the bullet weight.

Model 700

870081 Accuracy Synthetic Stock
870142 Strength Left Hand T&P
870641 243588 Left Hand T&P
871111 Short Action Mountain Rifle Design Verification
871112 F.S. T&P
871383 Police 223 T&P

871531 Rynite Stock T&P
872441 Strength 7mm Rem Mag Mountain Rifle
873521 Accuracy - Fiberglass Stock with Alignment Block

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: F.H. SMITH
REPORT NO.: 870081
WRITTEN BY: F.L. SUPRY

TESTER: J. SELAN

DATE: 01/19/87
WORK ORDER NO.: C-0604

TEST TYPE: SYNTHETIC STOCKS - ACCURACY @ TEMPERATURE VARIATIONS

REASON FOR TEST :

To determine the affect of temperature variations on the experimental synthetic stock, provided by F.H. Smith, using 100 yard accuracy as a test comparison.

EQUIPMENT REQUIRED :

One experimental (light gray camouflage) synthetic stock, an oven, a freezer, 30.06 Remington ammunition, a 100 yard shooting range, HP 9000 computer and digitizing tablet, and personnel.

TEST PROCEDURE :

Five, 5 shot groups, at 100 yards and at ambient temperature, were shot by J. Selan. The scope was removed, and the stock, with an action assembled to it, was subjected to 12 hours at -40 degrees F. The rifle was allowed to return to ambient temperature, the scope mounted, and the accuracy procedure was repeated. The scope was removed, and the stock, with the action assembled to it, was then subjected to 12 hours at +250 degrees F. The rifle was allowed to return to ambient temperature, the scope mounted, and the accuracy procedure was repeated. All the 100 yard targets were digitized and analyzed using the HP 9000 computer.

TEST RESULTS :

The Butt Pad was damaged slightly during the +250 degree F. bake.

The group size averages for each phase of the test were, as follows:

AMBIENT	AFTER -40 deg	AFTER +250 DEG
2.2058 in.	2.636 in.	2.5618 in.

At the completion of the test, the rifle was returned to F.H. Smith.

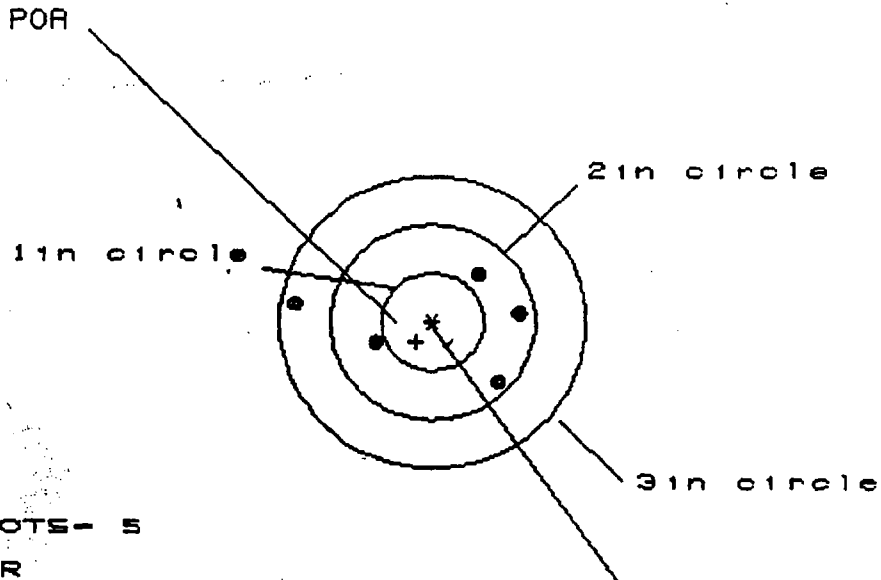
The accuracy results are included in the Appendix of this report.

8 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/5YN870081

AMBIENT

CENTERFIRE PATTERNS # 1



OF SHOTS - 5
 # IN CIR
 1in - 0
 2in - 4
 3in - 5
 HS - 2.148
 VS - 1.141
 GS - 2.150
 AVG - 2.2058

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.817	.484	.584
MINIMUM X	-1.331	-.871	-.771
MAXIMUM Y	.537	.582	.395
MINIMUM Y	-.604	-.559	-.341
CENTROID X	.153	.485	.386
CENTROID Y	.208	.163	.350
POA TO CENTROID in	.258	.512	.521
MIN RADIUS	.574	.501	.437
MEAN RADIUS	.859	.65	.622
MAX RADIUS	1.343	.984	.843
HORIZONTAL SPREAD	2.148	1.355	1.355
VERTICAL SPREAD	1.141	1.141	.736
EXTREME SPREAD	2.150	1.385	1.385
NUMBER IN ONE INCH CIRCLE	0		
NUMBER IN TWO INCH CIRCLE		4	
NUMBER IN THREE INCH CIRCLE		5	

B-6333144
 M-700.

180 GR. S.P. REM.

DD 4RL5125

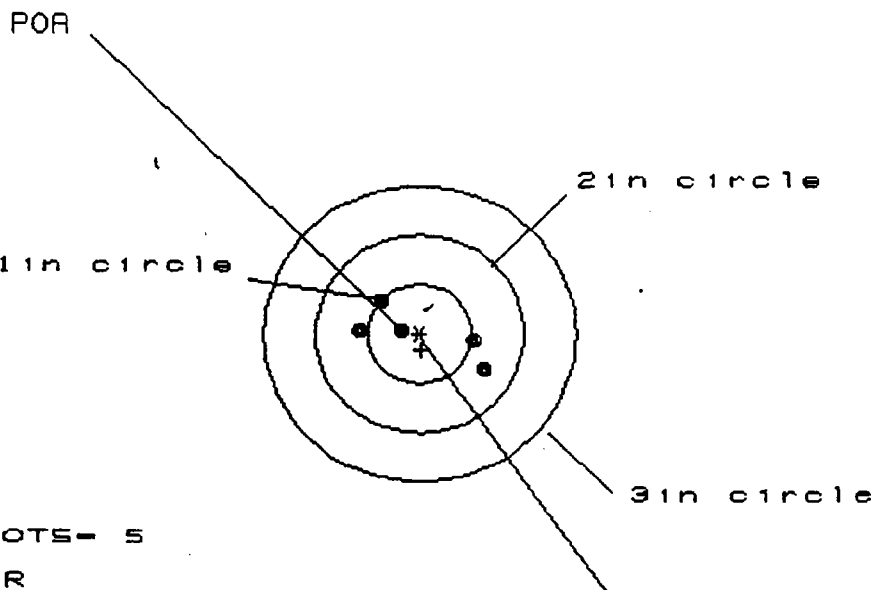
100 YDS. SAND BAG REST

AMBIENT TEMP.

B Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/SYN870081

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= 1.235

VS= .620

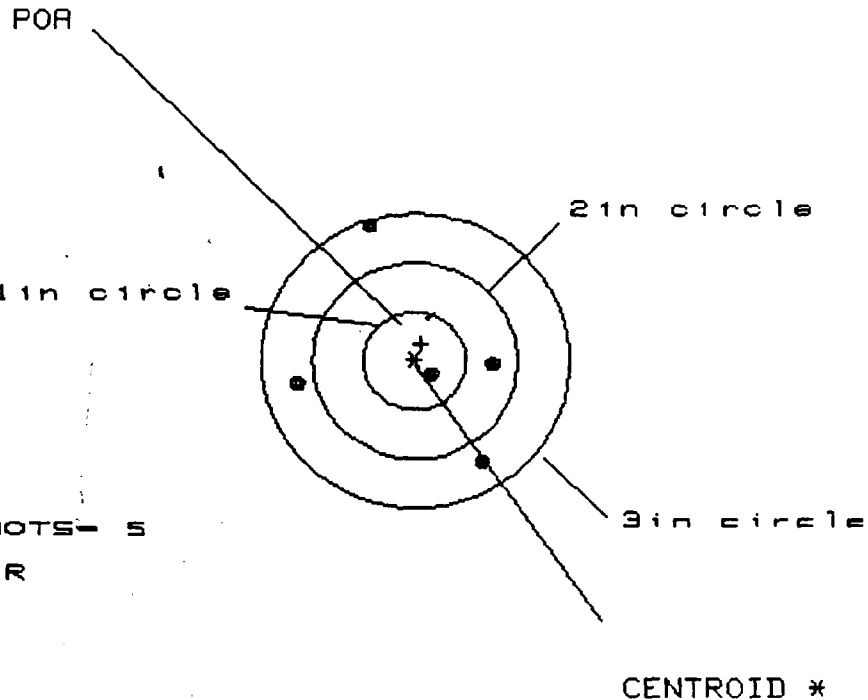
GS= 1.276

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.624	.649	.497
MINIMUM X	:	-.611	-.455	-.371
MAXIMUM Y	:	.294	.212	.183
MINIMUM Y	:	-.326	-.113	-.142
CENTROID X	:	-.020	-.176	-.024
CENTROID Y	:	.162	.244	.273
POA TO CENTROID in.	:	.163	.301	.274
MIN RADIUS	:	.140	.028	.133
MEAN RADIUS	:	.487	.364	.354
MAX RADIUS	:	.704	.658	.517
HORIZONTAL SPREAD	:	1.235	1.104	.868
VERTICAL SPREAD	:	.620	.325	.325
EXTREME SPREAD	:	1.276	1.104	.927
NUMBER IN ONE INCH CIRCLE	:		3	
NUMBER IN TWO INCH CIRCLE	:		5	
NUMBER IN THREE INCH CIRCLE	:		5	

8 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/SYN870881

CENTERFIRE PATTERNS # 3



OF SHOTS= 5

IN CIR

1in = 1

2in = 2

3in = 5

HS= 1.979

VS= 2.425

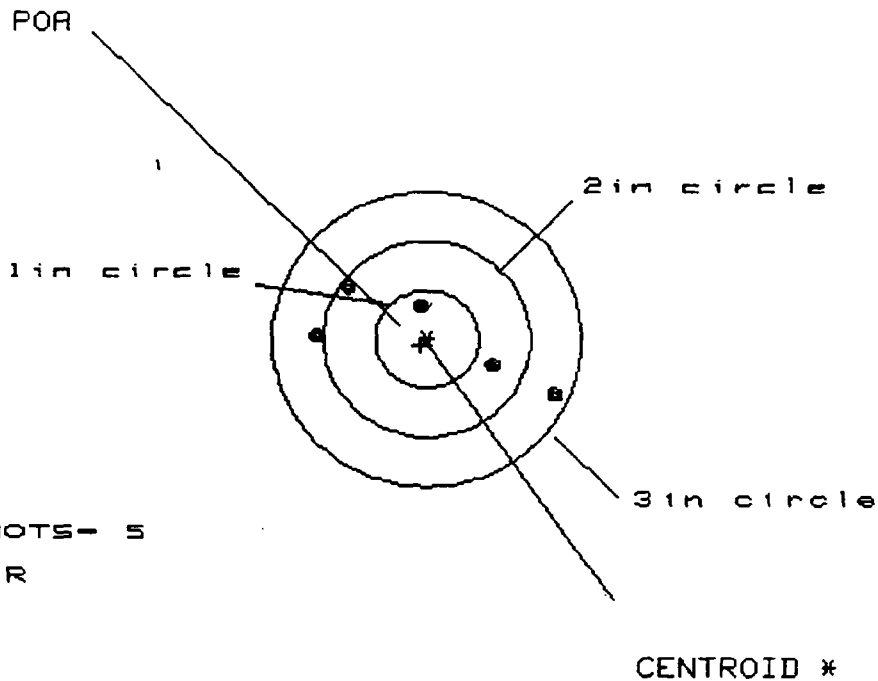
GS= 2.653

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.792	.693	.887
MINIMUM X	-1.187	-1.286	-1.092
MAXIMUM Y	1.397	.351	.124
MINIMUM Y	-1.028	-.679	-.124
CENTROID X	-.058	.041	-.153
CENTROID Y	-.175	-.524	-.297
POA TO CENTROID 1n.	.184	.525	.334
MIN RADIUS	.166	.226	.206
MEAN RADIUS	.971	.797	.733
MAX RADIUS	1.451	1.290	1.099
HORIZONTAL SPREAD	1.979	1.979	1.979
VERTICAL SPREAD	2.425	1.030	.248
EXTREME SPREAD	2.653	2.025	1.994
NUMBER IN ONE INCH CIRCLE	= 1		
NUMBER IN TWO INCH CIRCLE	= 2		
NUMBER IN THREE INCH CIRCLE	= 5		

8 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/SYN070001

CENTERFIRE PATTERNS # 4



OF SHOTS- 5

IN CIR

1in = 1

2in = 3

3in = 5

HS= 2.275

VS= 1.090

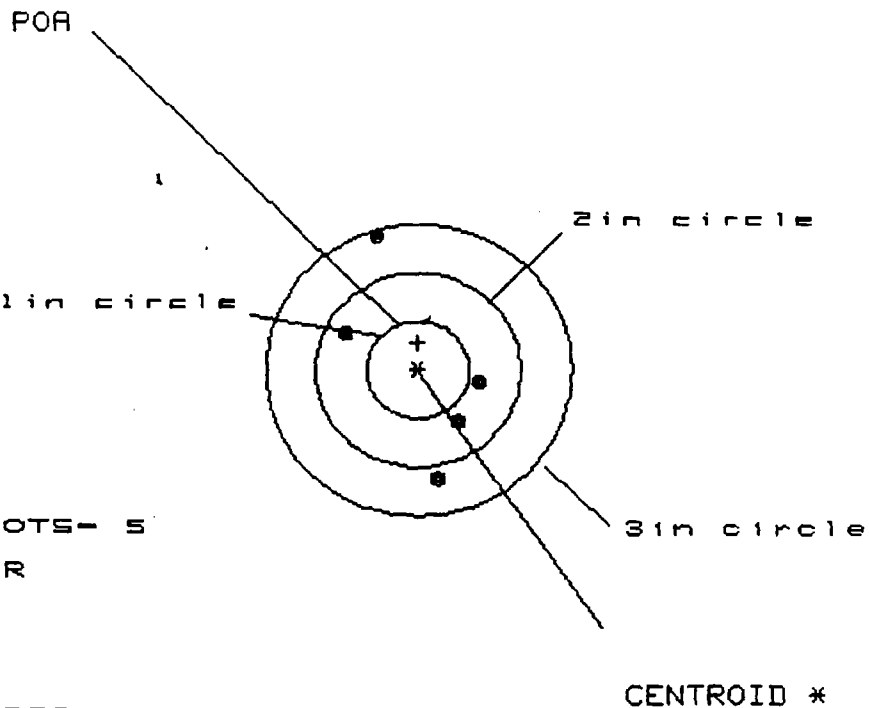
GS= 2.360

PATTERN #	:	4		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.242	.976	.735
MINIMUM X	:	-1.033	-.722	-.715
MAXIMUM Y	:	.503	.356	.331
MINIMUM Y	:	-.587	-.456	-.481
CENTROID X	:	.065	-.246	-.005
CENTROID Y	:	.063	.210	.235
POA TO CENTROID in.	:	.091	.323	.235
MIN RADIUS	:	.335	.282	.152
MEAN RADIUS	:	.082	.670	.606
MAX RADIUS	:	1.074	1.077	.879
HORIZONTAL SPREAD	:	2.275	1.698	1.450
VERTICAL SPREAD	:	1.090	.812	.812
EXTREME SPREAD	:	2.360	1.740	1.662
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		5	

8 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/SYN870081

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1in = 0

2in = 3

3in = 5

HS= 1.273

VS= 2.495

GS= 2.582

PATTERN #	5	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.549	.441	.482
MINIMUM X	-.724	-.832	-.791
MAXIMUM Y	1.382	.683	.427
MINIMUM Y	-1.113	-.767	-.428
CENTROID X	.006	.114	.073
CENTROID Y	-.281	-.627	-.371
POA TO CENTROID in.	.281	.637	.378
MIN RADIUS	.556	.319	.482
MEAN RADIUS	.916	.671	.636
MAX RADIUS	1.448	1.076	.899
HORIZONTAL SPREAD	1.273	1.273	1.273
VERTICAL SPREAD	2.495	1.450	.855
EXTREME SPREAD	2.582	1.736	1.393
NUMBER IN ONE INCH CIRCLE =	0	0	0
NUMBER IN TWO INCH CIRCLE =	3	3	3
NUMBER IN THREE INCH CIRCLE =	5	5	5

AFTEC - 40

14 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/B700B1B40

CENTERFIRE PATTERNS

1

POA

1 in circle

2 in circle

3 in circle

CENTROID *

OF SHOTS- 5

IN CIR

1 in = 1

2 in = 3

3 in = 5

HS= 2.045

VS= 1.516

GS= 2.082

PK= 2.686

PATTERN #

1

B-6333144

SHOTS (BEST OF)

5

4

3

m-700. SYN. STICK.

MAXIMUM X

.810

.501

.278

MINIMUM X

-1.235

-.551

-.284

MAXIMUM Y

.788

.887

.389

MINIMUM Y

-.728

-.629

-.333

CENTROID X

.072

.381

.214

CENTROID Y

-.151

-.250

-.346

POA TO CENTROID in.

1.167

.455

.586

MIN RADIUS

.242

.368

.284

MEAN RADIUS

1.811

.644

.393

MAX RADIUS

1.297

1.019

.546

HORIZONTAL SPREAD

2.045

1.052

.662

VERTICAL SPREAD

1.516

1.516

.722

EXTREME SPREAD

2.082

1.617

.872

NUMBER IN ONE INCH CIRCLE

1

NUMBER IN TWO INCH CIRCLE

3

NUMBER IN THREE INCH CIRCLE

5

180 GR. SP. REM.

* DO 4RC-5125

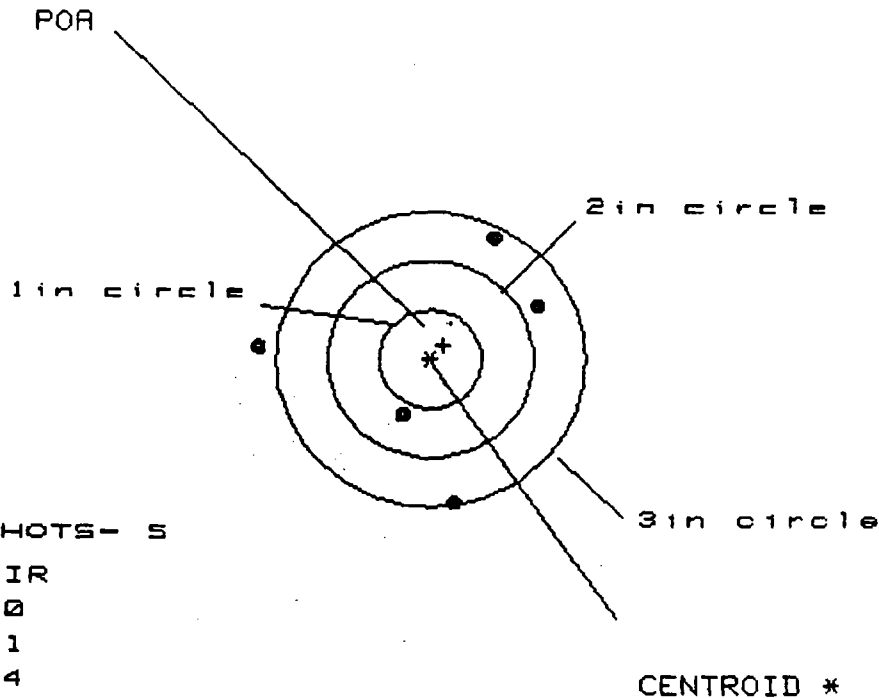
180 YDS. SAND BAG EAST.

-40°F. RETURN TO AMBIENT.

14 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/870081840

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1 in - 0

2 in - 1

3 in - 4

HS- 2.757

VS- 2.706

GS- 2.789

PATTERN #

1

2

SHOTS (BEST OF)

1

5

4

3

MAXIMUM X

1

1.071

.650

.594

MINIMUM X

1

-1.686

-.697

-.753

MAXIMUM Y

1

1.277

1.317

.853

MINIMUM Y

1

-1.429

-1.389

-1.005

CENTROID X

1

-.128

.293

.349

CENTROID Y

1

-.141

-.181

.283

POA TO CENTROID (in.)

1

.191

.344

.449

MIN RADIUS

1

.643

.883

.613

MEAN RADIUS

1

1.286

1.128

.912

MAX RADIUS

1

1.693

1.408

1.256

HORIZONTAL SPREAD

1

2.757

1.347

1.347

VERTICAL SPREAD

1

2.786

2.786

1.858

EXTREME SPREAD

1

2.789

2.733

2.070

NUMBER IN ONE INCH CIRCLE =

1

0

NUMBER IN TWO INCH CIRCLE =

1

1

NUMBER IN THREE INCH CIRCLE =

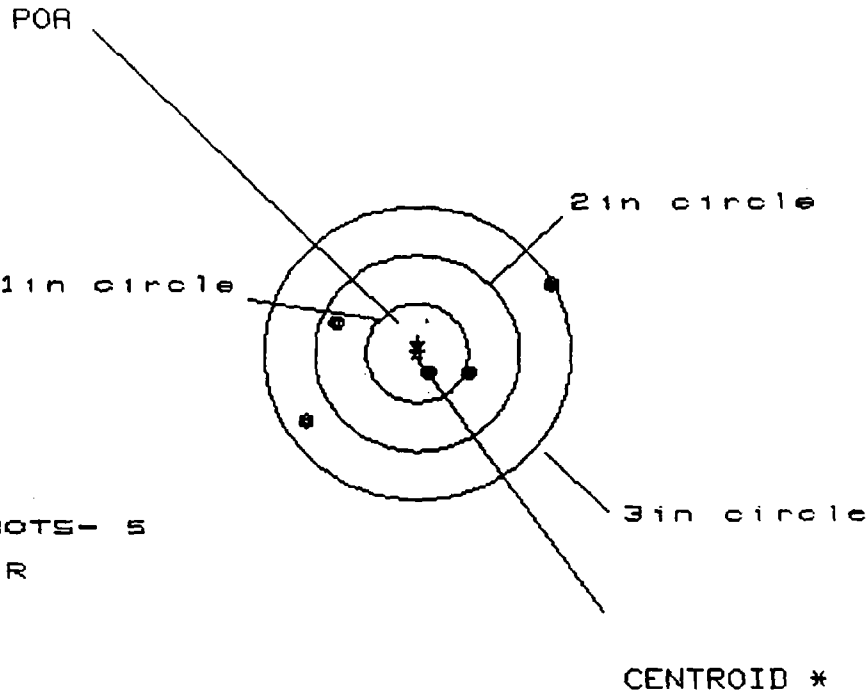
1

4

14 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/B7B0B1B40

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 3

3in = 5

HS= 2.400

VS= 1.338

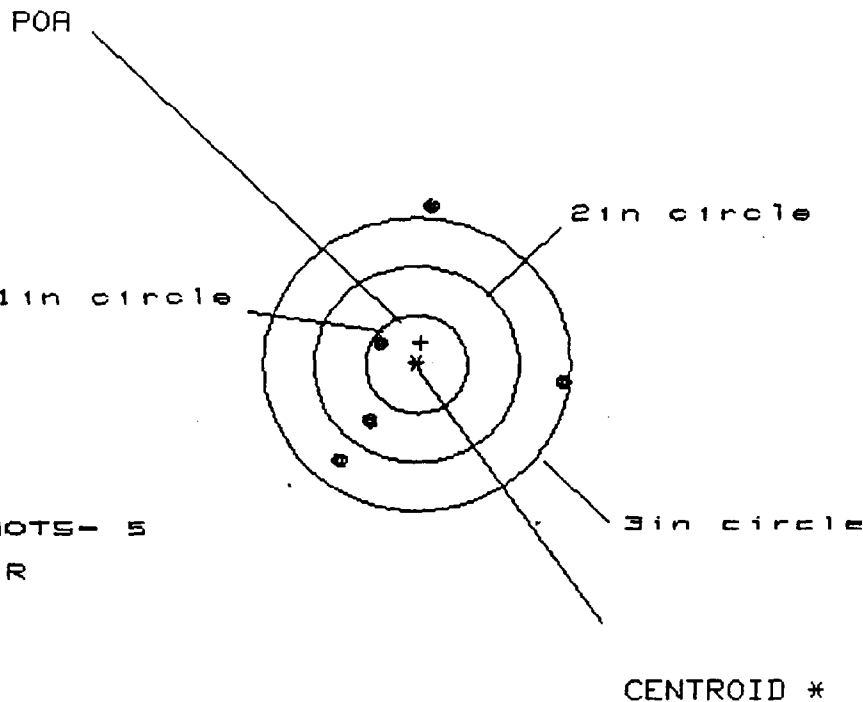
GS= 2.755

PATTERN #	1	3	4	5
SHOTS (BEST OF)	5	4	3	
MAXIMUM X	1.296	.834	.571	
MINIMUM X	-1.112	-.788	-.764	
MAXIMUM Y	.695	.446	.290	
MINIMUM Y	-.643	-.469	-.156	
CENTROID X	-.007	-.331	-.068	
CENTROID Y	-.111	-.285	-.129	
POA TO CENTROID in.	.111	.437	.146	
MIN RADIUS	.200	.456	.235	
MEAN RADIUS	.873	.720	.548	
MAX RADIUS	1.471	.917	.817	
HORIZONTAL SPREAD	2.400	1.622	1.335	
VERTICAL SPREAD	1.338	.915	.446	
EXTREME SPREAD	2.755	1.688	1.408	
NUMBER IN ONE INCH CIRCLE	1	3	5	
NUMBER IN TWO INCH CIRCLE	3	5		
NUMBER IN THREE INCH CIRCLE	5			

14 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/670081B40

CENTERFIRE PATTERNS # 4



OF SHOTS- 5

IN CIR

1in = 1

2in = 2

3in = 4

HS= 2.141

VS= 2.560

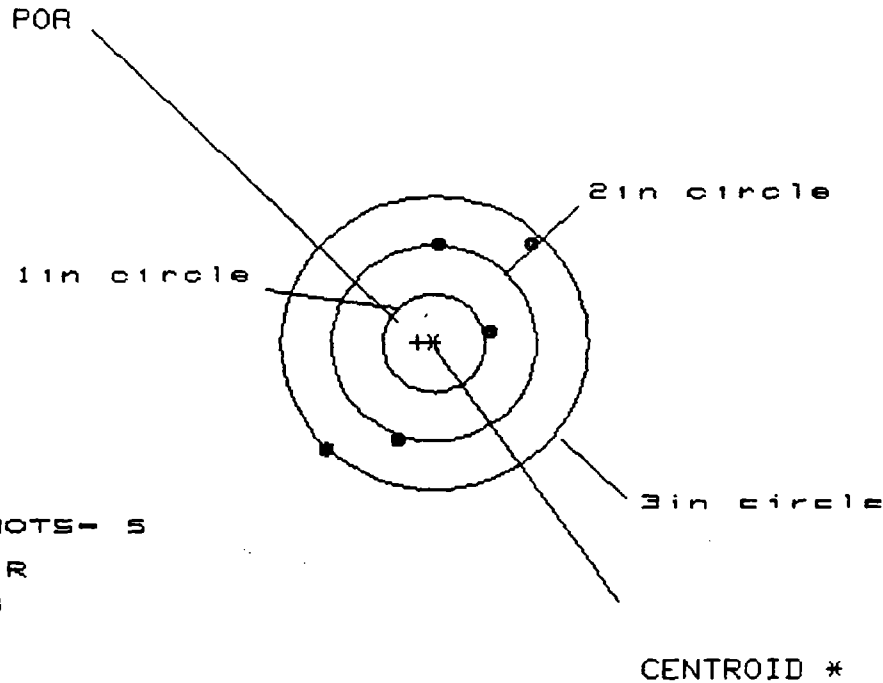
GS= 2.684

PATTERN #	4	3	2
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.428	1.452	.115
MINIMUM X	-.713	-.689	-.205
MAXIMUM Y	1.574	.577	.634
MINIMUM Y	-.986	-.593	-.536
CENTROID X	-.041	-.065	-.549
CENTROID Y	-.223	-.616	-.673
POA TO CENTROID in.	.226	.619	.869
MIN RADIUS	.434	.424	.134
MEAN RADIUS	1.073	.870	.451
MAX RADIUS	1.576	1.462	.645
HORIZONTAL SPREAD	2.141	2.141	.320
VERTICAL SPREAD	2.560	1.170	1.170
EXTREME SPREAD	2.684	2.274	1.213
NUMBER IN ONE INCH CIRCLE	=	1	
NUMBER IN TWO INCH CIRCLE	=	2	
NUMBER IN THREE INCH CIRCLE	=	4	

14 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/B70061840

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1in = 0

2in = 2

3in = 5

HS = 1.992

VS = 2.066

GS = 2.870

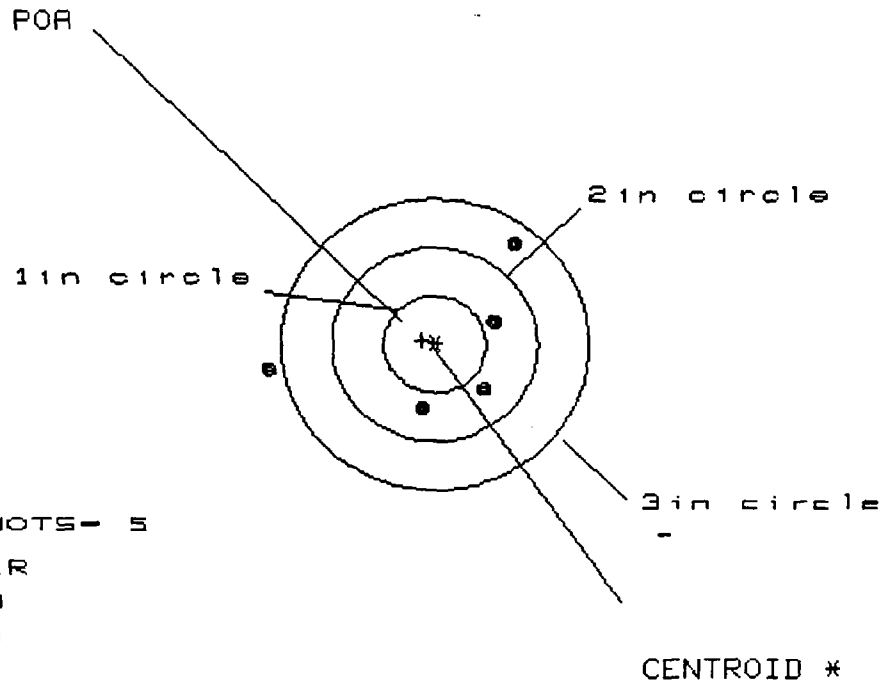
AK = 2.636

PATTERN #	5		
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.921	.653	.493
MINIMUM X	-1.071	-.665	-.447
MAXIMUM Y	1.017	.755	.964
MINIMUM Y	-1.049	-1.296	-1.044
CENTROID X	.158	.426	.208
CENTROID Y	-.015	.247	-.005
POA TO CENTROID in.	.159	.492	.208
MIN RADIUS	.551	.324	.500
MEAN RADIUS	1.101	.885	.867
MAX RADIUS	1.499	1.457	1.136
HORIZONTAL SPREAD	1.992	1.318	.940
VERTICAL SPREAD	2.066	2.051	2.008
EXTREME SPREAD	2.870	2.438	2.048
NUMBER IN ONE INCH CIRCLE		0	
NUMBER IN TWO INCH CIRCLE		2	
NUMBER IN THREE INCH CIRCLE		5	

16 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/870081A250

CENTERFIRE PATTERNS # 1



OF SHOTS- 5
IN CIR
1in = 0
2in = 3
3in = 4
HS= 2.391
VS= 1.760
GS= 2.738
AVG= 2.5618

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.754	.345	.274
MINIMUM X	:	-1.637	-.550	-.435
MAXIMUM Y	:	1.085	1.022	.540
MINIMUM Y	:	-.675	-.738	-.397
CENTROID X	:	.126	.535	.420
CENTROID Y	:	-.038	.025	-.316
POA TO CENTROID in.	:	.131	.535	.525
MIN RADIUS	:	.620	.255	.215
MEAN RADIUS	:	.982	.685	.470
MAX RADIUS	:	1.656	1.079	.606
HORIZONTAL SPREAD	:	2.391	.895	.709
VERTICAL SPREAD	:	1.760	1.760	.937
EXTREME SPREAD	:	2.738	1.974	1.175
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		4	

B-6333144

m-700 . SYN. STOCK.

100 GR. SP. REM.

*DO 4RL-5125

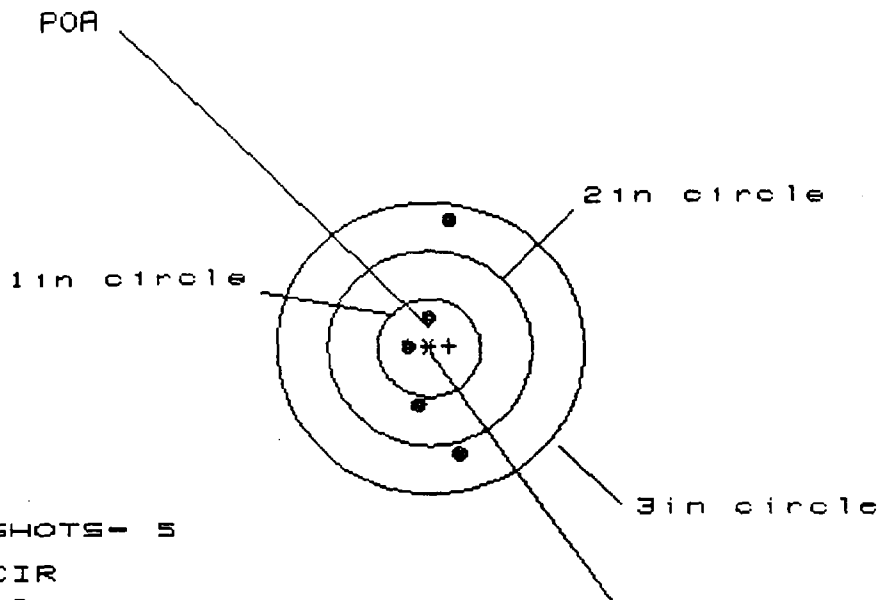
100 YDS. SAND BAG REST.

+250°F. RETURN TO
AMBIENT.

16 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/870061A250

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 5

HS= .541

VS= 2.376

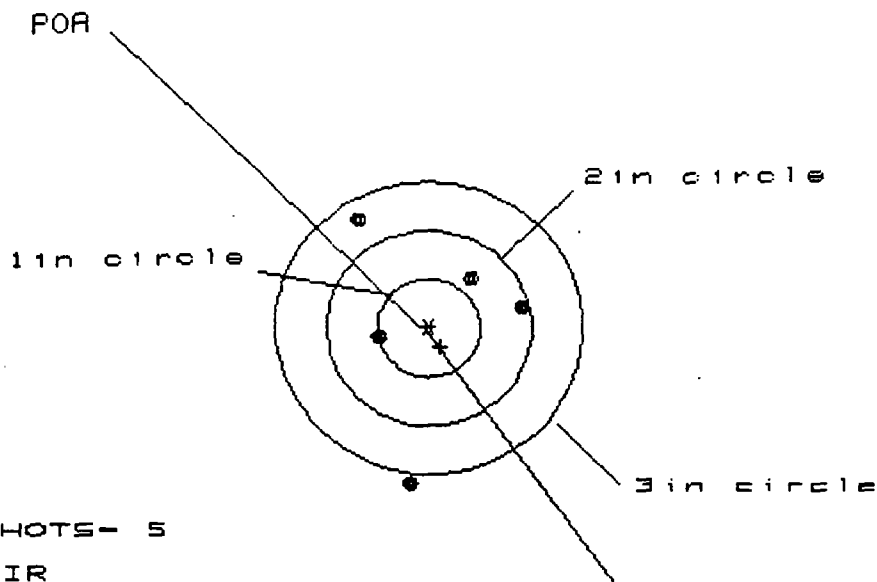
GS= 2.379

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.288	.331	.099
MINIMUM X	:	-.253	-.211	-.100
MAXIMUM Y	:	1.304	.611	.362
MINIMUM Y	:	-1.072	-.746	-.498
CENTROID X	:	-.190	-.232	-.343
CENTROID Y	:	-.020	-.346	-.097
POA TO CENTROID in.	:	.191	.417	.356
MIN RADIUS	:	.260	.272	.168
MEAN RADIUS	:	.714	.534	.347
MAX RADIUS	:	1.315	.816	.498
HORIZONTAL SPREAD	:	.541	.541	.199
VERTICAL SPREAD	:	2.376	1.357	.860
EXTREME SPREAD	:	2.379	1.399	.865
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		5	

16 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/B70001A250

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 3

3in = 4

HS= 1.660

VS= 2.724

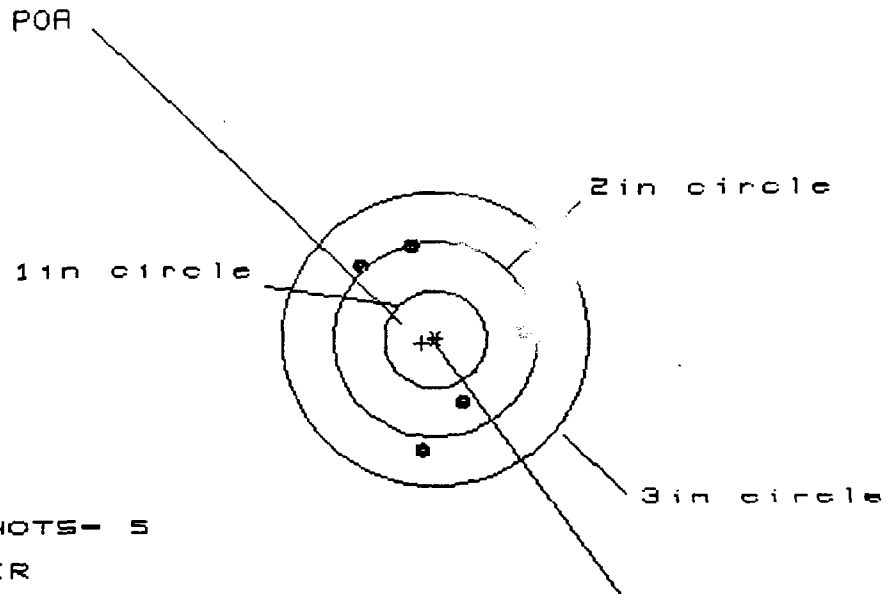
GS= 2.770

PATTERN #	:	3	4	3
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.955	.905	.654
MINIMUM X	:	-.705	-.755	-.751
MAXIMUM Y	:	1.088	.679	.344
MINIMUM Y	:	-1.636	-.547	-.321
CENTROID X	:	-.111	-.061	.190
CENTROID Y	:	.191	.600	.373
POA TO CENTROID in.	:	.221	.603	.419
MIN RADIUS	:	.470	.368	.358
MEAN RADIUS	:	1.009	.766	.610
MAX RADIUS	:	1.648	1.016	.817
HORIZONTAL SPREAD	:	1.660	1.660	1.405
VERTICAL SPREAD	:	2.724	1.227	.665
EXTREME SPREAD	:	2.770	1.902	1.436
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		4	

16 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/B70081A250

CENTERFIRE PATTERNS # 4



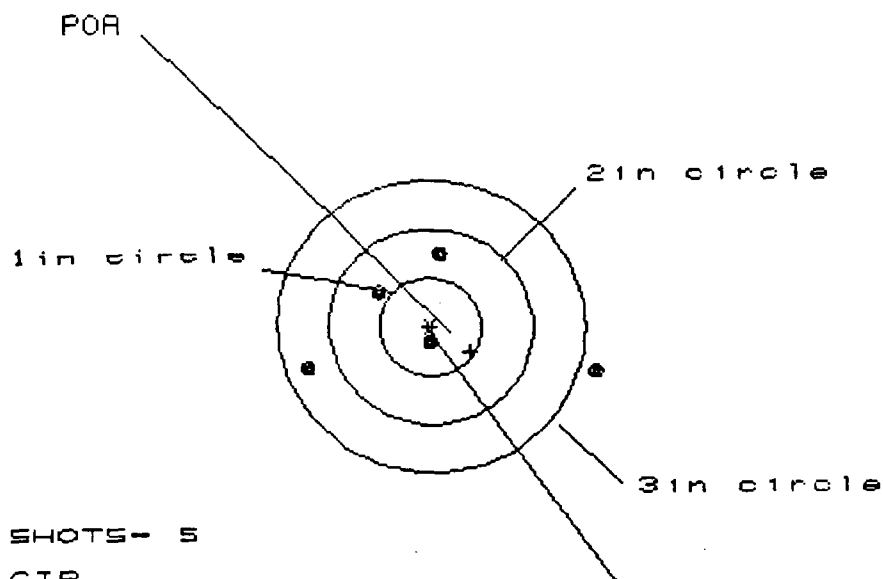
OF SHOTS- 5
 # IN CIR
 1in = 0
 2in = 3
 3in = 5
 HS= 1.611
 VS= 2.074
 GS= 2.075

PATTERN #	:	4		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.849	.813	.547
MINIMUM X	:	-.762	-.798	-.496
MAXIMUM Y	:	.965	.688	.836
MINIMUM Y	:	-1.109	-.911	-.763
CENTROID X	:	.129	.165	.431
CENTROID Y	:	.035	.312	.164
POA TO CENTROID in.	:	.133	.353	.461
MIN RADIUS	:	.681	.725	.552
MEAN RADIUS	:	.937	.854	.763
MAX RADIUS	:	1.118	.936	.972
HORIZONTAL SPREAD	:	1.611	1.611	1.043
VERTICAL SPREAD	:	2.074	1.599	1.599
EXTREME SPREAD	:	2.075	1.743	1.659
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		5	

16 Jan 1987

FILE:/PATTERNING/CENTERFIRE_PATT/B70061R250

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1 in - 1

2 in - 3

3 in - 4

HS- 2.846

VS- 1.233

GS- 2.847

CENTROID *

PATTERN #	:	5		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.627	.546	.275
MINIMUM X	:	-1.219	-.813	-.359
MAXIMUM Y	:	.737	.635	.435
MINIMUM Y	:	-.496	-.598	-.486
CENTROID X	:	-.395	-.802	-.531
CENTROID Y	:	.252	.354	.554
POA TO CENTROID in.	:	.468	.876	.767
MIN RADIUS	:	.191	.265	.363
MEAN RADIUS	:	.908	.642	.457
MAX RADIUS	:	1.677	1.009	.515
HORIZONTAL SPREAD	:	2.846	1.358	.634
VERTICAL SPREAD	:	1.233	1.233	.921
EXTREME SPREAD	:	2.847	1.834	.940
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		4	

Report No. 870081

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> ☐ Safety Related ☐ Competitive Evaluation ☒ New Design ☐ Design Change ☐ Plant Assistance ☐ Litigation ☐ Warehouse Audit ☐ Cost Reduction ☐ Stake _____ ☐ Other	
<u>FIREARM STAT'S.</u> MODEL: <u>700</u> CAL. or GAGE: <u>30-06</u> BARREL TYPE: <u>BOL</u> PROOFED: YES ☒ NO ☐	<u>REPORT REQ'D.</u> FORMAL ☐ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>1-8-87</u> DATE NEEDED BY: <u>1-16-87</u> REQUESTED BY: <u>F.H. Smith</u> WORK ORDER NO: <u>C-0604-314</u>

TEST TYPE

☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other _____
☒ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

SHOOT 5 - 5 SHOT GROUPS FOR ACCURACY AT AMBIENT TEMP. REPEAT AFTER 12 HOURS AT -40°F & RETURNED TO AMBIENT AND AGAIN AFTER 12 HOURS AT +250°F & RETURNED TO AMBIENT.

-GUNS REQUIRED:

12 M/700 R.S.

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 1/17/87TEST COMPLETED BY: J. SchenREPORT DATE: 1/19/87

TEST AND MEASUREMENT LAB - TEST RESULTS

REQUESTER: J.B. WILLOUGHBY TESTER: R.HOWE, F. SUPRY DATE: 01/14/87
REPORT NO.: 870142 WORK ORDER NO.: _____
WRITTEN BY: F.L. SUPRY

TEST TYPE: HIGH PRESSURE STRENGTH - INTENTIONAL GUN ABUSE

FIREARM STAT'S : MODEL: 700 ADL CAL or GAUGE: 30.06
BARREL TYPE: _____ PROOFED: YES X NO _____

REASON FOR TEST :

To determine if the three rifles (serial numbers: B6837266, B6833165, B6837240) would withstand 130,000 psi.

EQUIPMENT REQUIRED :

Handloading equipment, 4198 powder, 30.06 primed cases, 220 grain 30 caliber bullets, 110 grain 30 caliber bullets, iron lung, lanyard, short range with sand pit, and personnel.

TEST PROCEDURE :

The barrel on each rifle was plugged with 110 grain 30 caliber bullets. The plug was set at a depth that would allow the high pressure round to contact, when that round was fully chambered.

A handload to generate +130,000 psi was developed (approximately 50 grains of 4198 powder, and a 220 grain 30 caliber bullet assembled in a Remington primed 30.06 case). A rifle was mounted in the iron lung, the lanyard attached, the rifle loaded with the high pressure round, and the iron lung secured. The room housing the iron lung was locked out and the rifle was fired by using the lanyard from the adjacent room. After the rifle was fired, the iron lung was opened, the rifle was examined for damage, and all comments were recorded. The rifle was then removed and photographs were taken. This procedure was repeated until all three rifles had been subjected to the high pressure strength test. Summary sheets and photographs are included in this report.

TEST RESULTS :

The three rifles reacted the same as previously tested Model 700 rifles.

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.



PETERS



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"_____

xc: W.H. Coleman, II/File
K.W. Soucy
G.J. Hill
J.R. Snedeker
F.L. Supry
File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 870641
MARCH 12, 1987

MODEL 700 LEFT HAND - TRIAL AND PILOT EVALUATION
243 WIN AND 308 WIN CALIBERS

MODEL 700 LEFT HAND 243 WIN AND 308 WIN TRIAL AND PILOT EVALUATION

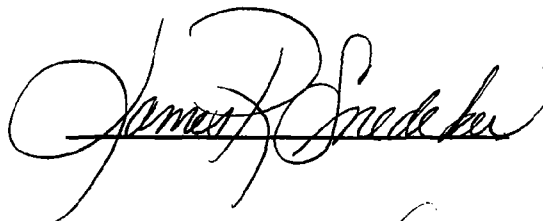
ABSTRACT:

Research and Development finds the Trial and Pilot Evaluation of the Model 700 left hand 243 win caliber, and the Model 700 left hand 308 win caliber rifles to be acceptable. The Trial and Pilot Evaluation consisted of Visual Inspection, Accuracy, and Function. The ten rifle sample (five rifles of each caliber) was found to be within Remington specifications for each phase of the Trial and Pilot Evaluation.

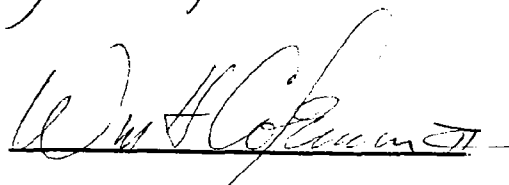
Prepared by: F.L. Supry
Date prepared: 12 march 1987

proofread and cleared by:

J.R. Snedeker, Research Supervisor
Test, Measurement & Mech. Analysis Lab



W.H. Coleman, II
New Products Research Lab Director



REPORT# 870641

WORK ORDER# 81411-905

To: J.R. Snedeker

From: F.L. Supry

MODEL 700 LEFT HAND (243 WIN, AND 308 WIN) TRIAL AND PILOT EVALUATION

INTRODUCTION:

On March 5, 1987 a request was received to conduct a Visual, Accuracy, and Function Evaluation of the Model 700 left hand (243 Win and 308 Win caliber) Trial and Pilot rifles. Five rifles of each caliber were randomly selected from production.

SCOPE OF TEST:

To determine if the production run samples meet the Remington Specifications set by the Research Design Section.

TEST RESULTS:

The ten rifle Trial and Pilot Evaluation was found to be acceptable. The following results were obtained:

A. VISUAL:

a. The overall appearance of the rifles was good.

B. ACCURACY: (Average group size)

- a. 243 Win = 1.972 inches.
- b. 308 Win = 1.749 inches.

C. FUNCTION:

a. No malfunctions occurred.

REPORT# 870641

WORK ORDER# 81411-905

TEST REPORT:

1. VISUAL:

- A. The visual inspection committee felt that the following two items need to be checked more thoroughly:
- a. Finish peeling by the grip checkering.
 - b. Rear sight being raised off the ramp.
- B. Data sheets containing the comments on each rifle inspected is included in the appendix of this report.

2. ACCURACY:

- A. The Remington Specification for group size is as follows:
- a. 243 Win caliber: 2.2 inches, center to center.
 - b. 308 Win caliber: 3.5 inches, center to center.
- B. Three rifles of each caliber were tested for 100 yard accuracy and the following results were obtained.

		GROUP			AVG
243 WIN CALIBER		1	2	3	
Rifle# B6850372	-	2.305	2.329	1.505	2.046
Rifle# B6849949	-	1.815	1.666	1.603	1.695
Rifle# B6849906	-	2.603	1.527	2.395	2.175

OVERALL GROUP SIZE AVERAGE = 1.972 INCHES

308 WIN CALIBER

Rifle# B6851090	-	2.337	1.852	1.713	1.968
Rifle# B6851007	-	1.497	2.266	1.188	1.650
Rifle# B6851094	-	1.324	2.204	1.356	1.628

OVERALL GROUP SIZE AVERAGE = 1.749

3. FUNCTION:

- A. Three rifles of each caliber were subjected to a 30 round per rifle, function test and the following results were obtained:
- a. No malfunctions occurred.

TEST PROCEDURE:

1. VISUAL:

- A. The visual inspection committee consisted of G. Hill, G. Barnes (P.E. & C.); J. Baggetta, C. Stephens, and F. Supry (R. & D.).
- B. All five rifles of each caliber were used in the visual inspection. The rifles were as follows:
 - a. 243 Win caliber:
B6849906 B6849999 B6849949 B6849965 B6850372
 - b. 308 Win caliber:
B6851094 B6851145 B6851007 B6850969 B6851090
- C. Each rifle was wiped down with a clean white Coyne towel, and examined by each member of the visual inspection committee. All comments were recorded, and are included in the appendix of this report.

2. ACCURACY:

- A. The following rifles were used in the 100 yard accuracy test:
 - a. 243 Win caliber:
B6850372 B6849949 B6849906
 - b. 308 Win caliber:
B6851090 B6851007 B6851094
- B. The accuracy was shot by C. Stephens, at the R&D 100 yard range located in building 52-1.
- C. Leupold base and rings were used in conjunction with a Redfield 12X (4-plex) scope.
- D. Remington ammunition; index R243W3, code W20LD0948, and index R308W3, code C13TC6305 was used for the 100 yard accuracy test.
- E. Before shooting the accuracy test, the bores on each rifle were brushed with Hoppe's No. 9 solvent and patched dry.
- F. A total of three, five shot groups were shot with each rifle. The rifles were cooled between each group, and one "warmer" shot was fired before the next group was shot.
- G. The targets were analyzed for group size and the averages calculated, using the HP 9000 computer and digitizing tablet.

TEST PROCEDURE: (continued)

3. FUNCTION:

A. The following rifles were selected for the function test:

a. 243 Win Caliber:

B6849906 B6849999 B6849965

b. 308 Win caliber:

B6851007 B6851145 B6850969

B. Each of the rifles was subjected to the loading and firing of 30 rounds of Remington ammunition (15 rounds of 80 grain and 15 rounds of 100 grain for the 243 Win caliber rifles, and 15 rounds of 55 grain and 15 rounds of 180 grain for the 308 Win caliber rifles). Fifteen rounds were fired; 5 at a slow feeding cycle speed, 5 at a medium feeding cycle speed, and 5 at a fast feeding cycle speed. The rifles were allowed to cool, and then the procedure was repeated with the remaining ammunition type.

C. The following ammunition was used in the function test:

a. R243W1 - 80 grain pointed soft point.

b. R243W3 - 100 grain pointed soft point.

c. R308W5 - 55 grain Win accelerator.

d. R308W2 - 180 grain soft point.

REPORT# 870641

WORK ORDER# 81411-905

APPENDIX

REPORT# 870641

WORK ORDER# 81411-905

VISUAL INSPECTION MODEL 700 LEFT HAND 243 WIN AND 308 WIN CALIBERS

243 WIN CALIBER:

<u>SERIAL NUMBER</u>	<u>COMMENTS</u>
B6849906	FINISH PEELING AT GRIP CHECKERING. BRIGHT MARK ON THE BARREL. SMALL PIMPLES IN THE FINISH NEAR THE STUD, AT THE FORE END TIP.
B6849999	SMALL CHIP ON GRIP CAP. SMALL PIMPLES IN THE FINISH, ON THE RIGHT SIDE OF THE STOCK NEAR THE TRIGGER GUARD. SLIGHT CRACK IN THE BOLT HANDLE SLOT, AND SANDING BREAKTHROUGH IN THE SAME AREA.
B6849949	REAR SIGHT RAISED OFF THE SLIDE. MAR ON THE TRIGGER GUARD. BLEED OUT ON THE CROSS PIN. SLIGHT DING IN THE STOCK, LEFT SIDE NEAR FORE END TIP.
B6849965	GAP BOTH SIDES OF THE BUTT PLATE. SCRATCH LEFT SIDE OF STOCK BY THE RECEIVER.
B6850372	FINISH PEELING RIGHT SIDE OF STOCK NEAR THE CHECKERING.

308 WIN CALIBER:

B6851094	SLIGHT DING ON THE FLOOR PLATE, RIGHT SIDE.
B6851145	MAR ON THE FLOOR PLATE, LEFT SIDE. TWO SLIGHT DINGS ON THE BUTT PLATE. BUTT PLATE INSERT NOT FLUSH.
B6851007	FINISH RUN NEAR THE CHECKERING. SPACE UNDER FORE END TIP.
B6850969	DENT ON THE TOP OF THE STOCK, NEAR THE REAR SWIVEL. TWO SLIGHT DINGS ON THE RIGHT SIDE OF THE TRIGGER GUARD. REAR SIGHT RAISED OFF OF RAMP.
B6851090	SLIGHT DING, LEFT SIDE OF STOCK, NEAR THE BOLT HANDLE SLOT. EXCESSIVE WOOD MARGIN AT THE SAFETY SLOT. BOLT HANDLE SLOT IS ROUGH.

RD-69-B

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.*PETERS*

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

xc: W.H. Coleman, II/File
J.R. Snedeker
T.C. Douglas
F.H. Smith

RESEARCH TEST AND MEASUREMENT REPORT
REPORT# 871111
MAY 01, 1987

MODEL 700 SHORT ACTION MOUNTAIN RIFLE DESIGN VERIFICATION

RP# 871111

WO# C-0254

MODEL 700 SHORT ACTION MOUNTAIN RIFLE DESIGN VERIFICATION

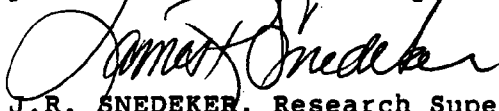
ABSTRACT:

The Test and Measurement Laboratory finds the Design Verification of the Model 700 short action Mountain Rifle in the 308 Win., 243 Win., and the 7mm-08 calibers to be acceptable. The testing consisted of 100 yard accuracy.

Five rifles for each caliber were selected for the accuracy test. The accuracy was shot by Chuck Stephens. All the rifles tested were within Remington 100 yard accuracy specifications.

Prepared by: C. Stephens
Date Prepared: May 01, 1987

proofread and cleared by:



J.R. SNEDEKER, Research Supervisor
Test, Measurement & Mech. Analysis Lab



W.H. COLEMAN, II
New Products Research Lab Director

RP# 871111

WO# C-0254

To: J.R. Snedeker
From: C. Stephens

INTRODUCTION:

A request was received from F.H. Smith on April 21, 1987 to conduct a design verification test, for 100 yard accuracy, on the Model 700 Short Action Mountain Rifles in the 308 Win, 243 Win, and 7mm-08 calibers.

SCOPE OF TEST:

To determine if the short action Model 700 rifles, with the Mountain Rifle barrel contour, would meet the Remington 100 yard accuracy specifications.

TEST RESULTS:

All the rifles tested were within Remington specifications for 100 yard accuracy. The following average group sizes were established:

CALIBER	REMINGTON SPECIFICATIONS	ACCURACY RESULTS
308 Win	3.5 inches	2.0 inches
243 Win	2.2 inches	1.8 inches
7mm-08	2.7 inches	2.2 inches

REPORT TEXT:

1. Five rifles were shot for each caliber, with three groups shot for each rifle consisting of five shots per group.
2. Remington ammunition R308W3, 180 grain PSP, code C13TC6305; R243W3, 100 grain PSP, code W20LD0948; R7M081, 140 grain PSP, code R03CD2929 was used in the respective calibers.
3. Individual accuracy results are listed in the appendix of this report.

TEST PROCEDURE:

1. The accuracy was shot by C. Stephens in the R&D 100 yard range, located in building 52-1.
2. Standard short action Leupold bases and Leupold rings were used, in conjunction with a 12X Redfield scope.
3. A total of three, five shot groups, were shot for each rifle. The rifles were cooled between each group, and one fouling shot fired before the next group was shot.
4. The patterns were analyzed for group size, using the HP 9000 computer and digitizing tablet.

RP# 871111

WO# C-0254

APPENDIX

MODEL 700 SHORT ACTION MOUNTAIN RIFLE ACCURACY RESULTS

CALIBER	SERIAL NUMBER	GROUP 1 (in.)	GROUP 2 (in.)	GROUP 3 (in.)	AVERAGE (in.)
308 WIN		OVERALL AVERAGE OF ALL 5			2.01
	B6769154	3.47	2.05	1.64	2.38
	B6772467	2.76	1.78	1.60	2.04
	B6769084	2.61	0.86	1.26	1.57
	B6772474	2.20	1.59	2.26	2.01
	B6772398	2.02	2.41	1.69	2.04
243 WIN		OVERALL AVERAGE OF ALL 5			1.82
	B6772452	1.09	1.91	1.55	1.51
	B6772489	2.48	1.89	1.89	2.08
	B6772447	2.26	1.38	2.53	2.05
	B6772460	1.52	1.84	0.60	1.32
	B6769158	2.29	1.85	2.30	2.14
7mm-08		OVERALL AVERAGE OF ALL 5			2.16
	B6772501	2.07	2.65	2.80	2.50
	B6772448	3.13	1.64	2.81	2.52
	B6772353	1.89	1.68	2.65	2.07
	B6772517	2.29	1.26	1.82	1.79
	B6769163	1.77	2.02	1.97	1.92

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.



PETERS



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

xc: W.H. Coleman, II/File
K.W. Soucy
G.J. Hill
J.R. Snedeker
J.F. Matousek, Jr
F.L. Supry
File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 871112
APRIL 29, 1987

MODEL 700 FS TRIAL AND PILOT EVALUATION

308 WIN CALIBER

MODEL 700 FS 308 WIN CALIBER - TRIAL AND PILOT EVALUATION

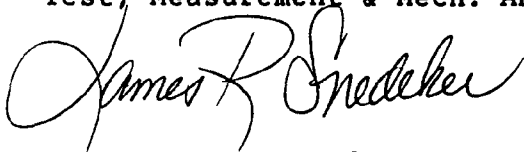
ABSTRACT:

Research and Development finds the Trial and Pilot Evaluation of the Model 700 FS 308 win caliber rifles to be acceptable. The Trial and Pilot Evaluation consisted of Visual Inspection, Accuracy, and Function. The eight rifle sample (four rifles with gray stocks and four rifles with camo stocks) was found to be within Remington specifications for each phase of the Trial and Pilot Evaluation.

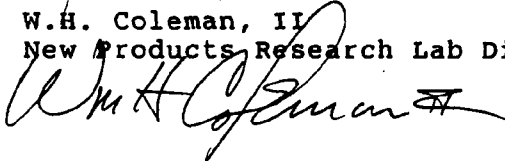
Prepared by: F.L. Supry
Date prepared: 29 April 1987

proofread and cleared by:

J.R. Snedeker, Research Supervisor
Test, Measurement & Mech. Analysis Lab



W.H. Coleman, II
New Products Research Lab Director



REPORT# 871112

WORK ORDER# 81389-914

To: J.R. Snedeker

From: F.L. Supry

MODEL 700 FS 308 WIN CALIBER - TRIAL AND PILOT EVALUATION

INTRODUCTION:

On April 21, 1987 a request was received to conduct a Visual, Accuracy, and Function Evaluation of the Model 700 FS 308 Win caliber, Trial and Pilot rifles. Eight rifles, four of each stock option, were randomly selected from production.

SCOPE OF TEST:

To determine if the production run samples meet the Remington Specifications set by the Research Design Section.

TEST RESULTS:

The eight rifle Trial and Pilot Evaluation was found to be acceptable. The following results were obtained:

A. VISUAL:

a. The overall appearance of the rifles was good.

B. ACCURACY: (Average group size)

a. 308 Win (Gray) = 1.857 inches.

b. 308 Win (Camo) = 1.832 inches.

C. FUNCTION:

a. No malfunctions occurred.

REPORT# 871112

WORK ORDER# 81389-914

TEST REPORT:

1. VISUAL:

- A. The visual inspection committee felt that the following three items need to be checked more thoroughly:
 - a. "F" stamp upsetting the receiver, near the bolt handle slot.
 - b. The Proof Stamp was light.
 - c. The swivels were off center.
- B. Data sheets containing the comments on each rifle inspected is included in the appendix of this report.

2. ACCURACY:

- A. The Remington Specification for group size is as follows:
 - a. 308 Win caliber: 3.5 inches, center to center.
- B. Two rifles of each stock option were tested for 100 yard accuracy and the following results were obtained.

			GROUP		AVG
		1	2	3	
Gray Stock					
Rifle# B6848853	-	1.738	1.409	1.444	1.530
Rifle# B6848285	-	2.542	2.382	1.626	2.183

OVERALL GROUP SIZE AVERAGE = 1.857 INCHES

Camo Stock

Rifle# B6849758	-	1.813	1.606	2.421	1.947
Rifle# B6848296	-	1.359	1.804	1.986	1.716

OVERALL GROUP SIZE AVERAGE = 1.832

3. FUNCTION:

- A. The rifles were subjected to a 30 round per rifle, function test and the following results were obtained:
 - a. No malfunctions occurred.

TEST PROCEDURE:

1. VISUAL:

- A. The visual inspection committee consisted of G. Hill, G. Barnes, P. Johnson, R. Long (P.E. & C.); R. Howe, and F. Supry (R. & D.).
- B. All four rifles of each stock option were used in the visual inspection. The rifles were as follows:
 - a. Gray Stock:
B6848853 B6848285 B6849351 B6849316
 - b. Camo Stock:
B6849330 B6849758 B6848296 B6849254
- C. Each rifle was wiped down with a clean white Coyne towel, and examined by each member of the visual inspection committee. All comments were recorded, and are included in the appendix of this report.

2. ACCURACY:

- A. The following rifles were used in the 100 yard accuracy test:
 - a. Gray Stock:
B6848285 B6848853
 - b. Camo Stock:
B6848296 B6849758
- B. The accuracy was shot by C. Stephens, at the R&D 100 yard range located in building 52-1.
- C. Leupold base and rings were used in conjunction with a Redfield 12X (4-plex) scope.
- D. Remington ammunition; index R308W3, code C13TC6305 was used for the 100 yard accuracy test.
- E. Before shooting the accuracy test, the bores on each rifle were brushed with Hoppe's No. 9 solvent and patched dry.
- F. A total of three, five shot groups were shot with each rifle. The rifles were cooled between each group, and one "warmer" shot was fired before the next group was shot.
- G. The targets were analyzed for group size and the averages calculated, using the HP 9000 computer and digitizing tablet.

REPORT# 871112

WORK ORDER# 81389-914

TEST PROCEDURE: (continued)

3. FUNCTION:

A. All four rifles of each stock option were used in the function test. The rifles were as follows:

a. Gray Stock:

B6848853 B6848285 B6849351 B6849316

b. Camo Stock:

B6849330 B6849758 B6848296 B6849254

B. Each of the rifles was subjected to the loading and firing of 30 rounds of Remington 308 Win caliber ammunition (15 rounds of 55 grain and 15 rounds of 180 grain). Fifteen rounds were fired; 5 at a slow feeding cycle speed, 5 at a medium feeding cycle speed, and 5 at a fast feeding cycle speed. The rifles were allowed to cool, and then the procedure was repeated with the remaining ammunition type.

C. The following ammunition was used in the function test:

a. R308W5 - 55 grain Win accelerator.

b. R308W2 - 180 grain soft point.

REPORT# 871112

WORK ORDER# 81389-914

APPENDIX

REPORT# 871112

WORK ORDER# 81389-914

VISUAL INSPECTION MODEL 700 FS 308 WIN CALIBERS

Gray Stock:

<u>SERIAL NUMBER</u>	<u>COMMENTS</u>
B6848853	MISMATCH ON THE TRIGGER GUARD. POOR COLOR ON THE BOLT. LIGHT PROOF MARK.
B6848285	POOR COLOR ON THE BOLT. LIGHT PROOF MARK.
B6849351	LIGHT PROOF MARK. GOUGE IN THE SAFETY SLOT.
B6849316	MAR ON THE TRIGGER GUARD. LIGHT PROOF MARK.

Camo Stock:

B6849330	SLIGHT BLEMISH OVER SERIAL NUMBER. LIGHT PROOF MARK. REAR SWIVEL OFF CENTER. BRIGHT MAR ON THE BOLT PLUG.
B6849758	LIGHT PROOF MARK. REAR SWIVEL OFF CENTER. BRIGHT MAR ON THE BOLT PLUG.
B6848296	LIGHT PROOF MARK. BRIGHT MAR ON THE BOLT PLUG.
B6849254	LIGHT PROOF MARK. BRIGHT MAR ON THE BOLT PLUG.

GENERAL COMMENTS:

THE BRIGHT MAR ON THE BOLT PLUGS WAS CAUSED BY THE "F" STAMP ON THE RECEIVER BEING STAMPED CLOSE TO THE EDGE, UPSETTING THE SLOT.

THE STYLE OF BARREL FINISH CONTRIBUTES TO THE PROOF MARK BEING LIGHT.

THE SWIVELS ARE PUT IN SLIGHTLY OFF CENTER BY THE VENDOR.

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.



PETERS



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

xc: W.H. Coleman, II/File
 K.W. Soucy
 G.J. Hill
 T.C. Douglas
 J.R. Snedeker
 J.F. Matousek, Jr.
 F.L. Supry
 File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 871383

MAY 28, 1987

MODEL 700 "POLICE" 223 REM CALIBER BOLT ACTION RIFLES

TRIAL AND PILOT EVALUATION

MODEL 700 "POLICE" 223 REM CALIBER - TRIAL AND PILOT EVALUATION

ABSTRACT:

Research and Development finds the Trial and Pilot Evaluation of the Model 700 "Police" 223 Rem caliber rifles to be acceptable. The Trial and Pilot Evaluation consisted of Accuracy, and Function. The five rifle sample was found to be within Remington specifications for each phase of the Trial and Pilot Evaluation.

Prepared by: F.L. Supry
Date prepared: 28 May 1987

proofread and cleared by:

J.R. Snedeker, Research Supervisor
Test, Measurement & Mech. Analysis Lab



W.H. Coleman, II
New Products Research Lab Director



REPORT# 871383

WORK ORDER# 82034-905

To: J.R. Snedeker

From: F.L. Supry

MODEL 700 "POLICE" 223 REM CALIBER - TRIAL AND PILOT EVALUATION

INTRODUCTION:

On May 18, 1987 a request was received to conduct an Accuracy, and Function Evaluation of the Model 700 "Police" 223 Rem caliber, Trial and Pilot rifles. Five rifles were randomly selected from production.

SCOPE OF TEST:

To determine if the production run samples meet the Remington Specifications set by the Research Design Section.

TEST RESULTS:

The five rifle Trial and Pilot Evaluation was found to be acceptable. The following results were obtained:

A. ACCURACY: (Average group size)

a. 223 Rem = 1.009 inches.

C. FUNCTION:

a. No malfunctions occurred.

REPORT# 871383

WORK ORDER# 82034-905

TEST REPORT

1. ACCURACY:

A. The Remington Specification for group size is as follows:

a. 223 Rem caliber: 1.5 inches, center to center.

B. Three rifles tested for 100 yard accuracy and the following results were obtained.

			GROUP		AVG
		1	2	3	
Rifle#	B6853162	- 0.795	1.144	0.911	0.950
Rifle#	B6853148	- 1.571	0.881	1.465	1.304
Rifle#	B6853242	- 1.089	0.560	0.672	0.774

OVERALL GROUP SIZE AVERAGE = 1.009 INCHES

3. FUNCTION:

A. The rifles were subjected to a 30 round per rifle, function test and the following results were obtained:

a. No malfunctions occurred.

TEST PROCEDURE:

1. ACCURACY:

A. The following rifles were used in the 100 yard accuracy test:

B6853162 B6853148 B6853242

B. The accuracy was shot by J.E. Selan, at the R&D 100 yard range located in building 52-1.

C. Leupold base and rings were used in conjunction with a Redfield 12X (4-plex) scope.

D. Remington ammunition; index R223R3 , code A06ID was used for the 100 yard accuracy test.

REPORT# 871383

WORK ORDER# 82034-905

TEST PROCEDURE: (continued)

1. ACCURACY: (continued)

- E. Before shooting the accuracy test, the bores on each rifle were brushed with Hoppe's No. 9 solvent and patched dry.
- F. A total of three, five shot groups were shot with each rifle. The rifles were cooled between each group, and one "warmer" shot was fired before the next group was shot.
- G. The targets were analyzed for group size and the averages calculated, using the HP 9000 computer and digitizing tablet.

2. FUNCTION:

- A. Three rifles were used in the function test. The rifles were as follows:

B6853162

B6853148

B6853242

- B. Each of the rifles was subjected to the loading and firing of 30 rounds of Remington 223 Rem caliber ammunition (15 rounds of 55 grain metal case, and 15 rounds of 55 grain pointed soft point). Fifteen rounds were fired; 5 at a slow feeding cycle speed, 5 at a medium feeding cycle speed, and 5 at a fast feeding cycle speed. The rifles were allowed to cool, and then the procedure was repeated with the remaining ammunition type.
- C. The following ammunition was used in the function test:
 - a. R223R1 - 55 grain pointed soft point.
 - b. R223R3 - 55 grain metal case.

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington.



PETERS



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

xc: W.H. Coleman, II/File
K.W. Soucy
G.J. Hill
T.C. Douglas
J.R. Snedeker
J.F. Matousek, Jr.
F.L. Supry
File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 871531
JUNE 10, 1987

MODEL 700 RS TRIAL AND PILOT EVALUATION
270 WIN CALIBER

MODEL 700 - 270 WIN CALIBER - TRIAL AND PILOT EVALUATION

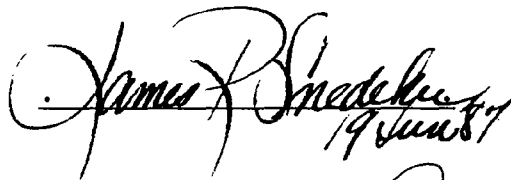
ABSTRACT:

Research and Development finds the Trial and Pilot Evaluation of the Model 700, 270 win caliber rifles to be acceptable. The Trial and Pilot Evaluation consisted of Visual Inspection, Accuracy, and Function. The eight rifle sample was found to be within Remington specifications for each phase of the Trial and Pilot Evaluation.

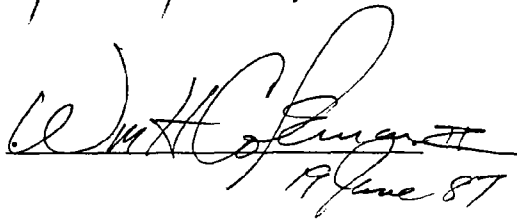
Prepared by: F.L. Supry
Date prepared: 10 June 1987

proofread and cleared by:

J.R. Snedeker, Research Supervisor
Test, Measurement & Mech. Analysis Lab


19 June 87

W.H. Coleman, II
New Products Research Lab Director


19 June 87

REPORT# 871531

WORK ORDER# 82034-905

To: J.R. Snedeker

From: F.L. Supry

MODEL 700 RS - 270 WIN CALIBER - TRIAL AND PILOT EVALUATION

INTRODUCTION:

On June 02, 1987 a request was received to conduct a Visual Inspection, Accuracy, and Function Evaluation of the Model 700 RS, 270 Win caliber, Trial and Pilot rifles. Eight rifles, four Camo and four Grey, were randomly selected from production.

SCOPE OF TEST:

To determine if the production run samples meet the Remington Specifications set by the Research Design Section.

TEST RESULTS:

The eight rifle Trial and Pilot Evaluation was found to be acceptable. The following results were obtained:

A. VISUAL INSPECTION:

- a. The overall appearance of the rifles was acceptable.
- b. The pattern design of the Camo stocks was well liked.

B. ACCURACY: (Average group size)

- a. 270 Win = 1.91 inches.

C. FUNCTION:

- a. Three rifles fired 225 rounds each, with no malfunctions.
- b. One rifle had one stem high malfunction.
- c. The overall malfunction rate was 0.11%.

REPORT# 871531

WORK ORDER# 82034-905

TEST REPORT

1. VISUAL INSPECTION:

- A. The visual inspection committee made the following general comments:
 - a. They liked the pattern in the Camo stocks.
 - b. Several of the stocks showed a rough area at the top of the grip. More care is needed in transit.
- B. Data sheets containing the comments on each rifle inspected is included in the appendix of this report.

2. ACCURACY:

- A. The Remington Specification for group size is as follows:
 - a. 270 Win caliber: 3.5 inches, center to center.
- B. Four rifles tested for 100 yard accuracy and the following results were obtained.

		GROUP			AVG
		1	2	3	
Rifle#	B6865078	- 1.435	1.648	2.199	1.761
Rifle#	B6864276	- 1.668	2.420	1.584	1.891
Rifle#	B6862889	- 1.951	1.838	2.422	2.070
Rifle#	B6865545	- 2.169	1.856	1.750	1.925

OVERALL GROUP SIZE AVERAGE = 1.91 INCHES

3. FUNCTION:

- A. Four of the rifles were subjected to a 225 round per rifle, field function test and the following results were obtained:
 - a. One stem chamber malfunction occurred.

REPORT# 871382

WORK ORDER# 82034-905

TEST PROCEDURE:

1. VISUAL:

- A. The visual inspection committee consisted of J. Piseck, G. Barnes (P.E. & C.); C. Stephens, and F. Supry (R. & D.).
- B. Six rifles, three Camo and three Grey, were used in the visual inspection. The rifles were as follows:
 - a. Camo:
B6865679 B6864928 B6864900
 - b. Grey:
B6866020 B6865078 B6862889
- C. Each rifle was wiped down with a clean white Coyne towel, and examined by each member of the visual inspection committee. All comments were recorded, and are included in the appendix of this report.

2. ACCURACY:

- A. The following rifles were used in the 100 yard accuracy test:

B6865078 B6864276 B6862889 B6865545
- B. The accuracy was shot by C.J. Stephens, at the R&D 100 yard range located in building 52-1.
- C. Leupold base and rings were used in conjunction with a Redfield 12X (4-plex) scope.
- D. Remington ammunition; index R270W4, 150 grain soft point, code E23F B6007 was used for the 100 yard accuracy test.
- E. Before shooting the accuracy test, the bores on each rifle were brushed with Hoppe's No. 9 solvent and patched dry.
- F. A total of three, five shot groups were shot with each rifle. The rifles were cooled between each group, and one "warmer" shot was fired before the next group was shot.
- G. The targets were analyzed for group size and the averages calculated, using the HP 9000 computer and digitizing tablet.

REPORT# 871382

WORK ORDER# 82034-905

TEST PROCEDURE: (continued)

3. FIELD FUNCTION:

- A. Four rifles were used in the function test. The rifles were as follows:

B6865078 B6864276 B6862889 B6865545

- B. Each of the rifles was subjected to the loading and firing of 225 rounds of Remington and competitive ammunition, in a Field Function test conducted at the Ilion Fish and Game Club. Fifteen rounds were fired; 5 at a slow feeding cycle speed, 5 at a medium feeding cycle speed, and 5 at a fast feeding cycle speed. The rifles were allowed to cool, and then the procedure was repeated with each remaining ammunition type.

- C. The following ammunition was used in the function test:

R270W1	270A	X2701	16902
R270W2	270B	X2703	16903
R270W3	270C	X2704	IVI 270
R270W4	270E	X2705	

APPENDIX

REPORT# 871382

WORK ORDER# 82034-905

VISUAL INSPECTION SUMMARY

CAMO STOCKS:

SERIAL NUMBER -	COMMENTS
B6865679	SLIGHT OPENING BETWEEN FLOOR PLATE AND STOCK
B6864928	SCUFF MARK AT BARREL BRACKET BULGE SCUFF MARK AT THE FORE-END TIP SCUFF MARK AT THE GRIP CAP MISMATCH AT THE TOE
B6864900	SLIGHT DISCOLOR AT THE BUTT PAD MAR AT THE TOP OF THE RECEIVER (BEFORE BLASTING)

GREY STOCKS:

B6866020	SLIGHT OPENING BETWEEN FLOOR PLATE AND STOCK MAR ON THE TANG SCUFF MARK ON THE TOP OF THE GRIP AREA GAP AT THE TOE OF THE BUTT PLATE
B6865078	OPENING AT THE REAR OF THE TRIGGER GUARD SCUFF MARK ON THE TOP OF THE GRIP AREA
B6862889	ROUGH CHEEK PIECE MINIMUM OVER-TRAVEL ON THE SAFETY MAR BY THE GRIP CAP

GENERAL COMMENTS"

THE COMMITTEE LIKED THE PATTERN DESIGN OF THE CAMO STOCKS.

MORE CARE NEEDS TO BE TAKEN, IN TRANSIT, TO KEEP FROM MARRING THE TOP OF THE GRIP AREA.

Report No. 872441

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

		AREA OF TESTING	
☒ Developmental		☒ Safety Related	☐ Litigation
☐ Design Acceptance		☐ Competitive Evaluation	☐ Warehouse Audit
☐ Pre-Pilot		☐ New Design	☐ Cost Reduction
☐ Pilot		☒ Design Change	Stake ☐
☐ Production Acceptance		☐ Plant Assistance	☐ Other

FIREARM STAT'S.	REPORT REQ'D.	
MODEL: <u>700 Mountain Rifle</u>	FORMAL ☐	DATE REQUESTED: <u>9-1-87</u>
CAL. or GAGE: <u>7mm Rem Mag</u>	TEST RESULTS ONLY ☒	DATE NEEDED BY: <u>9-15-87</u>
BARREL TYPE: <u>22"</u>		REQUESTED BY: <u>RS Murphy</u>
PROOFED: YES ☒ NO ☐		WORK ORDER NO: <u>481152</u>

TEST TYPE			
☒ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other ☐
☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	☐

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

DT Anderson would like to add the 7mm Mag to the Mountain Rifle. I don't think the barrel will handle extreme pressures like our standard 700's do. Please do your best to try to blow up this gun.

GUNS REQUIRED:

1 700 # B6859143

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 9/3/87
TEST COMPLETED BY: DT CS
REPORT DATE: 9/3/87

REMINGTON ARMS COMPANY, INC.
Ilion Research Division

SUMMARY OF INTENTIONAL GUN ABUSE TEST

DATA

By D. Thomas / C. Stephens

Date 9/3/87

FIREARM:

Make Remington Model 700 Mountain

Grade _____ Gauge _____ Serial Number B6859143

Origin Plant

Test Number Assigned 872441

Comments Test to determine if The 700 Mountain rifle in
7mm Rem Mag Cal. will withstand high Pressure as well as
a Standard 700

HISTORY:

Condition New

Previous Rounds Fired _____

Headspace at Test _____

Test Date 9/3/87

ABUSIVE
LOAD USED:

Powder Type 4198

Powder Weight 69gn

Case Make and Type Rem.

Total Bullet Weight 175gn PSP

Total Shot Weight _____

Estimated Pressure 165 K PSI

ADDITIONAL
COMMENTS:

BOLT Froze

Case Swelled & Stuck to Chamber

Shroud of bolt broke

Typical 700 Type high Pressure results

TEST AND MEASUREMENT LAB

- TEST REPORT

REQUESTER: WILLOUGHBY/SNEDEKERTESTER: DRTDATE: 12/28/87REPORT NO.: 873521WORK ORDER NO.: 017556WRITTEN BY: F.L. SUPRYTEST TYPE: ACCURACY, COLD, 100 ROUND PROOF, AND 2000 ROUND ENDURANCEFIREARM STAT'S:MODEL: 700CAL OR GAGE: 30-06/270BARREL TYPE: STANDARDPROOFED: YESREASON FOR TEST:

The Fiberglass stocks on each of the rifles contained alignment blocks, to help center the barrel in the barrel channel. The test was to determine if the blocks would stay in position, and if they had any adverse affect on the rifles.

EQUIPMENT REQUIRED:

Redfield (All-American 20X) scope, 100 yard shooting range, 30-06 and 270 caliber ammunition and proof rounds, industrial freezer, shooting jacks, high pressure test shield, lanyard, and personal.

TEST PROCEDURE:

The initial 100 yard accuracy test, three five shot groups with each rifle, was conducted. Then, the rifles were placed in the industrial freezer, set at -40 degrees F., for 64 hours. The rifles were removed from the freezer, placed in the shooting jack, fired for 20 rounds then, replaced in the freezer until the barrels cooled. The sequence was repeated until each rifle had been fired 100 rounds, and then, the rifles were allowed to return to ambient temperature and the accuracy test was repeated. Following that, the rifles were disassembled and the alignment blocks were checked. Next, the rifles were subjected to the firing of 100 proof rounds. (The rifles were reassembled, placed in a shooting jack, and fired using a lanyard and the high pressure test shield.) After the proof round test, the rifles were disassembled and the alignment blocks checked. Then, each rifle was reassembled, placed in a shooting jack and subjected to the loading and firing of 2000 rounds. Following that, the rifles were disassembled, the alignment blocks checked, and then reassembled, tagged and returned to J. Willoughby.

TEST RESULTS:

The alignment blocks remained secure, and had no adverse affect on either of the rifles tested.

The accuracy results are included in the appendix of this report.

Report No. 873521

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> ☐ Safety Related ☐ Competitive Evaluation ☐ New Design ☐ Design Change ☒ Plant Assistance ☐ Litigation ☐ Warehouse Audit ☐ Cost Reduction ☐ Stake _____ ☐ Other _____	
<u>FIREARM STAT'S</u> MODEL: <u>700</u> CAL. or GAGE: <u>30.06/270</u> BARREL TYPE: _____ PROOFED: YES ☒ NO _____	<u>REPORT REQ'D.</u> FORMAL _____ TEST RESULTS ONLY <u>X</u>	DATE REQUESTED: <u>12/18/87</u> DATE NEEDED BY: <u>12/23/87</u> REQUESTED BY: <u>Will-dee-boy / Sneders</u> WORK ORDER NO: <u>017556</u>

<u>TEST TYPE</u>			
☐ Strength Test ☐ Function Test ☐ Accuracy Test	☐ Ammunition Test ☐ Environmental Test ☐ Customer Complaint	☐ Dry Cycle Test ☐ Measurements ☐ Endurance Test	☐ Photo/Video ☐ Other _____

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

- ① - 100 YARD ACCURACY - FREEZER OVER WEEK-END -
- ② - 100 ROUND ENDURANCE while still cold from freezer -
- ③ - ALLOW TO RETURN TO AMBIENT TEMP. - REPEAT ACCURACY TEST
- ④ - TEAR DOWN RIFLES.. CHECK BLOCK - REASSEMBLE OK LPT
- ⑤ - 100 ROUND PROOF TEST - Repeat ④ OK LPT
- ⑥ - 2000 ROUND ENDURANCE OK LPT

-GUNS REQUIRED:

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 12/23/87
 TEST COMPLETED BY: DI & CS
 REPORT DATE: _____

30-06 Before

21 Dec 1987

FILE:/PATTERNING/CENTERFIRE_PATT/873521-1

CENTERFIRE PATTERNS # 1

POA

1in circle

2in circle

3in circle

OF SHOTS - 5

IN CIR

1in = 0

2in = 3

3in = 5

HS= 1.631

VS= 1.633

GS= 1.893

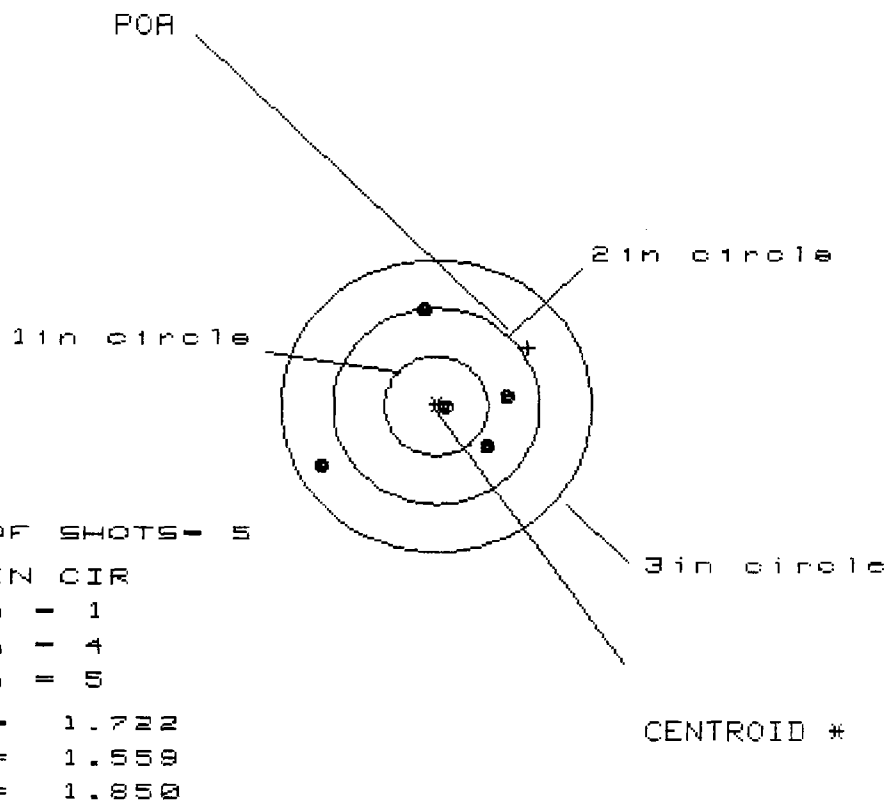
CENTROID *

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.780	.644	.296
MINIMUM X	:	-.911	-1.046	-.519
MAXIMUM Y	:	.555	.285	.347
MINIMUM Y	:	-1.078	-.544	-.482
CENTROID X	:	-.170	-.034	.314
CENTROID Y	:	-1.006	-.736	-.798
POA TO CENTROID in.	:	1.020	.737	.857
ANGLE POA CENTROID	:	260.418	267.317	338.492
MIN RADIUS	:	.556	.332	.262
MEAN RADIUS	:	.879	.704	.484
MAX RADIUS	:	1.206	1.063	.624
HORIZONTAL SPREAD	:	1.691	1.691	.815
VERTICAL SPREAD	:	1.633	.829	.829
EXTREME SPREAD	:	1.893	1.841	1.163
NUMBER IN ONE INCH CIRCLE =			0	
NUMBER IN TWO INCH CIRCLE =			3	
NUMBER IN THREE INCH CIRCLE =			5	

21 Dec 1987

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CENTERFIRE PATTERNS # 2

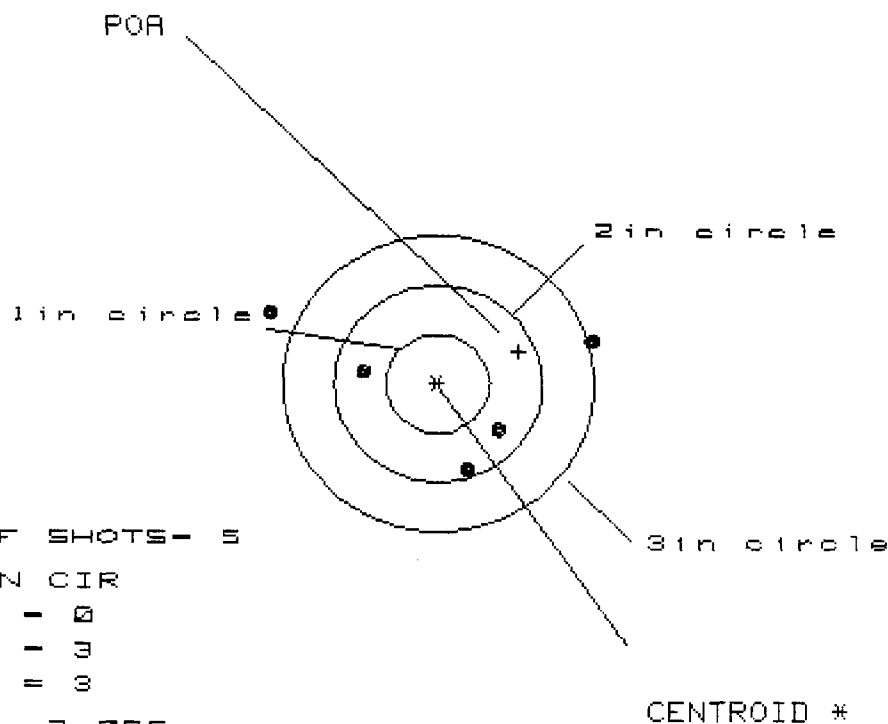


PATTERN #	2		
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.649	.381	.242
MINIMUM X	-1.073	-.416	-.319
MAXIMUM Y	.947	.794	.177
MINIMUM Y	-.612	-.528	-.264
CENTROID X	-.888	-.620	-.481
CENTROID Y	-.593	-.441	-.705
POA TO CENTROID in.	1.068	.761	.854
ANGLE POA CENTROID	213.747	215.393	235.690
MIN RADIUS	.092	.254	.274
MEAN RADIUS	.710	.528	.302
MAX RADIUS	1.235	.897	.330
HORIZONTAL SPREAD	1.722	.797	.561
VERTICAL SPREAD	1.559	1.323	.441
EXTREME SPREAD	1.850	1.466	.568
NUMBER IN ONE INCH CIRCLE =		1	
NUMBER IN TWO INCH CIRCLE =		4	
NUMBER IN THREE INCH CIRCLE =		5	

21 Dec 1987

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CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1 in = 0

2 in = 3

3 in = 3

HS = 3.086

VS = 1.543

GS = 3.095

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.463	1.058	.561
MINIMUM X	:	-1.623	-1.137	-.784
MAXIMUM Y	:	.684	.618	.537
MINIMUM Y	:	-.859	-.688	-.482
CENTROID X	:	-.783	-.378	-.730
CENTROID Y	:	-.330	-.501	-.707
POA TO CENTROID in.	:	.850	.627	1.016
ANGLE POA CENTROID	:	202.848	233.002	224.083
MIN RADIUS	:	.748	.334	.531
MEAN RADIUS	:	1.138	.861	.682
MAX RADIUS	:	1.761	1.225	.950
HORIZONTAL SPREAD	:	3.086	2.194	1.345
VERTICAL SPREAD	:	1.543	1.306	1.019
EXTREME SPREAD	:	3.095	2.213	1.470
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		3	

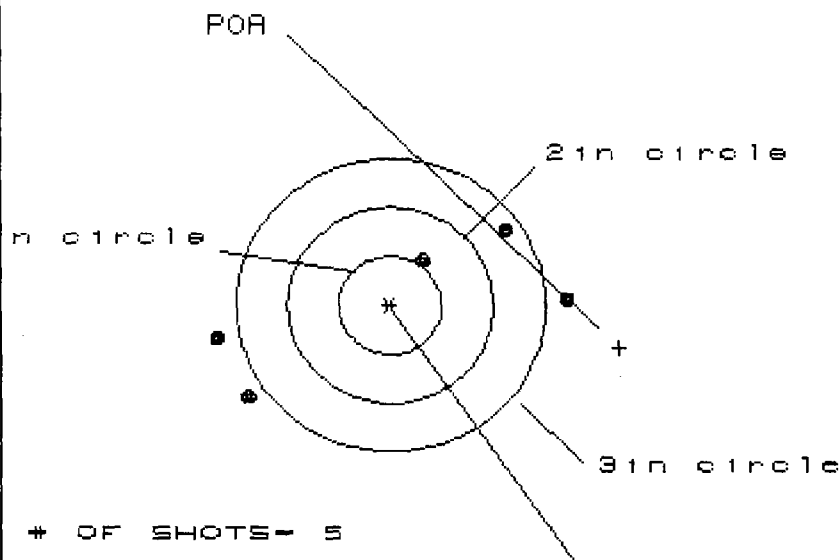
30-06 After

21 Dec 1987

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CENTERFIRE PATTERNS

1



OF SHOTS - 5

IN CIR

1 in = 0

2 in = 1

3 in = 2

HS = 3.417

VS = 1.635

GS = 3.445

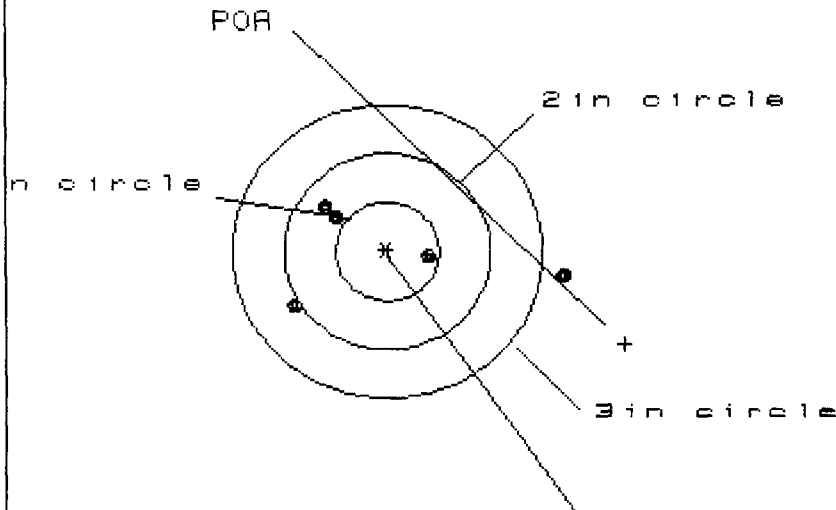
CENTROID *

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.686	1.253	1.079
MINIMUM X	:	-1.731	-1.841	-1.424
MAXIMUM Y	:	.723	.635	.634
MINIMUM Y	:	-.912	-1.000	-1.001
CENTROID X	:	-2.217	-1.784	-2.201
CENTROID Y	:	.436	.524	.525
POA TO CENTROID in.	:	2.259	1.859	2.263
ANGLE POA CENTROID	:	101.123	106.378	103.414
MIN RADIUS	:	.581	.375	.503
MEAN RADIUS	:	1.405	1.160	1.165
MAX RADIUS	:	1.767	2.095	1.740
HORIZONTAL SPREAD	:	3.417	3.094	2.503
VERTICAL SPREAD	:	1.635	1.635	1.635
EXTREME SPREAD	:	3.445	3.251	2.990
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		1	
NUMBER IN THREE INCH CIRCLE	=		2	

21 Dec 1987

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CENTERFIRE PATTERNS # 2



OF SHOTS - 5

IN CIR

1 in = 1

2 in = 3

3 in = 4

HS = 2.572

VS = .969

GS = 2.590

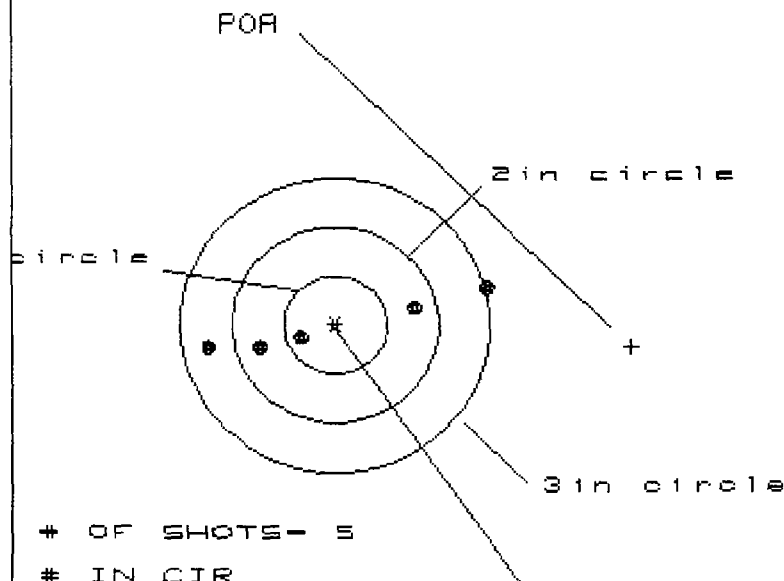
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.667	.786	.623
MINIMUM X	:	-.905	-.488	-.378
MAXIMUM Y	:	.410	.347	.139
MINIMUM Y	:	-.559	-.622	-.272
CENTROID X	:	-2.300	-2.717	-2.554
CENTROID Y	:	.945	1.008	1.216
POA TO CENTROID in.	:	2.487	2.898	2.829
ANGLE POA CENTROID	:	112.326	110.364	115.457
MIN RADIUS	:	.369	.350	.279
MEAN RADIUS	:	.903	.584	.454
MAX RADIUS	:	1.687	.791	.680
HORIZONTAL SPREAD	:	2.572	1.274	1.001
VERTICAL SPREAD	:	.969	.969	.411
EXTREME SPREAD	:	2.590	1.391	1.082
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		4	

21 Dec 1987

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CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 3

3in = 4

CENTROID *

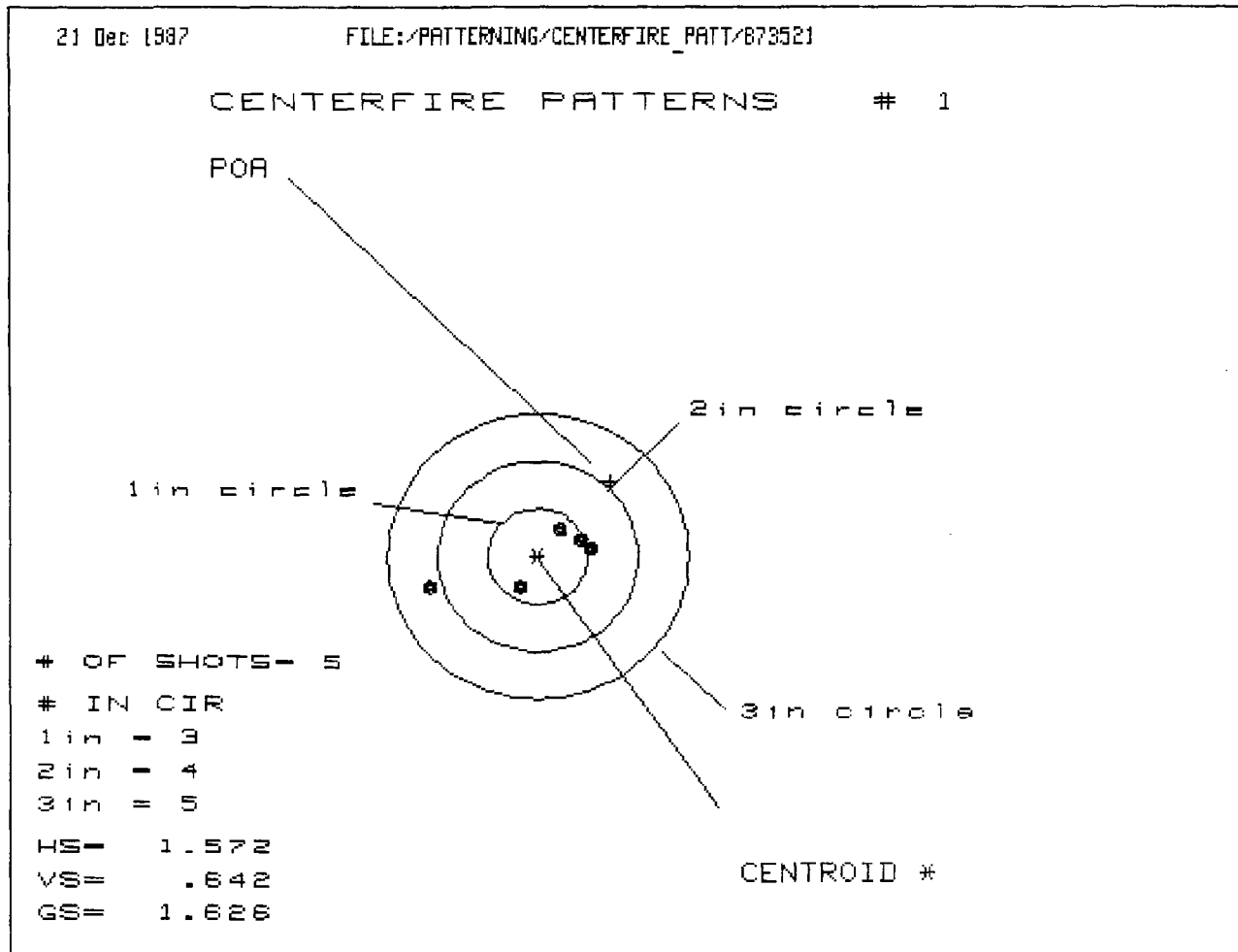
HS= 2.735

VS= .633

GS= 2.807

PATTERN #	3
SHOTS (BEST OF)	5
MAXIMUM X	1.511
MINIMUM X	-1.224
MAXIMUM Y	.412
MINIMUM Y	-.221
CENTROID X	-2.866
CENTROID Y	.222
POA TO CENTROID in.	2.875
ANGLE POA CENTROID	94.433
MIN RADIUS	.377
MEAN RADIUS	.935
MAX RADIUS	1.566
HORIZONTAL SPREAD	2.735
VERTICAL SPREAD	.633
EXTREME SPREAD	2.807
NUMBER IN ONE INCH CIRCLE =	1
NUMBER IN TWO INCH CIRCLE =	3
NUMBER IN THREE INCH CIRCLE =	4

270 Before

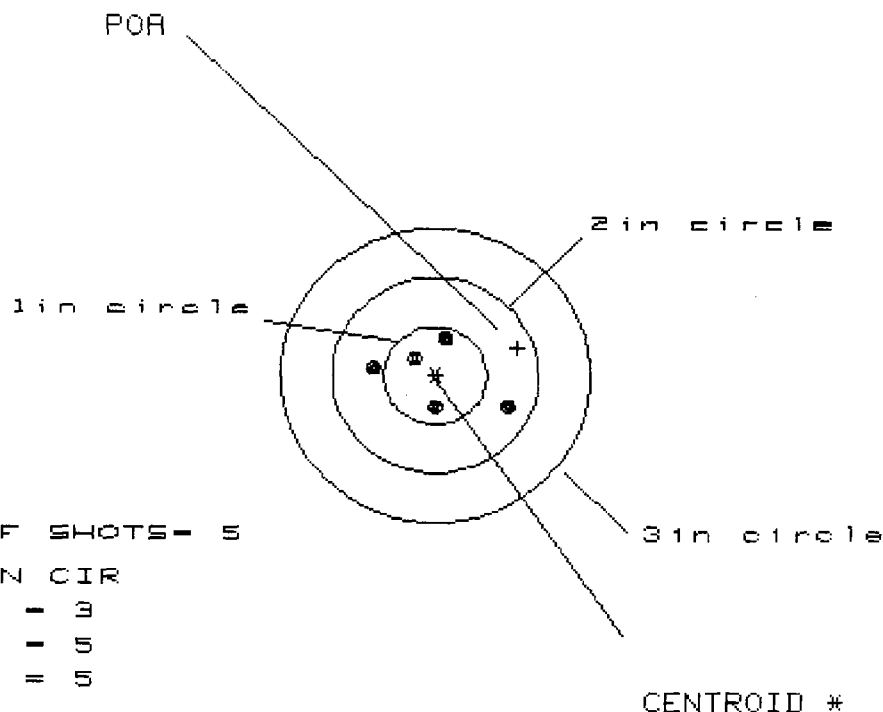


PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.544	.287	.277
MINIMUM X	-1.028	-.438	-.342
MAXIMUM Y	.316	.241	.256
MINIMUM Y	-.326	-.401	-.386
CENTROID X	-.724	-.467	-.562
CENTROID Y	-.784	-.709	-.724
POA TO CENTROID in.	1.067	.849	.916
ANGLE POA CENTROID	227.287	236.666	232.167
MIN RADIUS	.373	.216	.264
MEAN RADIUS	.573	.335	.362
MAX RADIUS	1.071	.593	.516
HORIZONTAL SPREAD	1.572	.724	.619
VERTICAL SPREAD	.642	.642	.642
EXTREME SPREAD	1.626	.849	.807
NUMBER IN ONE INCH CIRCLE =		3	
NUMBER IN TWO INCH CIRCLE =		4	
NUMBER IN THREE INCH CIRCLE =		5	

21 Dec 1987

FILE:/PATTERNING/CENTERFIRE_PATT/873521

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1 in - 3

2 in - 5

3 in - 5

HS- 1.267

VS- .783

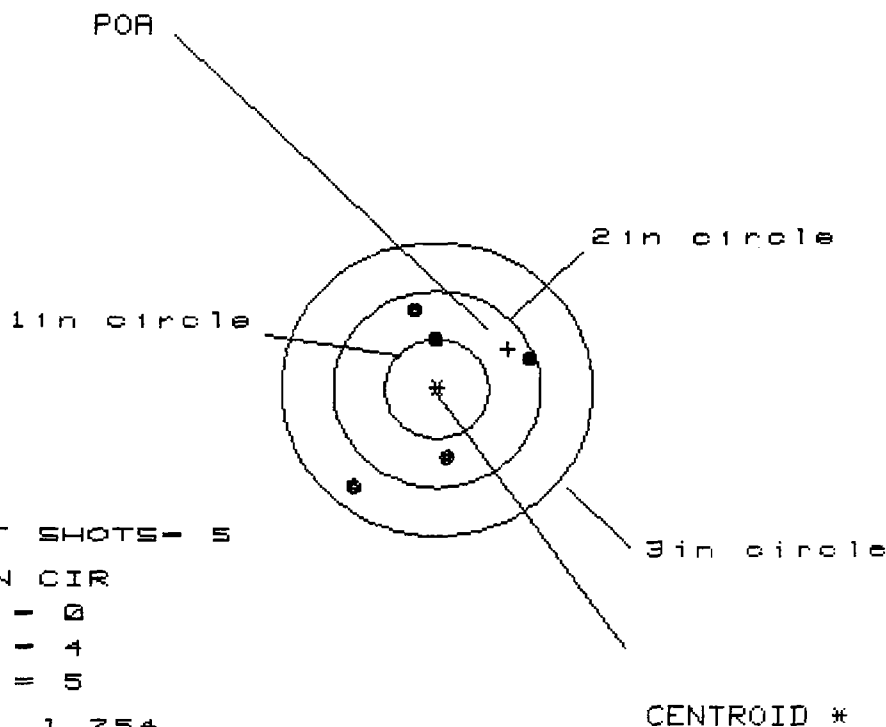
GS- 1.312

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.717	.239	.115
MINIMUM X	:	-.550	-.371	-.144
MAXIMUM Y	:	.425	.352	.343
MINIMUM Y	:	-.358	-.431	-.440
CENTROID X	:	-.800	-.980	-.856
CENTROID Y	:	-.282	-.209	-.200
POA TO CENTROID in.	:	.849	1.002	.879
ANGLE POA CENTROID	:	199.439	192.045	193.172
MIN RADIUS	:	.268	.107	.173
MEAN RADIUS	:	.477	.340	.325
MAX RADIUS	:	.775	.457	.441
HORIZONTAL SPREAD	:	1.267	.609	.259
VERTICAL SPREAD	:	.783	.783	.783
EXTREME SPREAD	:	1.312	.788	.788
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

21 Dec 1987

FILE:/PATTERNING/CENTERFIRE_PATT/B73521

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 0

2in = 4

3in = 5

HS= 1.754

VS= 1.832

GS= 2.210

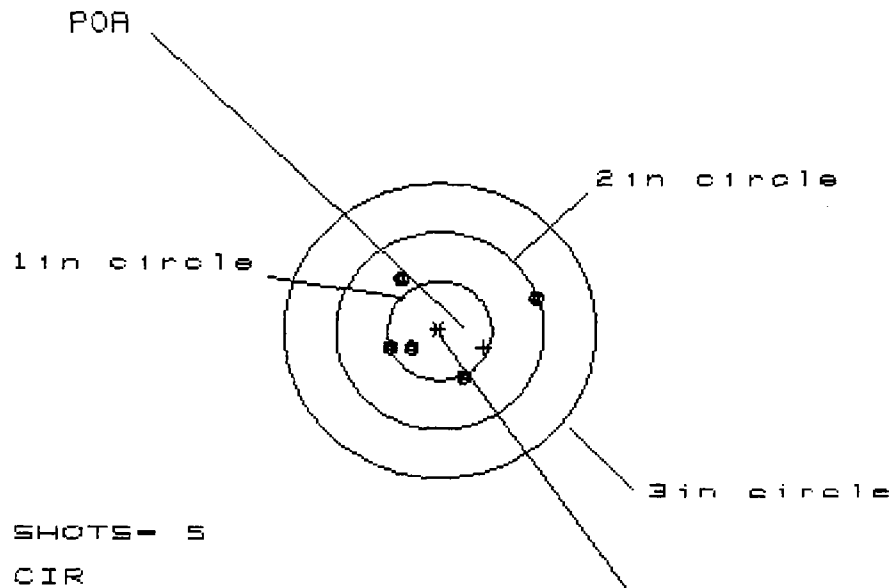
PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.913	.703	.161
MINIMUM X	:	-.841	-.406	-.171
MAXIMUM Y	:	.823	.571	.599
MINIMUM Y	:	-1.009	-.958	-.930
CENTROID X	:	-.690	-.480	-.715
CENTROID Y	:	-.409	-.157	-.185
POA TO CENTROID in.	:	.803	.505	.738
ANGLE POA CENTROID	:	210.667	198.130	194.538
MIN RADIUS	:	.555	.376	.331
MEAN RADIUS	:	.881	.686	.632
MAX RADIUS	:	1.313	.961	.943
HORIZONTAL SPREAD	:	1.754	1.109	.332
VERTICAL SPREAD	:	1.832	1.529	1.529
EXTREME SPREAD	:	2.210	1.565	1.565
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

270 After

21 Dec 1987

FILE:/PATTERNING/CENTERFIRE_PATT/873521-3

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 1

2in = 5

3in = 5

HS= 1.373

VS= 1.016

GS= 1.474

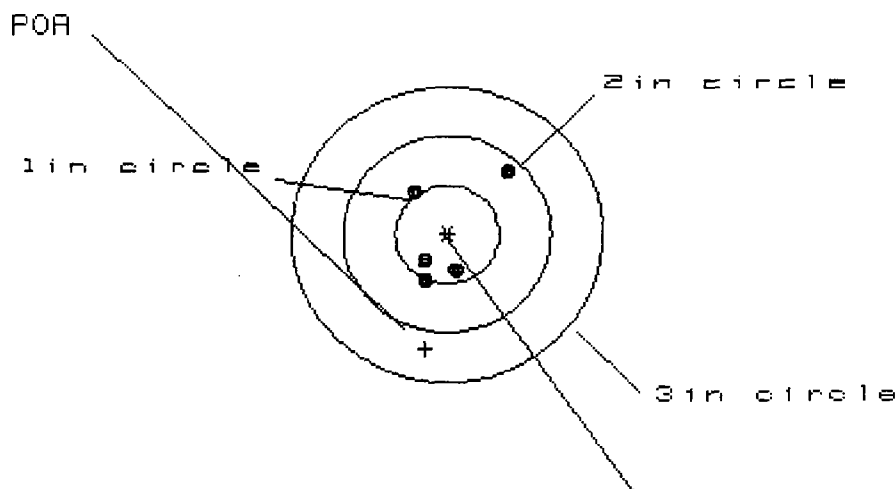
CENTROID *

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.896	.465	.418
MINIMUM X	-.477	-.253	-.300
MAXIMUM Y	.549	.630	.098
MINIMUM Y	-.467	-.386	-.176
CENTROID X	-.428	-.652	-.605
CENTROID Y	.166	.085	-.125
POA TO CENTROID in.	.459	.658	.618
ANGLE POA CENTROID	111.199	97.449	191.637
MIN RADIUS	.353	.133	.154
MEAN RADIUS	.602	.417	.306
MAX RADIUS	.952	.645	.454
HORIZONTAL SPREAD	1.373	.718	.718
VERTICAL SPREAD	1.016	1.016	.274
EXTREME SPREAD	1.474	1.182	.762
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

21 Dec 1987

FILE:/PATTERNING/CENTERFIRE_PATT/873521-3

CENTERFIRE PATTERNS # 2



OF SHOTS - 5

IN CIR

1 in = 3

2 in = 5

3 in = 5

HS = .0006

VS = 1.017

GS = 1.311

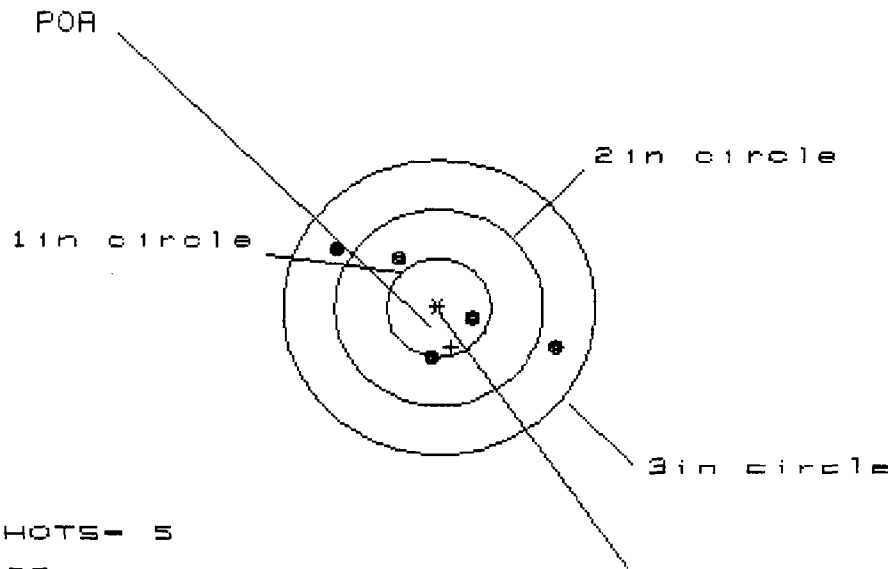
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.601	.252	.207
MINIMUM X	:	-.285	-.134	-.120
MAXIMUM Y	:	.590	.578	.102
MINIMUM Y	:	-.427	-.280	-.087
CENTROID X	:	.215	.064	.109
CENTROID Y	:	1.163	1.016	.823
POA TO CENTROID in.	:	1.183	1.018	.831
ANGLE POA CENTROID	:	79.549	86.382	82.459
MIN RADIUS	:	.306	.100	.134
MEAN RADIUS	:	.503	.327	.163
MAX RADIUS	:	.842	.593	.207
HORIZONTAL SPREAD	:	.886	.386	.327
VERTICAL SPREAD	:	1.017	.858	.189
EXTREME SPREAD	:	1.311	.875	.335
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

21 Dec 1987

FILE:/PATTERNING/CENTERFIRE_PATT/873521-3

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 3

3in = 5

HS= 2.053

VS= 1.152

GS= 2.310

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.113	.609	.388
MINIMUM X	:	-.940	-.661	-.361
MAXIMUM Y	:	.621	.512	.536
MINIMUM Y	:	-.531	-.640	-.470
CENTROID X	:	-.121	-.400	-.179
CENTROID Y	:	.399	.508	.338
POA TO CENTROID in.	:	.417	.647	.382
ANGLE POA CENTROID	:	163.061	141.814	152.027
MIN RADIUS	:	.354	.392	.394
MEAN RADIUS	:	.770	.637	.504
MAX RADIUS	:	1.197	.836	.646
HORIZONTAL SPREAD	:	2.053	1.270	.749
VERTICAL SPREAD	:	1.152	1.152	1.006
EXTREME SPREAD	:	2.310	1.474	1.060
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		5	

JACK FUNCTION

- CENTER FIRE

RETRON NO. 1

PAGE NO.

DATE: 12/23/87

MODEL: 700

CALIBER 270

SERIAL NO. B6892841

PREVIOUS
HOURS
1450

TEST TITLE, Will-doe-boy-fux Stock Repair

TTL, RIG, FIRED;
TTL, MALFUNCTIONS;
MALFUNCTION RATE;

"MALFUNCTIONS"

[illegible]

2250 rds Supports OK

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER

R2536263

DATE	VALUE	NO.
1900	100	1
1901	100	2
1902	100	3
1903	100	4
1904	100	5
1905	100	6
1906	100	7
1907	100	8
1908	100	9
1909	100	10
1910	100	11
1911	100	12
1912	100	13
1913	100	14
1914	100	15
1915	100	16
1916	100	17
1917	100	18
1918	100	19
1919	100	20
1920	100	21
1921	100	22
1922	100	23
1923	100	24
1924	100	25
1925	100	26
1926	100	27
1927	100	28
1928	100	29
1929	100	30
1930	100	31
1931	100	32
1932	100	33
1933	100	34
1934	100	35
1935	100	36
1936	100	37
1937	100	38
1938	100	39
1939	100	40
1940	100	41
1941	100	42
1942	100	43
1943	100	44
1944	100	45
1945	100	46
1946	100	47
1947	100	48
1948	100	49
1949	100	50
1950	100	51
1951	100	52
1952	100	53
1953	100	54
1954	100	55
1955	100	56
1956	100	57
1957	100	58
1958	100	59
1959	100	60
1960	100	61
1961	100	62
1962	100	63
1963	100	64
1964	100	65
1965	100	66
1966	100	67
1967	100	68
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1974	100	75
1975	100	76
1976	100	77
1977	100	78
1978	100	79
1979	100	80
1980	100	81
1981	100	82
1982	100	83
1983	100	84
1984	100	85
1985	100	86
1986	100	87
1987	100	88
1988	100	89
1989	100	90
1990	100	91
1991	100	92
1992	100	93
1993	100	94
1994	100	95
1995	100	96
1996	100	97
1997	100	98
1998	100	99
1999	100	100

CALIBER

SERIAL NO. B 689 2841

250
BRIMON
LAKI AALI

TEST TITLE. Will-doe-boy Fix.

TTL. RIX. FIRED!
TTL. MALFUNCTION!
MALFUNCTION DATE!

"FALFCTIONS"

R2536264

~~Amesbury~~ & Rynite
ARLON

880181
Model 700

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☒ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance		AREA OF TESTING ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☒ Design Change ☐ Stake <u>ALOT</u> ☐ Plant Assistance ☐ Other	
FIREARM STAT'S. MODEL: <u>700</u> CAL or GAGE: <u>30-06 / 300 W.M.</u> BARREL TYPE: <u>BDL</u> PROOFED: YES ☒ NO ☐		REPORT REQ'D. FORMAL ☒ TEST RESULTS ONLY ☐	
		DATE REQUESTED: <u>1-18-88</u> DATE NEEDED BY: <u>2-26-88</u> REQUESTED BY: <u>F.H. SMITH</u> WORK ORDER NO: <u>481157</u>	

TEST TYPE			
☒ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☒ Environmental Test	☐ Measurements	☐ Other _____
☒ Accuracy Test	☐ Customer Complaint	☒ Endurance Test	☐ _____

EXPLAIN IN DETAIL THE REASON FOR THIS TEST: TO EVALUATE SYNTHETIC LONG STOCKS

MADE OF DUPONT MAT'L. ACRYLON & RYNITE;

- ACCURACY TEST (6 STOCKS OF EACH MAT'L - APPROX 18 TOTAL)

AMBIENT

+250°F

-40°F

RETURN TO AMBIENT & SHOOT

- STRENGTH (2 STOCKS OF EACH MAT'L.)

*100 Proof RDS EACH (75 Proof & 25 Rec) 5 done
1,415 to do

STANDARD SAMMI DROP TEST

- ENVIRONMENTAL (2 STOCKS OF EACH MAT'L.)

PLACE GUNS ON ROOF

- SOLVENT

CUT SECTIONS OF STOCKS, w/ RECOIL PAD, PLACED IN HOPPERS OR
SIMILAR SOLVENT TO DETERMINE EFFECT ON MAT'L.

GUNS REQUIRED:

BARRELED ACTIONS & STOCK SECTIONS TO BE PROVIDED
BY REQUESTOR. (30/06 & 300 W.M. MAG. ACTIONS
PLUS CONTROL GUNS.)

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 3/18/88

TEST COMPLETED BY: LAB

REPORT DATE: _____

"JAR OFF TEST"

FIREARM # C6203696 RYHTE

REPORT # 880181

MODEL 700

W.O. # 481157

TRIGGER PULL LBS. ✓

SAFE "OFF" POSITION

J.O. = "JAR OFF"

	SAAMI SPEC								
	12" DROP			18" DROP			24" DROP		
	#1	2	3	#1	2	3	#1	2	3
BAR. VERT. MUZZLE UP	OK			OK			OK		
" " MUZZLE DOWN	OK			OK			OK		
BAR. HORIZ. BOTTOM UP	OK			OK			OK		
" " BOTTOM DOWN	OK			OK			OK		
" " LEFT SIDE UP	OK			OK			OK		
" " RIGHT SIDE UP	OK			OK			OK		

"DROP TEST"

SAFE "ON" POSITION

	SAAMI SPEC.								
	48" DROP			54" DROP					
	#1	2	3	#1	2	3			
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORIZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	OK			OK					
" " LEFT SIDE UP	OK			OK					
" " RIGHT SIDE UP	OK			OK					

"ROTATION TEST"

SAFE "ON" POSITION

SAAMI SPEC.

ALL DROPS ON 1" 85 ± 5

DUROMETER (SHORE A) RUBBER

MAT BACKED BY CONCRETE

RIGHT
SIDE UP

#1 2 3

OK

LEFT
SIDE UP

#1 2 3

OK

"JAR OFF TEST"

FIREARM # B6862427 RYNITE

REPORT # 880181

MODEL 700

W.O. # 481157

TRIGGER PULL LBS. ✓

SAFE "OFF" POSITION

J.O. = "JAR OFF"

	SAAMI SPEC								
	12" DROP			18" DROP			24" DROP		
	#1	2	3	#1	2	3	#1	2	3
BAR. VERT. MUZZLE UP	OK			OK			OK		
" " MUZZLE DOWN	OK			OK			OK		
BAR. HORIZ. BOTTOM UP	OK			OK			OK		
" " BOTTOM DOWN	OK			OK			OK		
" " LEFT SIDE UP	OK			OK			OK		
" " RIGHT SIDE UP	OK			OK			OK		

"DROP TEST"

SAFE "ON" POSITION

	SAAMI SPEC.								
	48" DROP			54" DROP					
	#1	2	3	#1	2	3			
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORIZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	OK			OK					
" " LEFT SIDE UP	OK			OK					
" " RIGHT SIDE UP	OK			OK					

"ROTATION TEST"

SAFE "ON" POSITION

SAAMI SPEC.								
ALL DROPS ON 1" 85 ± 5								
DUROMETER (SHORE A) RUBBER								
MAT BACKED BY CONCRETE								
			RIGHT SIDE UP			LEFT SIDE UP		
			#1	2	3	#1	2	3
			OK			OK		

*STOCKS CRACKED FROM 250° F. TEMP. WHEN RECEIVED

"JAR OFF TEST"

FIREARM # B 6893419- F.G.

REPORT # 880181

MODEL 700 LH.

W.O. # 481157

TRIGGER PULL LBS. ✓

SAFE "OFF" POSITION

	SAAMI SPEC								
	12" DROP			18" DROP			24" DROP		
	#1	2	3	#1	2	3	#1	2	3
<u>J.O. = "JAR OFF"</u>									
BAR. VERT. MUZZLE UP	OK			OK			OK		
" " MUZZLE DOWN	OK			OK			OK		
BAR. HORIZ. BOTTOM UP	OK			OK			OK		
" " BOTTOM DOWN	OK			OK			OK		
" " LEFT SIDE UP	OK			OK			OK		
" " RIGHT SIDE UP	OK			OK			OK		

"DROP TEST"

SAFE "ON" POSITION

	SAAMI SPEC.								
	48" DROP			54" DROP					
	#1	2	3	#1	2	3			
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORIZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	OK			OK					
" " LEFT SIDE UP	OK			OK					
" " RIGHT SIDE UP	OK			OK					

"ROTATION TEST"

SAFE "ON" POSITION

SAAMI SPEC.								
ALL DROPS ON 1" 85±5								
DURUMETER (SHORE A) RUBBER								
MAT BACKED BY CONCRETE								
			RIGHT SIDE UP			LEFT SIDE UP		
			#1	2	3	#1	2	3
			OK			OK		

* STOCK & FORE-END CRACKED - FROM 260°F TEMP. WHEN RECEIVED.
BUTT PAD SEPERATED FROM STOCK.

JAR OFF TEST

FIREARM # 36893598

REPORT # 880181

MODEL 700

W.O. # 481157

TRIGGER PULL LBS. ✓

SAFE "OFF" POSITION

J.O. = "JAR OFF"

	SAAMI SPEC								
	12" DROP			18" DROP			24" DROP		
	#1	2	3	#1	2	3	#1	2	3
BAR. VERT. MUZZLE UP	OK			OK			OK		
" " MUZZLE DOWN	OK			OK			OK		
BAR. HORIZ. BOTTOM UP	OK			OK			OK		
" " BOTTOM DOWN	OK			OK			OK		
" " LEFT SIDE UP	OK			OK			OK		
" " RIGHT SIDE UP	OK			OK			OK		

"DROP TEST"

SAFE "ON" POSITION

	SAAMI SPEC.								
	48" DROP			54" DROP					
	#1	2	3	#1	2	3			
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORIZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	X			OK					
" " LEFT SIDE UP	OK			OK					
" " RIGHT SIDE UP	OK			OK					

TRIGGER GUARD BENT

"ROTATION TEST"

SAFE "ON" POSITION

SAAMI SPEC.

ALL DROPS ON 1" 85 ± 5

DUROMETER (SHORE A) RUBBER

MAT BACKED BY CONCRETE

RIGHT SIDE UP

#1 2 3

OK

LEFT SIDE UP

#1 2 3

OK

"JAR OFF TEST"

FIREARM # B6835137 ARY-F.

REPORT # 880181

MODEL 700

W.O. # 48157

TRIGGER Pull LBS. ✓

SAFE "OFF" POSITION

J.O. = "JAR OFF"

	SAAMI SPEC								
	12" DROP			18" DROP			24" DROP		
	#1	2	3	#1	2	3	#1	2	3
BAR. VERT. MUZZLE UP	OK			OK			OK		
" " MUZZLE DOWN	OK			OK			OK		
BAR. HORIZ. BOTTOM UP	OK			OK			OK		
" " BOTTOM DOWN	OK			OK			OK		
" " LEFT SIDE UP	OK			X			OK		
" " RIGHT SIDE UP	OK			OK			OK		

F.S. RAMP BROKE OFF.

"DROP TEST"

SAFE "ON" POSITION

	SAAMI SPEC.								
	48" DROP			54" DROP					
	#1	2	3	#1	2	3			
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORIZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	OK			OK					
" " LEFT SIDE UP	OK			OK					
" " RIGHT SIDE UP	OK			OK					

"ROTATION TEST"

SAFE "ON" POSITION

SAAMI SPEC.								
ALL DROPS ON 1" 85 ± 5								
DIAMETER (SHORE A) RUBBER								
MAT BACKED BY CONCRETE								
			RIGHT SIDE UP			LEFT SIDE UP		
			#1	2	3	#1	2	3
			OK			OK		

"JAR OFF TEST"

FIREARM # B6829419 AYRMON

REPORT # 880181

MODEL 700

W.O. # 481157

TRIGGER PULL LBS. ✓

SAFE "OFF" POSITION

J.O. = "JAR OFF"

	SAAMI SPEC								
	12" DROP			18" DROP			24" DROP		
	#1	2	3	#1	2	3	#1	2	3
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	OK			OK					
" " LEFT SIDE UP	OK			OK					
" " RIGHT SIDE UP	OK			OK					

"DROP TEST"

SAFE "ON" POSITION

	SAAMI SPEC.								
	48" DROP			54" DROP					
	#1	2	3	#1	2	3			
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	OK			X					
" " LEFT SIDE UP	X			OK					
" " RIGHT SIDE UP	OK			OK					

X BUTT PAD BROKE OFF

X PIECE BROKE OUT OF BUTT TOE AREA

"ROTATION TEST"

SAFE "ON" POSITION

SAAMI SPEC.
ALL DROPS ON 1" 85 ± 5
DIAMETER (SHORE A) RUBBER
MAT BACKED BY CONCRETE

RIGHT SIDE UP		
#1	2	3
OK		

LEFT SIDE UP		
#1	2	3
OK		

"JAR OFF TEST"

FIREARM # BL6829937 ARY-F

REPORT # 880181

MODEL 700

W.O. # 481157

TRIGGER PULL LBS. ✓

SAFE "OFF" POSITION

J.O. = "JAR OFF"

	SAAMI SPEC								
	12" DROP			18" DROP			24" DROP		
	#1	2	3	#1	2	3	#1	2	3
BAR. VERT. MUZZLE UP	OK			OK			OK		
" " MUZZLE DOWN	OK			OK			OK		
BAR. HORIZ. BOTTOM UP	OK			OK			OK		
" " BOTTOM DOWN	OK			OK			OK		
" " LEFT SIDE UP	OK			OK			OK		
" " RIGHT SIDE UP	OK			OK			OK		

"DROP TEST"

SAFE "ON" POSITION

	SAAMI SPEC.								
	48" DROP			54" DROP					
	#1	2	3	#1	2	3			
BAR. VERT. MUZZLE UP	OK			OK					
" " MUZZLE DOWN	OK			OK					
BAR. HORIZ. BOTTOM UP	OK			OK					
" " BOTTOM DOWN	OK			OK					
" " LEFT SIDE UP	OK			OK					
" " RIGHT SIDE UP	OK			OK					

"ROTATION TEST"

SAFE "ON" POSITION

SAAMI SPEC.
ALL DROPS ON 1" 85 ± 5
DIAMETER (SHORE A) RUBBER
MAT BACKED BY CONCRETE

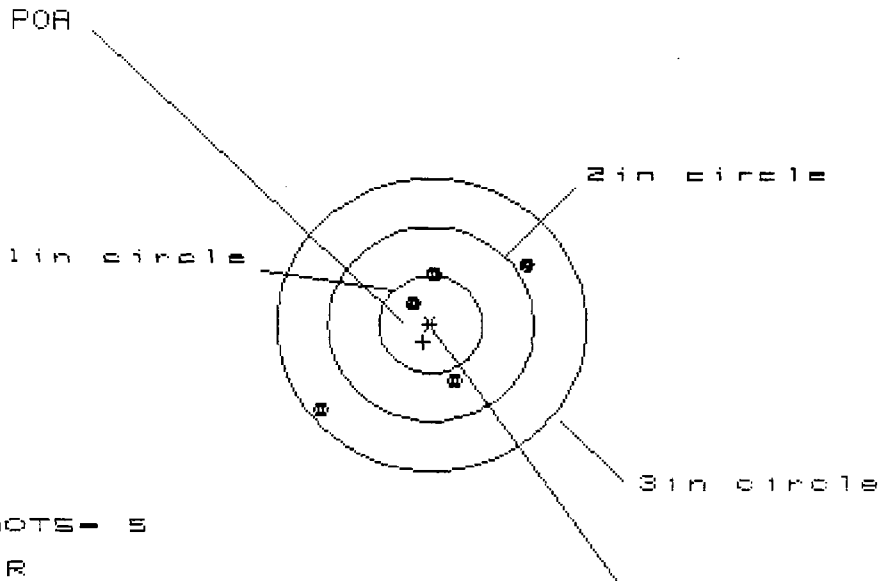
RIGHT SIDE UP		
#1	2	3
OK		

LEFT SIDE UP		
#1	2	3
OK		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3419 - CONTROL

CENTERFIRE PATTERNS # 1



AVG. G.S. = 2.236
A.M.R. = .743

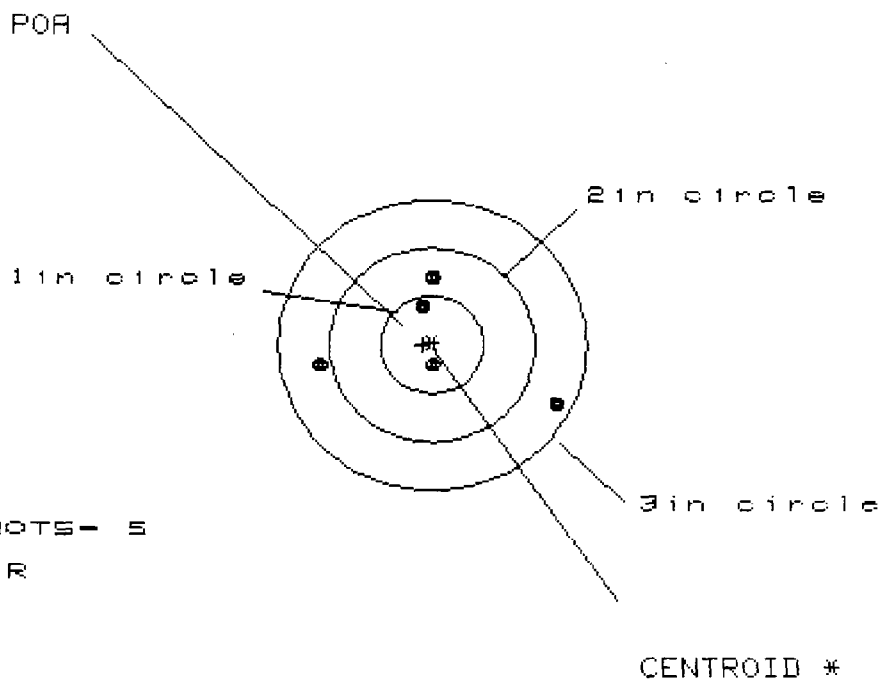
J.E.S

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.970	.712	.161
MINIMUM X	:	-1.030	-.390	-.153
MAXIMUM Y	:	.606	.393	.451
MINIMUM Y	:	-.856	-.746	-.616
CENTROID X	:	.074	.332	.095
CENTROID Y	:	.177	.390	.260
POA TO CENTROID in.	:	.192	.513	.276
ANGLE POA CENTROID	:	67.155	49.629	69.970
MIN RADIUS	:	.281	.391	.224
MEAN RADIUS	:	.772	.590	.437
MAX RADIUS	:	1.339	.813	.636
HORIZONTAL SPREAD	:	2.000	1.102	.314
VERTICAL SPREAD	:	1.462	1.139	1.067
EXTREME SPREAD	:	2.477	1.385	1.080
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3419

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 5

HS= 2.213

VS= 1.268

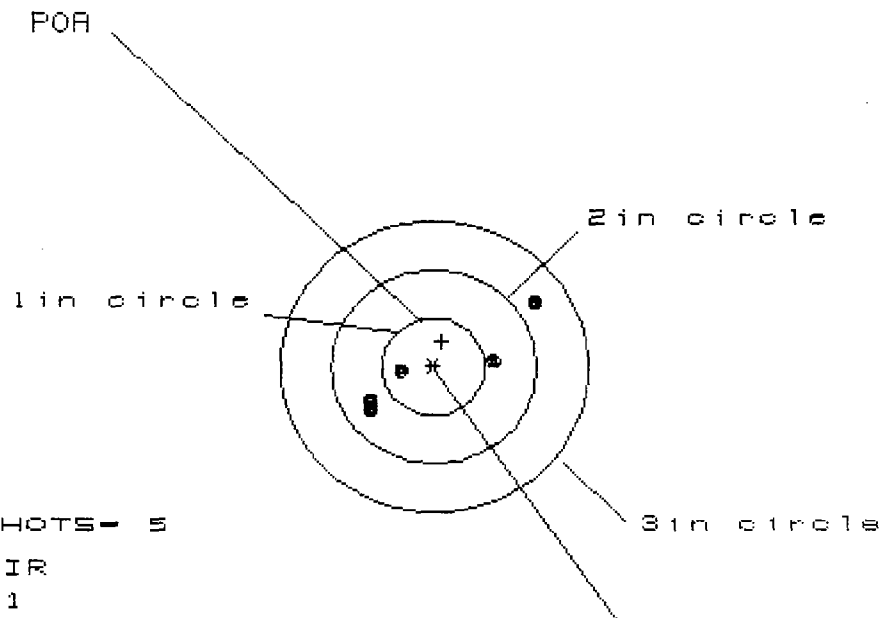
GS= 2.248

PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.165	.330	.078
MINIMUM X	-1.048	-.756	-.079
MAXIMUM Y	.679	.532	.417
MINIMUM Y	-.589	-.397	-.512
CENTROID X	.091	-.201	.051
CENTROID Y	.003	.150	.265
POA TO CENTROID in.	.091	.251	.270
ANGLE POA CENTROID	2.023	126.858	79.024
MIN RADIUS	.253	.271	.123
MEAN RADIUS	.736	.552	.353
MAX RADIUS	1.306	.830	.518
HORIZONTAL SPREAD	2.213	1.086	.157
VERTICAL SPREAD	1.268	.929	.929
EXTREME SPREAD	2.248	1.336	.932
NUMBER IN ONE INCH CIRCLE =	2		
NUMBER IN TWO INCH CIRCLE =	3		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3419

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 5

HS= 1.690

VS= 1.109

GS= 1.983

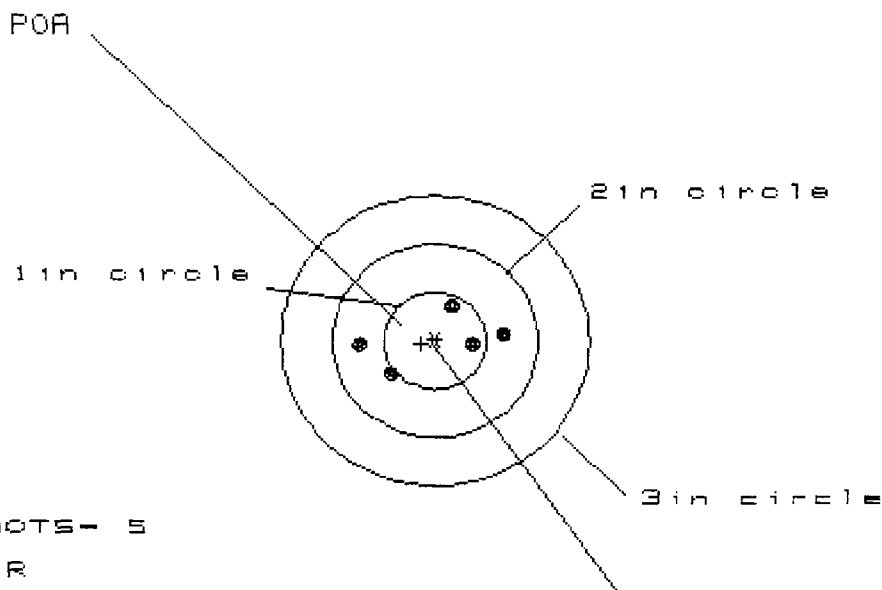
CENTROID #

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.026	.823	.687
MINIMUM X	:	-.664	-.407	-.459
MAXIMUM Y	:	.704	.198	.145
MINIMUM Y	:	-.405	-.229	-.282
CENTROID X	:	-.080	-.337	-.201
CENTROID Y	:	-.263	-.439	-.386
POA TO CENTROID in.	:	.275	.553	.435
ANGLE POA CENTROID	:	253.041	232.509	242.513
MIN RADIUS	:	.349	.210	.266
MEAN RADIUS	:	.722	.472	.502
MAX RADIUS	:	1.244	.846	.702
HORIZONTAL SPREAD	:	1.690	1.230	1.146
VERTICAL SPREAD	:	1.109	.427	.427
EXTREME SPREAD	:	1.983	1.280	1.223
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB2900. CONTROL

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1 in = 2

2 in = 5

3 in = 5

HS= 1.323

VS= .739

GS= 1.324

AVG- GS- 1.640
AVG- M.R- .6723

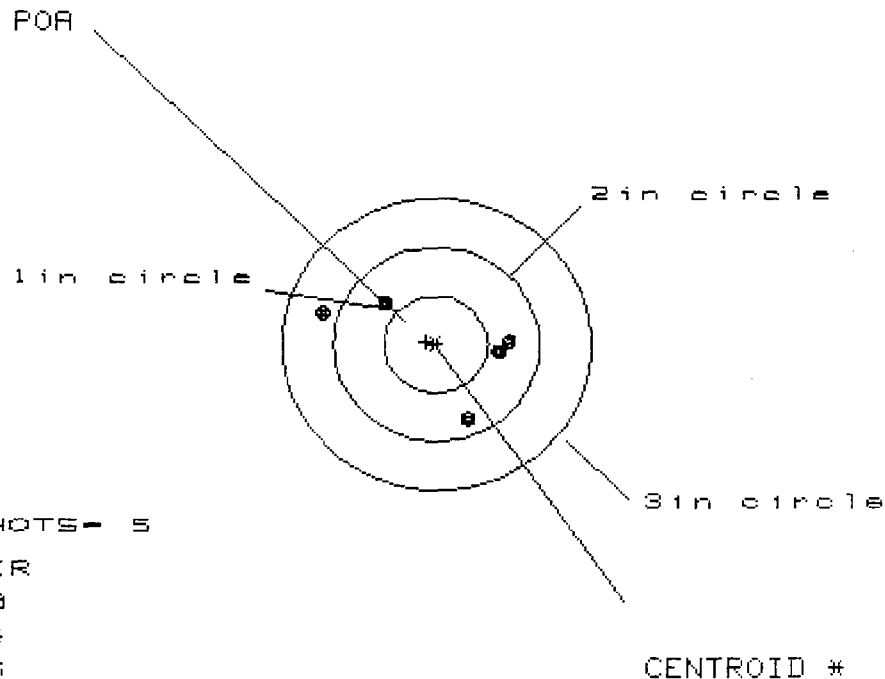
J.E.S.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.627	.453	.294
MINIMUM X	:	-.696	-.620	-.469
MAXIMUM Y	:	.393	.389	.396
MINIMUM Y	:	-.346	-.350	-.343
CENTROID X	:	.133	.307	.156
CENTROID Y	:	.031	.035	.028
POA TO CENTROID in.	:	.137	.309	.159
ANGLE POA CENTROID	:	13.183	6.499	10.036
MIN RADIUS	:	.322	.155	.299
MEAN RADIUS	:	.530	.428	.438
MAX RADIUS	:	.696	.712	.581
HORIZONTAL SPREAD	:	1.323	1.073	.763
VERTICAL SPREAD	:	.739	.739	.739
EXTREME SPREAD	:	1.324	1.136	.981
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB2908

CENTERFIRE PATTERNS # 2



OF SHOTS - 5

IN CIR

1 in = 0

2 in = 4

3 in = 5

HS = 1.799

VS = 1.267

GS = 1.814

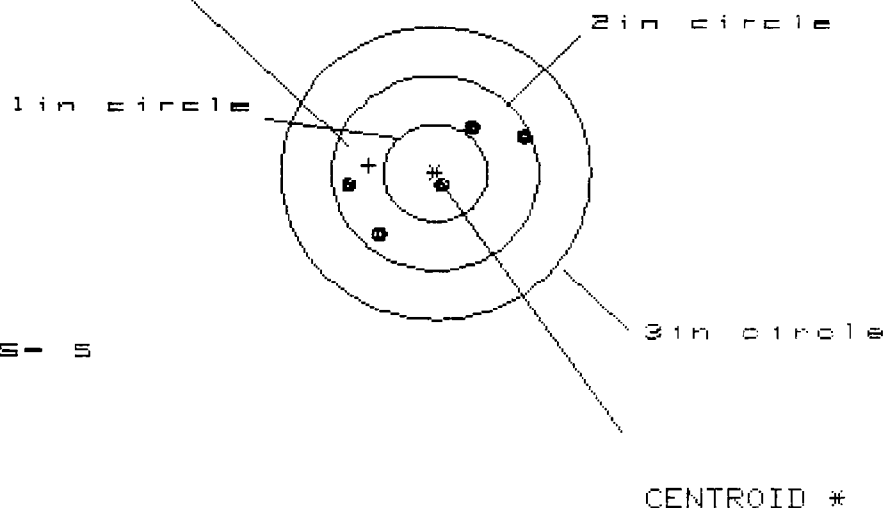
PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.680	.400	.400
MINIMUM X	-1.119	-.760	-.760
MAXIMUM Y	.467	.544	.303
MINIMUM Y	-.800	-.723	-.212
CENTROID X	.097	.377	.377
CENTROID Y	-.031	-.108	.133
POA TO CENTROID in.	.102	.392	.400
ANGLE POA CENTROID	287.655	285.975	19.432
MIN RADIUS	.641	.361	.410
MEAN RADIUS	.801	.611	.549
MAX RADIUS	1.161	.935	.818
HORIZONTAL SPREAD	1.799	1.160	1.160
VERTICAL SPREAD	1.267	1.267	.515
EXTREME SPREAD	1.814	1.478	1.233
NUMBER IN ONE INCH CIRCLE =		0	
NUMBER IN TWO INCH CIRCLE =		4	
NUMBER IN THREE INCH CIRCLE =		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB2908

CENTERFIRE PATTERNS # 3

POA



OF SHOTS- 5

IN CIR

1in = 1

2in = 5

3in = 5

HS= 1.700

VS= 1.179

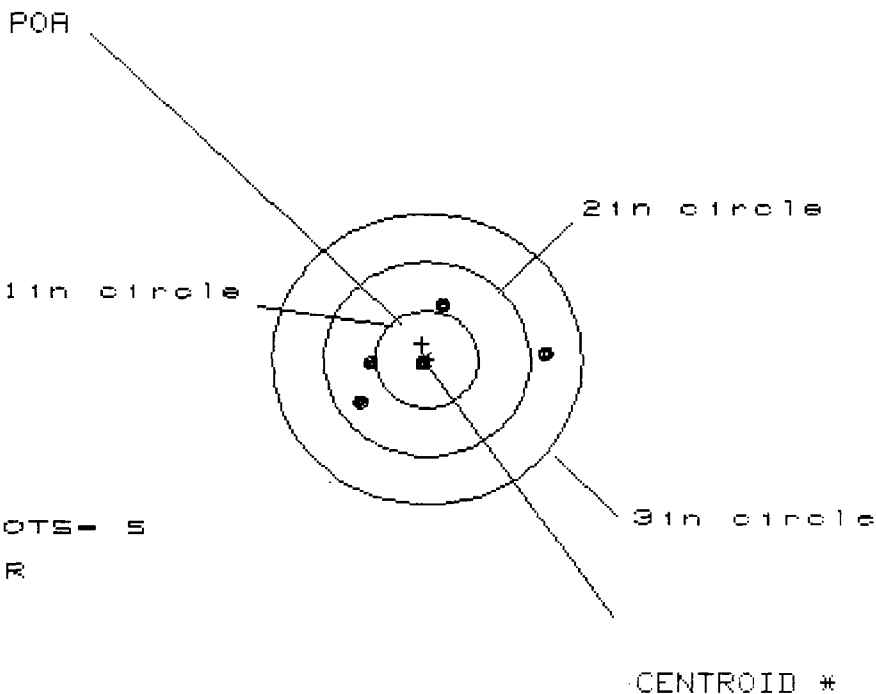
GS= 1.784

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.869	.622	.418
MINIMUM X	:	-.831	-.614	-.495
MAXIMUM Y	:	.509	.612	.603
MINIMUM Y	:	-.670	-.567	-.576
CENTROID X	:	.644	.427	.631
CENTROID Y	:	-.075	-.178	-.169
POA TO CENTROID in.	:	.648	.462	.654
ANGLE POA CENTROID	:	276.643	292.641	285.014
MIN RADIUS	:	.138	.283	.082
MEAN RADIUS	:	.686	.602	.525
MAX RADIUS	:	.962	.873	.759
HORIZONTAL SPREAD	:	1.700	1.236	.913
VERTICAL SPREAD	:	1.179	1.179	1.179
EXTREME SPREAD	:	1.784	1.491	1.491
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB353B- CONTROL

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 5

HS= 1.826

VS= .990

GS= 1.891

AGS= 2.075
AMR= .791

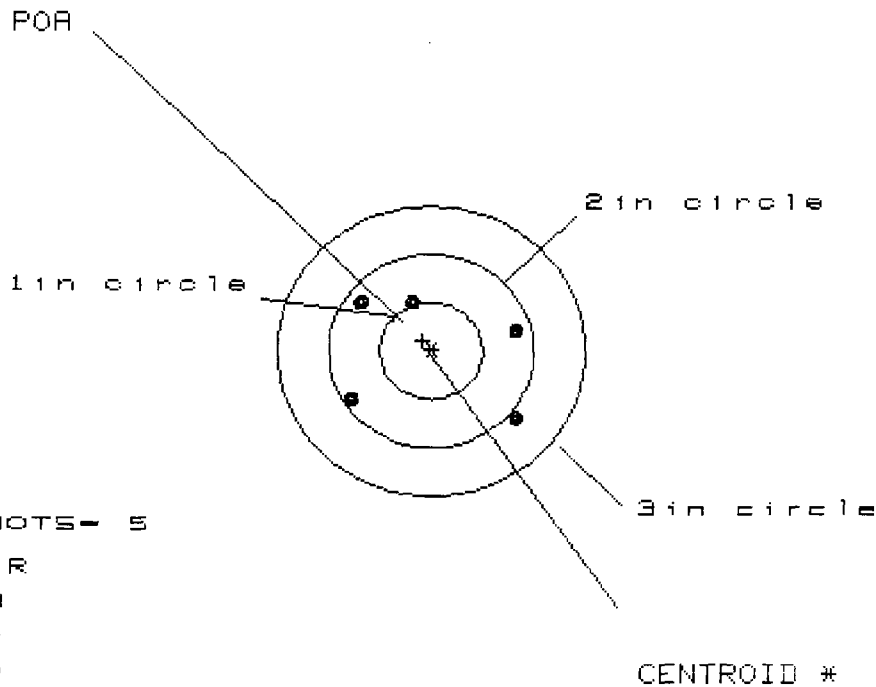
J.E.S.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.143	.481	.348
MINIMUM X	:	-.683	-.397	-.428
MAXIMUM Y	:	.512	.515	.357
MINIMUM Y	:	-.478	-.475	-.207
CENTROID X	:	.045	-.241	-.108
CENTROID Y	:	-.161	-.164	-.006
POA TO CENTROID in.	:	.167	.291	.108
ANGLE POA CENTROID	:	344.347	214.303	183.170
MIN RADIUS	:	.091	.217	.222
MEAN RADIUS	:	.639	.459	.391
MAX RADIUS	:	1.143	.705	.499
HORIZONTAL SPREAD	:	1.826	.878	.776
VERTICAL SPREAD	:	.990	.990	.564
EXTREME SPREAD	:	1.891	1.323	.927
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3598

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 0

2in = 4

3in = 5

HS= 1.568

VS= 1.263

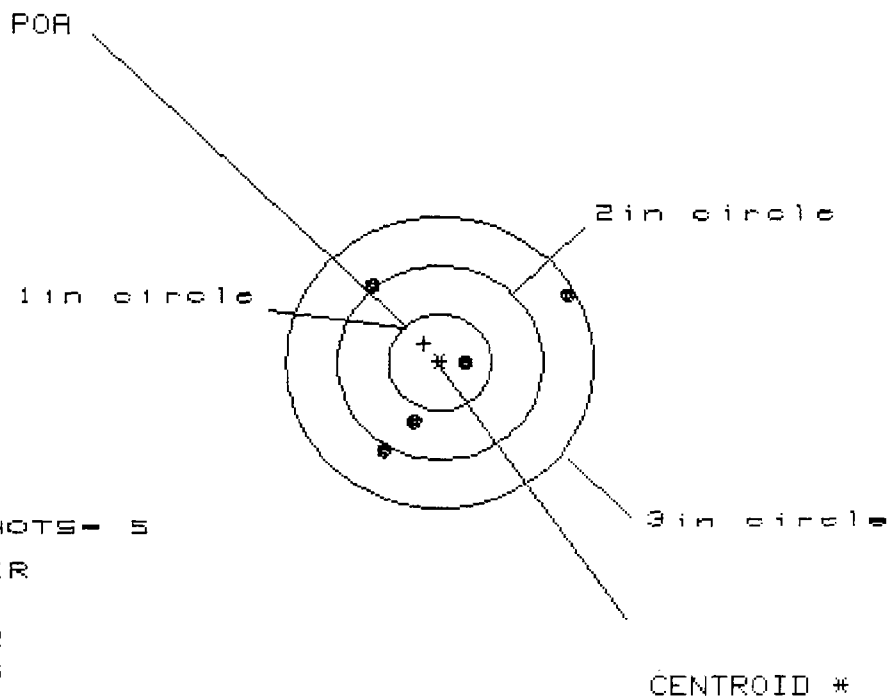
GS= 1.898

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.829	1.023	.841
MINIMUM X	:	-.739	-.545	-.653
MAXIMUM Y	:	.527	.343	.107
MINIMUM Y	:	-.736	-.708	-.188
CENTROID X	:	.080	-.114	.068
CENTROID Y	:	-.106	.078	.314
POA TO CENTROID in.	:	.133	.138	.321
ANGLE POA CENTROID	:	323.078	124.295	77.826
MIN RADIUS	:	.564	.343	.217
MEAN RADIUS	:	.846	.707	.579
MAX RADIUS	:	1.069	1.024	.862
HORIZONTAL SPREAD	:	1.568	1.568	1.494
VERTICAL SPREAD	:	1.263	1.051	.295
EXTREME SPREAD	:	1.898	1.741	1.518
NUMBER IN ONE INCH CIRCLE =			0	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB359B

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1in = 1

2in = 2

3in = 5

HS= 1.838

VS= 1.712

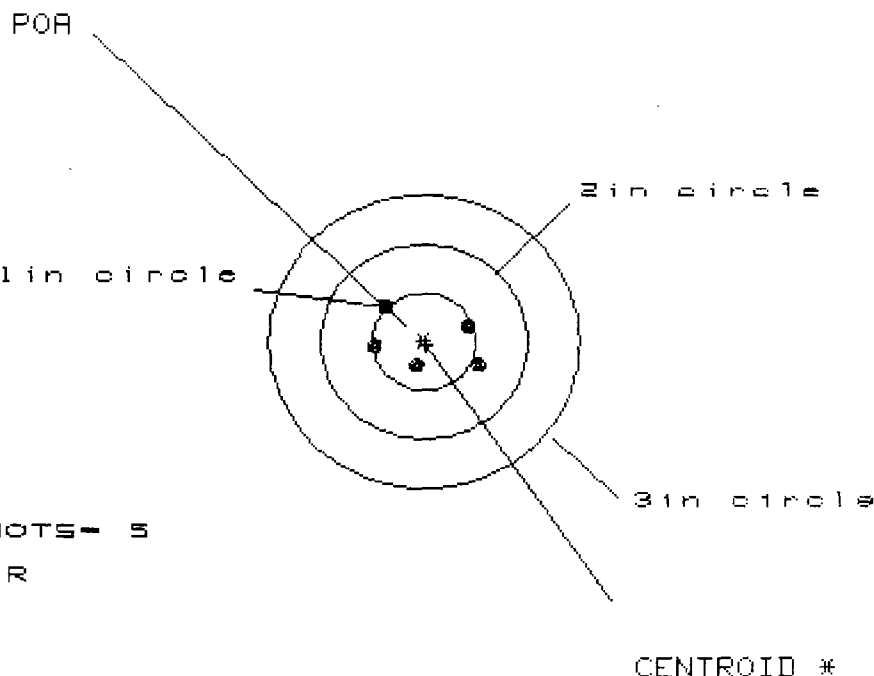
GS= 2.438

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.218	.545	.448
MINIMUM X	:	-.620	-.316	-.413
MAXIMUM Y	:	.823	1.008	.773
MINIMUM Y	:	-.889	-.704	-.671
CENTROID X	:	.154	-.150	-.053
CENTROID Y	:	-.195	-.380	-.145
POA TO CENTROID in.	:	.248	.409	.155
ANGLE POA CENTROID	:	321.700	248.394	249.848
MIN RADIUS	:	.247	.440	.460
MEAN RADIUS	:	.888	.705	.669
MAX RADIUS	:	1.425	1.056	.877
HORIZONTAL SPREAD	:	1.838	.861	.861
VERTICAL SPREAD	:	1.712	1.712	1.444
EXTREME SPREAD	:	2.438	1.712	1.492
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			2	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3696 Rynite

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 2

2in = 5

3in = 5

HS = 1.042

VS = .665

GS = 1.092

A.G.S. 1.456

A.M.B. .552

D.R.T.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.528	.551	.476
MINIMUM X	:	-.514	-.382	-.457
MAXIMUM Y	:	.383	.319	.195
MINIMUM Y	:	-.282	-.346	-.239
CENTROID X	:	-.019	-.151	-.076
CENTROID Y	:	.037	.101	-.006
POA TO CENTROID in.	:	.042	.182	.076
ANGLE POA CENTROID	:	152.447	123.668	184.264
MIN RADIUS	:	.292	.350	.240
MEAN RADIUS	:	.473	.422	.405
MAX RADIUS	:	.587	.558	.514
HORIZONTAL SPREAD	:	1.042	.933	.933
VERTICAL SPREAD	:	.665	.665	.434
EXTREME SPREAD	:	1.092	.945	.945
NUMBER IN ONE INCH CIRCLE	=	2		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3636

CENTERFIRE PATTERNS # 2

POA

1in circle

2in circle

3in circle

CENTROID #

OF SHOTS- 5

IN CIR

1in = 2

2in = 5

3in = 5

HS= 1.297

VS= 1.242

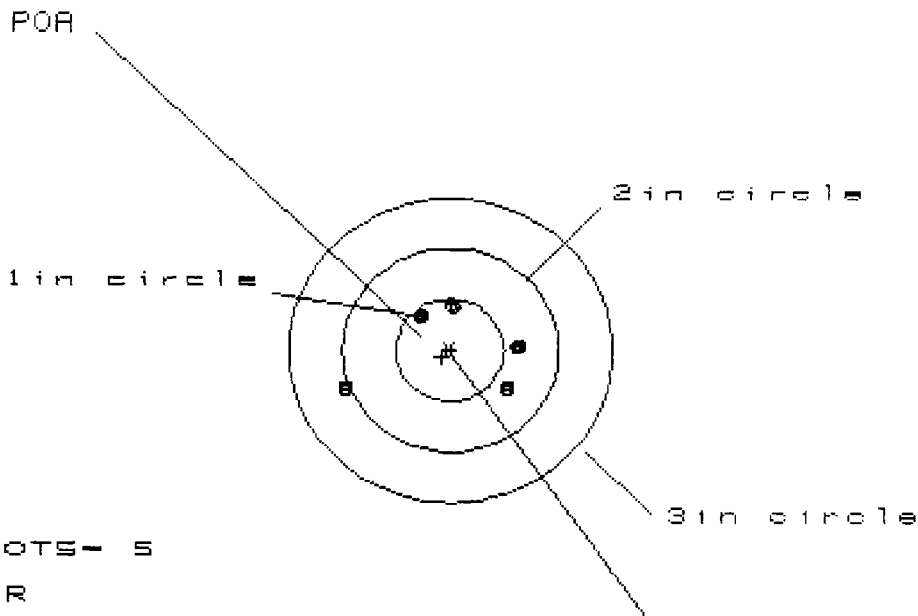
GS= 1.615

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.779	.457	.437
MINIMUM X	:	-.518	-.323	-.343
MAXIMUM Y	:	.690	.552	.159
MINIMUM Y	:	-.552	-.280	-.096
CENTROID X	:	.014	-.181	-.161
CENTROID Y	:	.164	.302	.118
POA TO CENTROID in.	:	.165	.352	.200
ANGLE POA CENTROID	:	85.127	149.120	126.316
MIN RADIUS	:	.283	.078	.184
MEAN RADIUS	:	.560	.395	.327
MAX RADIUS	:	.955	.555	.441
HORIZONTAL SPREAD	:	1.297	.780	.780
VERTICAL SPREAD	:	1.242	.832	.255
EXTREME SPREAD	:	1.615	.950	.781
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AM83696

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 2

2in = 4

3in = 5

HS= 1.604

VS= .802

GS= 1.662

CENTROID #

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.638	.397	.420
MINIMUM X	:	-.966	-.513	-.381
MAXIMUM Y	:	.404	.304	.284
MINIMUM Y	:	-.398	-.429	-.449
CENTROID X	:	.076	.317	.185
CENTROID Y	:	.065	.165	.185
POA TO CENTROID in.	:	.100	.357	.262
ANGLE POA CENTROID	:	40.701	27.443	45.052
MIN RADIUS	:	.394	.349	.286
MEAN RADIUS	:	.622	.453	.439
MAX RADIUS	:	1.045	.546	.615
HORIZONTAL SPREAD	:	1.604	.910	.801
VERTICAL SPREAD	:	.802	.733	.733
EXTREME SPREAD	:	1.662	1.010	1.010
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB2427

Rynite

CENTERFIRE PATTERNS

1

POA

1 in circle

2 in circle

3 in circle

CENTROID *

OF SHOTS - 5

IN CIR

1 in = 2

2 in = 5

3 in = 5

HS = 1.319

VS = 1.563

GS = 1.651

A.C.S. 2.089

A.M.R. .790

D.R.T.

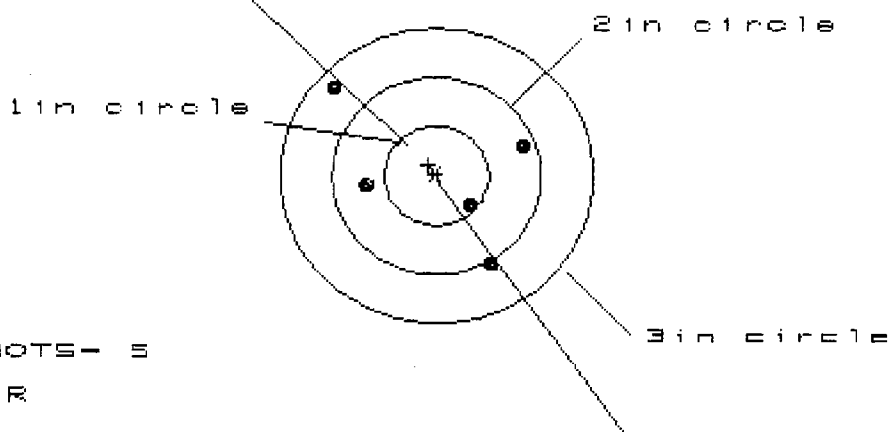
PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.645	.476	.373
MINIMUM X	-.674	-.388	-.491
MAXIMUM Y	.848	.670	.074
MINIMUM Y	-.715	-.304	-.081
CENTROID X	.225	.394	.497
CENTROID Y	.250	.428	.205
POA TO CENTROID in.	.336	.582	.538
ANGLE POA CENTROID	47.942	47.403	22.401
MIN RADIUS	.222	.268	.140
MEAN RADIUS	.623	.504	.338
MAX RADIUS	.982	.738	.491
HORIZONTAL SPREAD	1.319	.864	.864
VERTICAL SPREAD	1.563	.974	.155
EXTREME SPREAD	1.651	1.252	.868
NUMBER IN ONE INCH CIRCLE =	2		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB2427

CENTERFIRE PATTERNS # 2

POA



OF SHOTS- 5

IN CIR

1in - 1

2in - 3

3in - 5

HS- 1.753

VS- 1.808

GS- 2.358

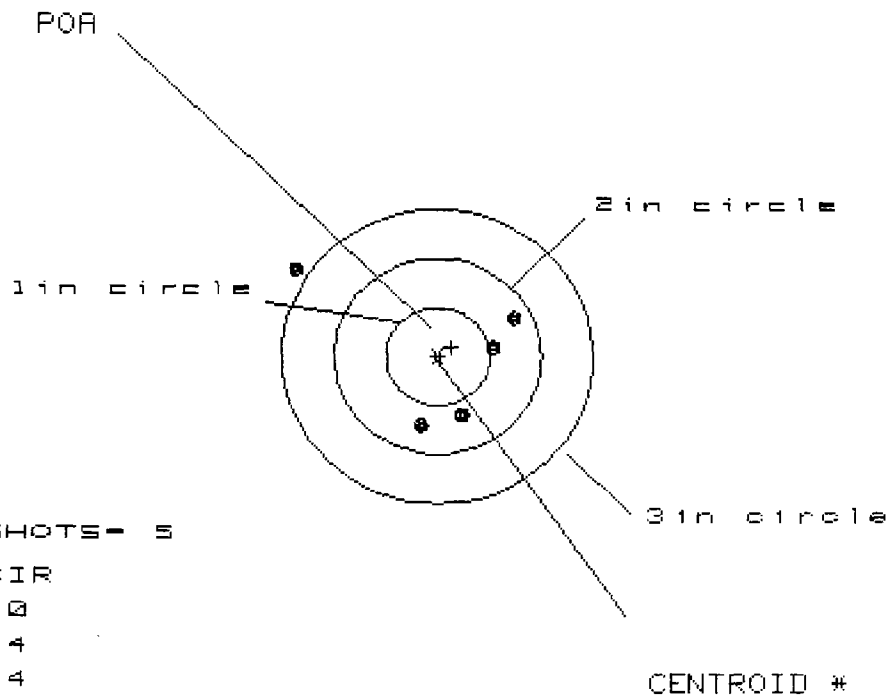
CENTROID *

PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.803	.566	.674
MINIMUM X	-.950	-.943	-.834
MAXIMUM Y	.906	.533	.308
MINIMUM Y	-.902	-.676	-.244
CENTROID X	.077	.315	.206
CENTROID Y	-.109	-.335	-.110
POA TO CENTROID in.	.133	.460	.233
ANGLE POA CENTROID	324.712	316.829	298.140
MIN RADIUS	.378	.054	.291
MEAN RADIUS	.864	.634	.623
MAX RADIUS	1.313	.956	.836
HORIZONTAL SPREAD	1.753	1.508	1.508
VERTICAL SPREAD	1.808	1.209	.552
EXTREME SPREAD	2.358	1.553	1.553
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	3		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB2427

CENTERFIRE PATTERNS # 3



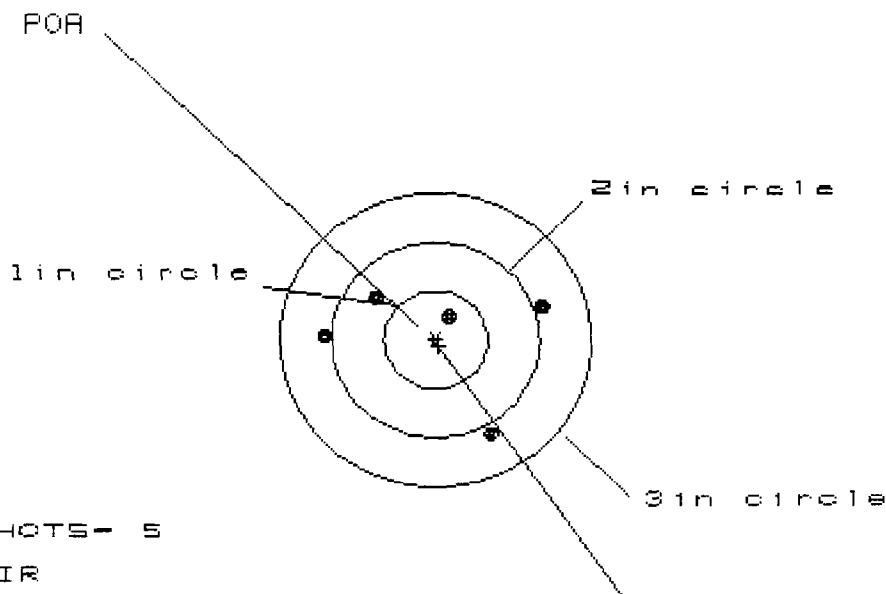
OF SHOTS - 5
IN CIR
1 in = 0
2 in = 4
3 in = 4
HS = 2.081
VS = 1.663
GS = 2.258

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.689	.339	.316
MINIMUM X	:	-1.402	-.471	-.358
MAXIMUM Y	:	.916	.586	.489
MINIMUM Y	:	-.747	-.518	-.322
CENTROID X	:	-.135	.216	.103
CENTROID Y	:	-.098	-.327	-.523
POA TO CENTROID in.	:	.167	.392	.533
ANGLE POA CENTROID	:	216.032	326.634	348.887
MIN RADIUS	:	.558	.357	.171
MEAN RADIUS	:	.884	.526	.412
MAX RADIUS	:	1.675	.700	.582
HORIZONTAL SPREAD	:	2.091	.809	.674
VERTICAL SPREAD	:	1.663	1.104	.811
EXTREME SPREAD	:	2.258	1.369	1.055
NUMBER IN ONE INCH CIRCLE	=	0		
NUMBER IN TWO INCH CIRCLE	=	4		
NUMBER IN THREE INCH CIRCLE	=	4		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3564 Ayralon F

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 1

2in = 2

3in = 5

HS = 2.084

VS = 1.429

GS = 2.114

A.G.S. 2.248

A.M.R. .806

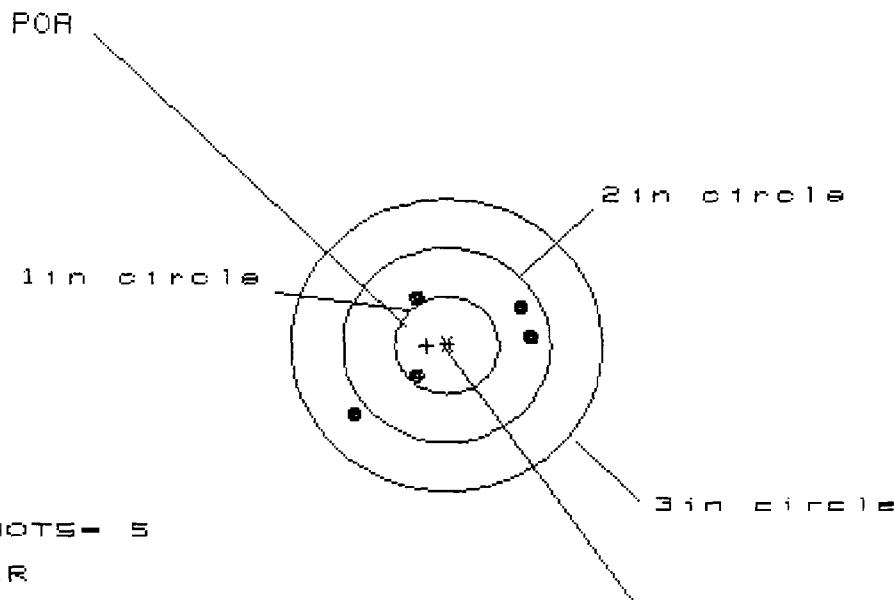
DRT.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.011	1.140	.672
MINIMUM X	:	-1.073	-.944	-.564
MAXIMUM Y	:	.423	.171	.210
MINIMUM Y	:	-1.006	-.235	-.196
CENTROID X	:	-.027	-.156	-.536
CENTROID Y	:	.059	.311	.272
POA TO CENTROID in.	:	.065	.348	.601
ANGLE POA CENTROID	:	155.323	153.306	116.863
MIN RADIUS	:	.256	.297	.237
MEAN RADIUS	:	.857	.733	.502
MAX RADIUS	:	1.131	1.146	.672
HORIZONTAL SPREAD	:	2.084	2.084	1.236
VERTICAL SPREAD	:	1.429	.406	.406
EXTREME SPREAD	:	2.114	2.114	1.249
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			2	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3564

CENTERFIRE PATTERNS # 2



OF SHOTS - 5
 # IN CIR
 1in = 1
 2in = 4
 3in = 5
 HS = 1.675
 VS = 1.119
 GS = 1.970

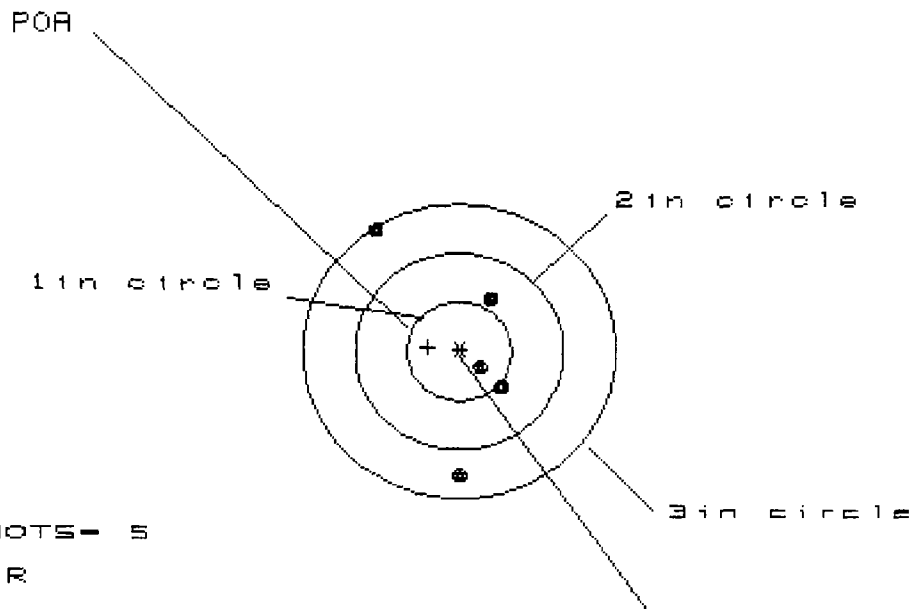
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.775	.558	.721
MINIMUM X	:	-.900	-.557	-.387
MAXIMUM Y	:	.450	.283	.370
MINIMUM Y	:	-.669	-.456	-.369
CENTROID X	:	.193	.417	.247
CENTROID Y	:	.008	.175	.088
POA TO CENTROID in.	:	.193	.453	.262
ANGLE POA CENTROID	:	2.319	22.742	19.541
MIN RADIUS	:	.440	.558	.499
MEAN RADIUS	:	.745	.608	.585
MAX RADIUS	:	1.121	.720	.721
HORIZONTAL SPREAD	:	1.675	1.108	1.108
VERTICAL SPREAD	:	1.119	.739	.739
EXTREME SPREAD	:	1.970	1.288	1.167
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB3564

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 5

HS= 1.198

VS= 2.538

GS= 2.659

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.371	.165	.085
MINIMUM X	:	-.827	-.239	-.133
MAXIMUM Y	:	1.241	.810	.481
MINIMUM Y	:	-1.297	-.987	-.346
CENTROID X	:	.300	.506	.586
CENTROID Y	:	-.040	-.350	-.021
POA TO CENTROID in.	:	.302	.616	.587
ANGLE POA CENTROID	:	277.562	304.645	272.051
MIN RADIUS	:	.192	.165	.190
MEAN RADIUS	:	.816	.551	.343
MAX RADIUS	:	1.491	1.016	.483
HORIZONTAL SPREAD	:	1.198	.404	.218
VERTICAL SPREAD	:	2.538	1.797	.827
EXTREME SPREAD	:	2.659	1.834	.828
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

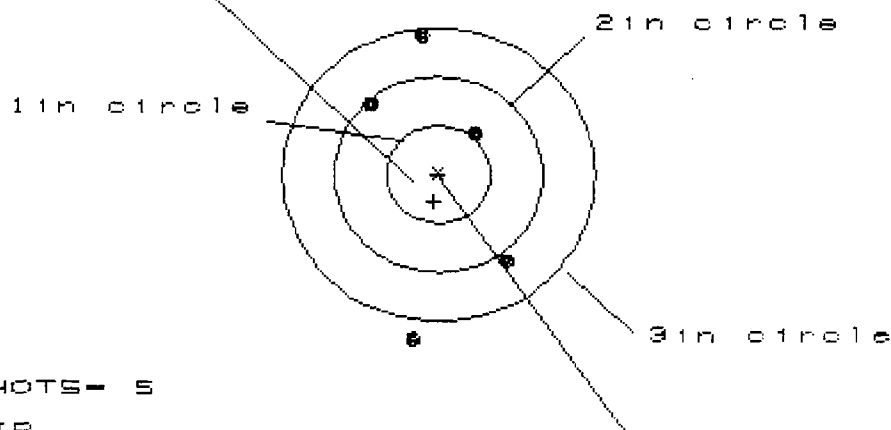
FILE:/PATTERNING/CENTERFIRE_PATT/BMA7194

Ayrabn F

CENTERFIRE PATTERNS

1

POA



OF SHOTS- 5

IN CIR

1in = 0

2in = 2

3in = 4

ME = 1.233

VS = 3.074

GS = 3.079

CENTROID *

A.G.S. 3.017

A.M.R. 1.071

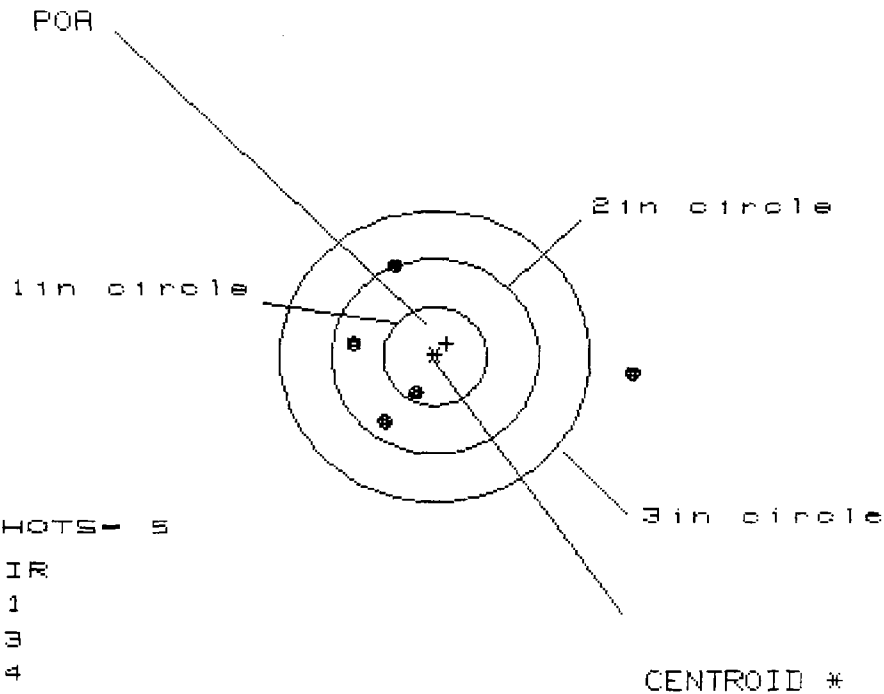
J.E.S.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.631	.561	.502
MINIMUM X	:	-.602	-.672	-.731
MAXIMUM Y	:	1.419	1.005	.610
MINIMUM Y	:	-1.655	-1.258	-.923
CENTROID X	:	.047	.117	.176
CENTROID Y	:	.277	.691	.356
POA TO CENTROID in.	:	.281	.701	.397
ANGLE POA CENTROID	:	80.417	80.410	63.736
MIN RADIUS	:	.530	.288	.387
MEAN RADIUS	:	1.120	.853	.797
MAX RADIUS	:	1.679	1.378	1.051
HORIZONTAL SPREAD	:	1.233	1.233	1.233
VERTICAL SPREAD	:	3.074	2.263	1.533
EXTREME SPREAD	:	3.079	2.380	1.967
NUMBER IN ONE INCH CIRCLE =			0	
NUMBER IN TWO INCH CIRCLE =			2	
NUMBER IN THREE INCH CIRCLE =			4	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB7134

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 1

2in = 3

3in = 4

HS= 2.760

VS= 1.639

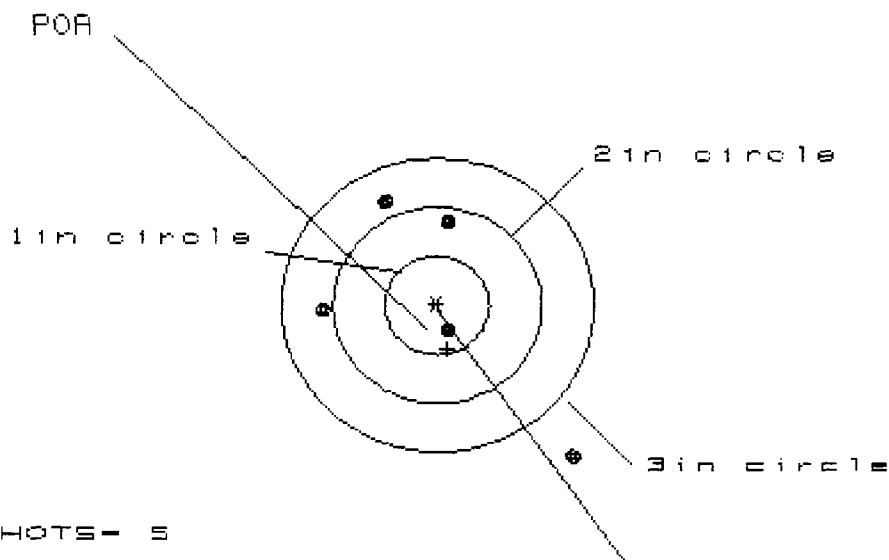
GS= 2.773

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.931	.267	.290
MINIMUM X	:	-.829	-.346	-.323
MAXIMUM Y	:	.982	.951	.435
MINIMUM Y	:	-.657	-.688	-.371
CENTROID X	:	-.112	-.595	-.618
CENTROID Y	:	-.134	-.103	-.420
POA TO CENTROID in.	:	.175	.604	.747
ANGLE POA CENTROID	:	229.968	189.817	214.186
MIN RADIUS	:	.411	.365	.297
MEAN RADIUS	:	1.013	.618	.404
MAX RADIUS	:	1.935	.954	.542
HORIZONTAL SPREAD	:	2.760	.613	.613
VERTICAL SPREAD	:	1.639	1.639	.806
EXTREME SPREAD	:	2.773	1.640	.881
NUMBER IN ONE INCH CIRCLE =		1		
NUMBER IN TWO INCH CIRCLE =		3		
NUMBER IN THREE INCH CIRCLE =		4		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB7194

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1in = 1

2in = 2

3in = 4

HS = 2.425

VS = 2.636

GS = 3.200

CENTROID *

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.344	.459	.415
MINIMUM X	:	-1.081	-.745	-.789
MAXIMUM Y	:	1.044	.646	.655
MINIMUM Y	:	-1.592	-.604	-.388
CENTROID X	:	-.100	-.436	-.392
CENTROID Y	:	.443	.841	.625
POA TO CENTROID in.	:	.454	.947	.738
ANGLE POA CENTROID	:	167.249	152.576	147.940
MIN RADIUS	:	.240	.607	.568
MEAN RADIUS	:	1.079	.728	.718
MAX RADIUS	:	2.083	.887	.833
HORIZONTAL SPREAD	:	2.425	1.204	1.204
VERTICAL SPREAD	:	2.636	1.250	1.043
EXTREME SPREAD	:	3.200	1.484	1.484
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			2	
NUMBER IN THREE INCH CIRCLE =			4	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB0125

Ayralon F

CENTERFIRE PATTERNS

1

POA

1 in circle

2 in circle

3 in circle

CENTROID *

OF SHOTS - 5

IN CIR

1 in = 1

2 in = 4

3 in = 5

HS = 2.085

VS = .435

GS = 2.107

A.G.S. 2.478

A.M.R. .772

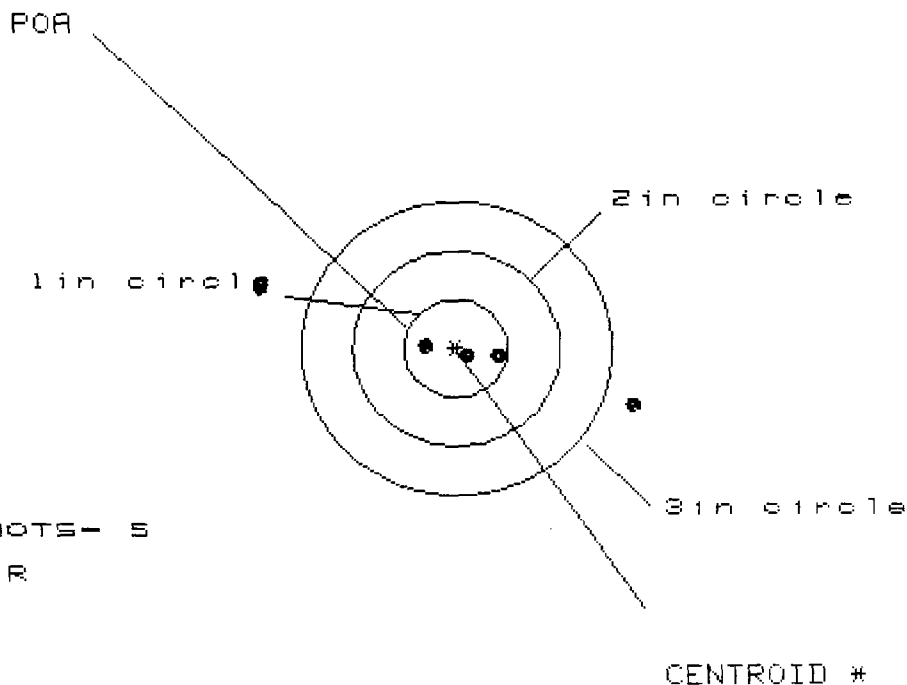
J.E.S.

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.212	.915	.722
MINIMUM X	-.883	-.581	-.522
MAXIMUM Y	.177	.159	.202
MINIMUM Y	-.258	-.276	-.233
CENTROID X	-.008	-.310	-.117
CENTROID Y	.014	.032	-.011
POA TO CENTROID in.	.016	.312	.117
ANGLE POA CENTROID	150.803	95.884	185.209
MIN RADIUS	.357	.159	.204
MEAN RADIUS	.752	.510	.522
MAX RADIUS	1.214	.956	.759
HORIZONTAL SPREAD	2.095	1.496	1.244
VERTICAL SPREAD	.435	.435	.435
EXTREME SPREAD	2.107	1.550	1.272
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	4		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB0125

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1 in = 3

2 in = 3

3 in = 3

HS= 3.563

VS= 1.255

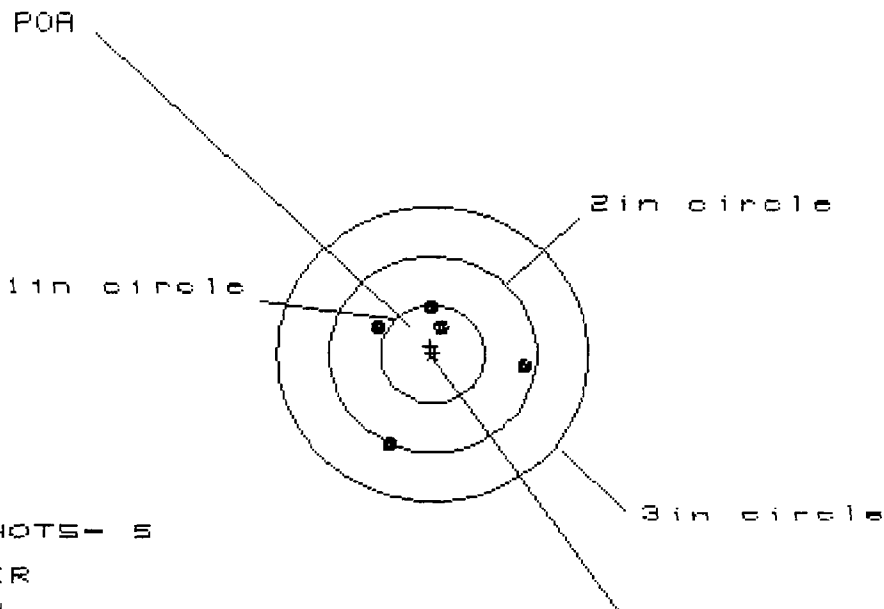
GS= 3.778

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.676	1.205	.318
MINIMUM X	:	-1.887	-.769	-.368
MAXIMUM Y	:	.656	.196	.050
MINIMUM Y	:	-.599	-.435	-.042
CENTROID X	:	.295	.766	.365
CENTROID Y	:	-.034	-.198	-.052
POA TO CENTROID in.	:	.297	.792	.369
ANGLE POA CENTROID	:	276.502	284.449	278.159
MIN RADIUS	:	.123	.133	.051
MEAN RADIUS	:	.919	.646	.248
MAX RADIUS	:	1.997	1.281	.371
HORIZONTAL SPREAD	:	3.563	1.974	.686
VERTICAL SPREAD	:	1.255	.631	.092
EXTREME SPREAD	:	3.778	2.072	.692
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		3	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB0125

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 5

HS = 1.415

VS = 1.355

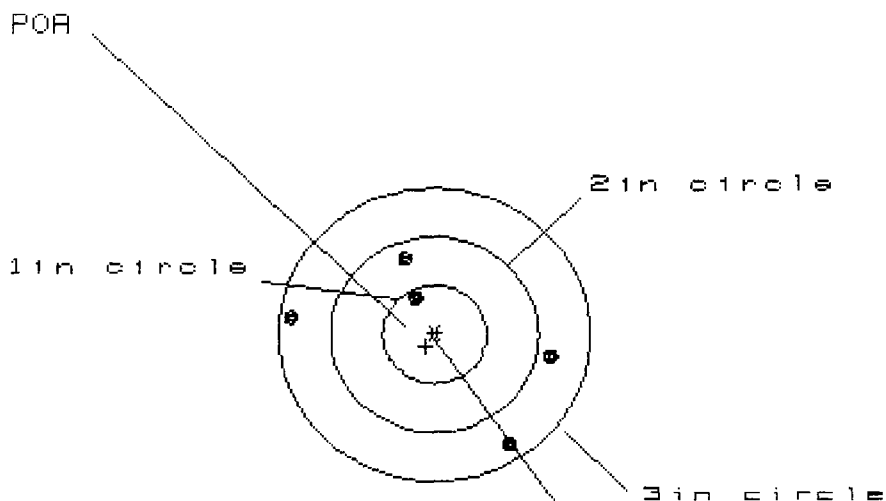
GS = 1.550

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.918	.811	.214
MINIMUM X	:	-.497	-.683	-.333
MAXIMUM Y	:	.459	.234	.118
MINIMUM Y	:	-.896	-.349	-.084
CENTROID X	:	.021	.127	-.143
CENTROID Y	:	-.081	.144	.260
POA TO CENTROID in.	:	.083	.192	.296
ANGLE POA CENTROID	:	345.396	48.379	151.158
MIN RADIUS	:	.261	.065	.168
MEAN RADIUS	:	.645	.459	.244
MAX RADIUS	:	.992	.883	.335
HORIZONTAL SPREAD	:	1.415	1.415	.547
VERTICAL SPREAD	:	1.355	.583	.202
EXTREME SPREAD	:	1.550	1.479	.549
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB9982 *Ayralon F*

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 1

2in = 2

3in = 5

HS = 2.482

VS = 1.837

GS = 2.522

A.G.S. 2.221
A.M.R. .853

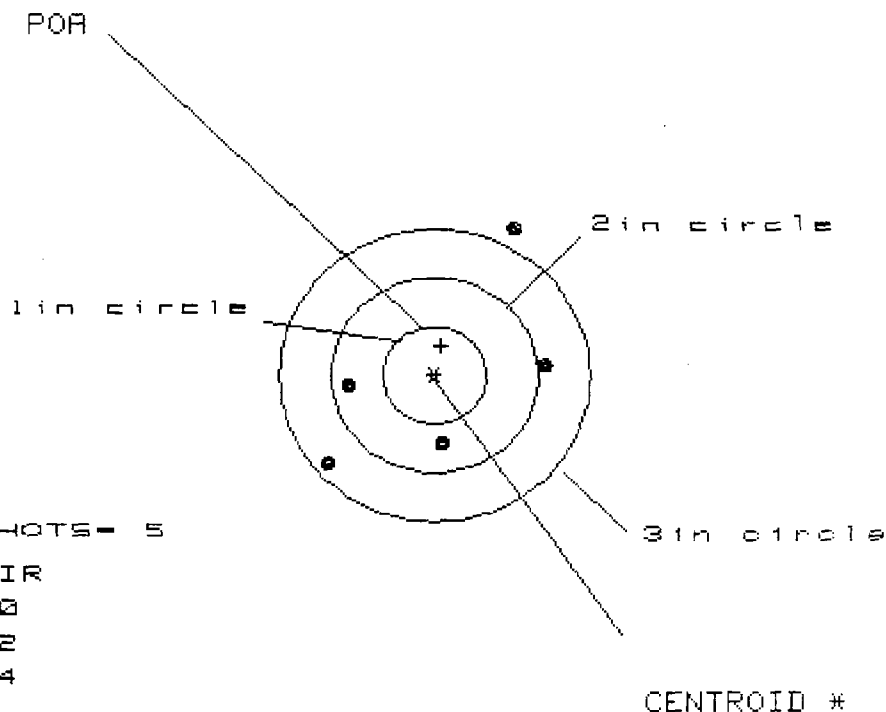
D.R.T.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.125	.786	.915
MINIMUM X	:	-1.357	-.650	-.521
MAXIMUM Y	:	.756	.803	.459
MINIMUM Y	:	-1.081	-1.034	-.557
CENTROID X	:	.083	.422	.293
CENTROID Y	:	.123	.076	.420
POA TO CENTROID in.	:	.148	.428	.512
ANGLE POA CENTROID	:	56.030	10.182	55.121
MIN RADIUS	:	.437	.685	.406
MEAN RADIUS	:	1.016	.909	.724
MAX RADIUS	:	1.369	1.104	1.071
HORIZONTAL SPREAD	:	2.482	1.436	1.436
VERTICAL SPREAD	:	1.837	1.837	1.016
EXTREME SPREAD	:	2.522	2.109	1.759
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			2	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB9937

CENTERFIRE PATTERNS # 2



OF SHOTS - 5

IN CIR

1 in - 0

2 in - 2

3 in - 4

HS - 2.108

VS - 2.384

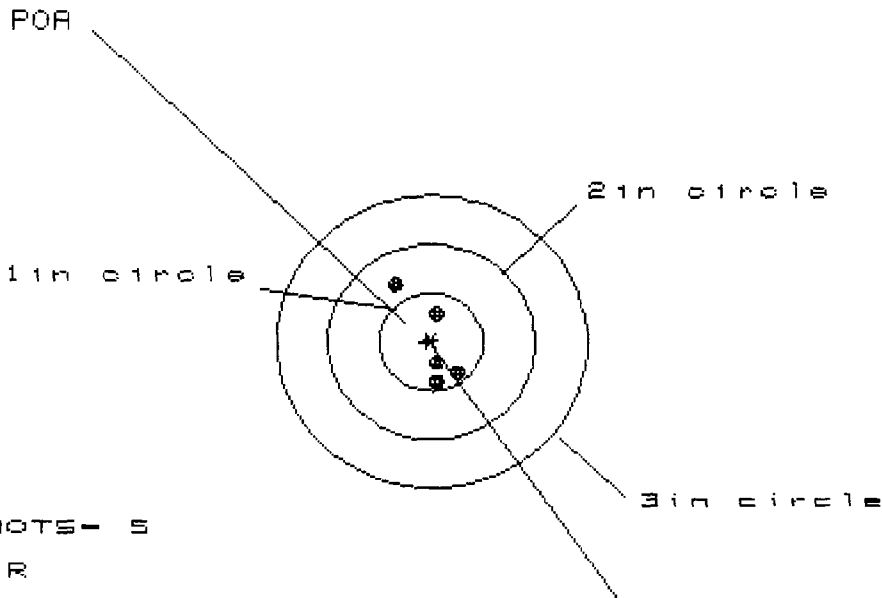
GS - 3.026

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.047	1.248	.961
MINIMUM X	:	-1.061	-.860	-.920
MAXIMUM Y	:	1.508	.483	.316
MINIMUM Y	:	-.876	-.499	-.469
CENTROID X	:	-.065	-.266	.021
CENTROID Y	:	-.304	-.681	-.514
POA TO CENTROID in.	:	.311	.731	.515
ANGLE POA CENTROID	:	257.887	248.657	357.699
MIN RADIUS	:	.681	.389	.471
MEAN RADIUS	:	1.131	.858	.805
MAX RADIUS	:	1.708	1.338	1.012
HORIZONTAL SPREAD	:	2.108	2.108	1.881
VERTICAL SPREAD	:	2.384	.982	.785
EXTREME SPREAD	:	3.026	2.326	1.888
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		2	
NUMBER IN THREE INCH CIRCLE	=		4	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB9937

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .573

VS= 1.049

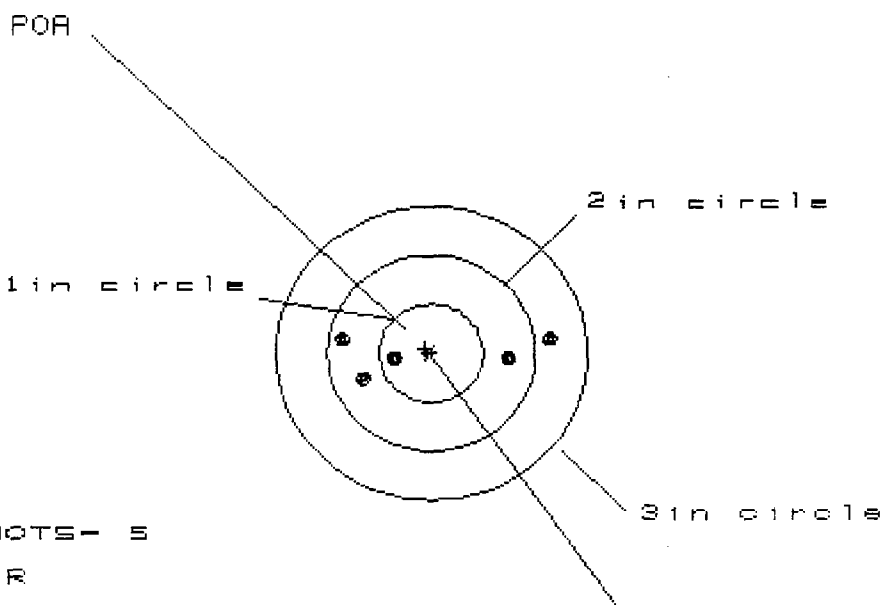
GS= 1.115

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.213	.123	.099
MINIMUM X	:	-.360	-.072	-.056
MAXIMUM Y	:	.604	.485	.386
MINIMUM Y	:	-.445	-.294	-.232
CENTROID X	:	.051	.141	.165
CENTROID Y	:	.007	-.144	-.045
POA TO CENTROID in.	:	.052	.201	.171
ANGLE POA CENTROID	:	8.224	315.453	285.333
MIN RADIUS	:	.215	.065	.165
MEAN RADIUS	:	.412	.259	.268
MAX RADIUS	:	.703	.485	.389
HORIZONTAL SPREAD	:	.573	.195	.155
VERTICAL SPREAD	:	1.049	.779	.618
EXTREME SPREAD	:	1.115	.781	.634
NUMBER IN ONE INCH CIRCLE =			4	
NUMBER IN TWO INCH CIRCLE =			5	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB5187 Ayralon F

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1 in = 1

2 in = 4

3 in = 5

HS = 1.995

VS = .399

GS = 1.985

A.G.S. 1.719

A.M.R. .657

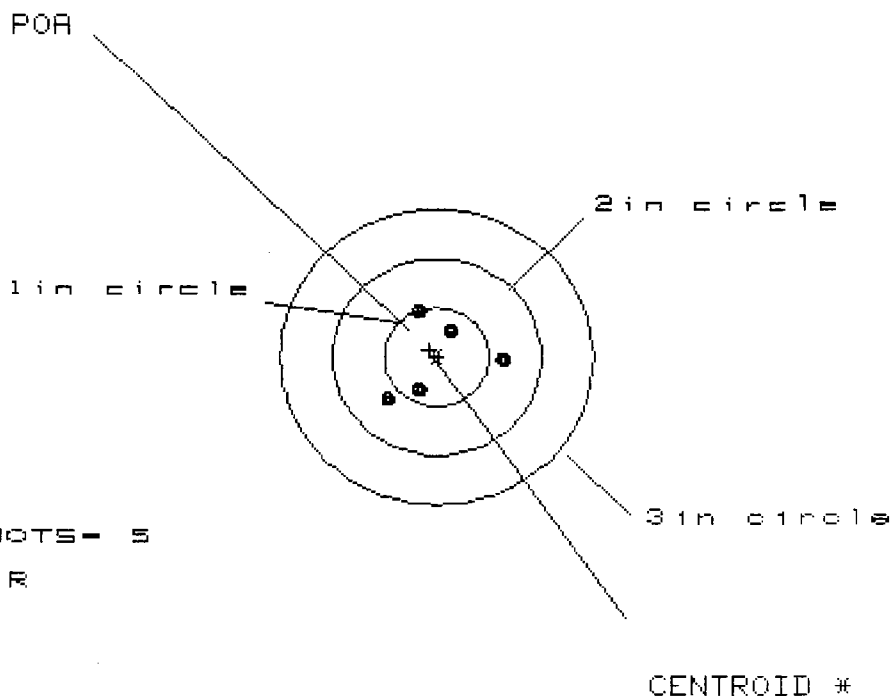
J.E.S.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.115	1.028	.828
MINIMUM X	:	-.880	-.601	-.585
MAXIMUM Y	:	.145	.171	.082
MINIMUM Y	:	-.254	-.218	-.161
CENTROID X	:	.055	-.224	-.024
CENTROID Y	:	-.050	-.086	-.143
POA TO CENTROID in.	:	.074	.240	.145
ANGLE POA CENTROID	:	312.378	201.059	260.624
MIN RADIUS	:	.321	.047	.255
MEAN RADIUS	:	.759	.536	.564
MAX RADIUS	:	1.125	1.028	.832
HORIZONTAL SPREAD	:	1.995	1.629	1.413
VERTICAL SPREAD	:	.399	.389	.243
EXTREME SPREAD	:	1.995	1.636	1.434
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB5187

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= 1.110

VS= .840

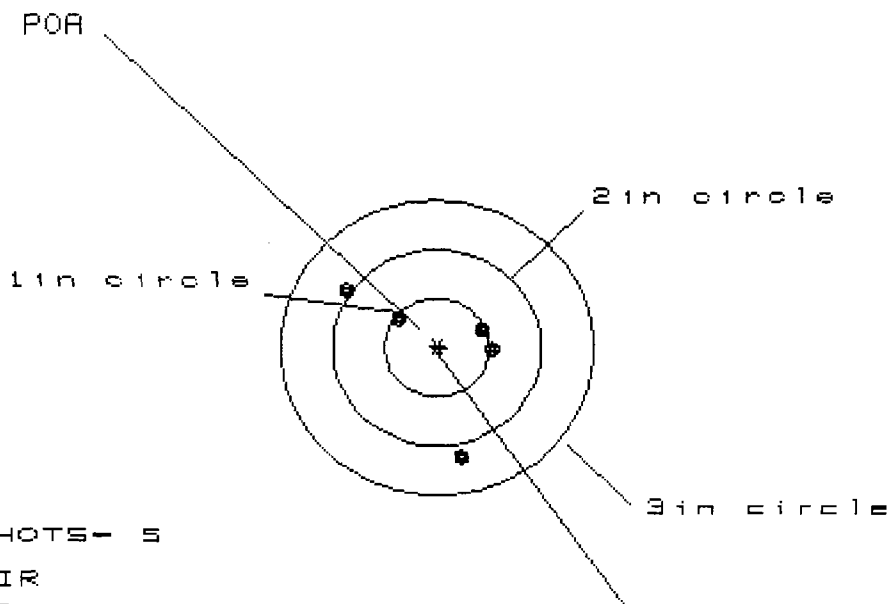
GS= 1.182

PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.610	.485	.200
MINIMUM X	-.500	-.275	-.113
MAXIMUM Y	.431	.329	.294
MINIMUM Y	-.409	-.426	-.461
CENTROID X	.066	.192	.030
CENTROID Y	-.073	.029	.064
POA TO CENTROID in.	.099	.194	.071
ANGLE POA CENTROID	317.866	8.538	64.885
MIN RADIUS	.346	.206	.261
MEAN RADIUS	.481	.406	.348
MAX RADIUS	.646	.496	.469
HORIZONTAL SPREAD	1.110	.759	.313
VERTICAL SPREAD	.840	.755	.755
EXTREME SPREAD	1.182	.875	.755
NUMBER IN ONE INCH CIRCLE =	3		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB5187

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 5

HS= 1.412

VS= 1.699

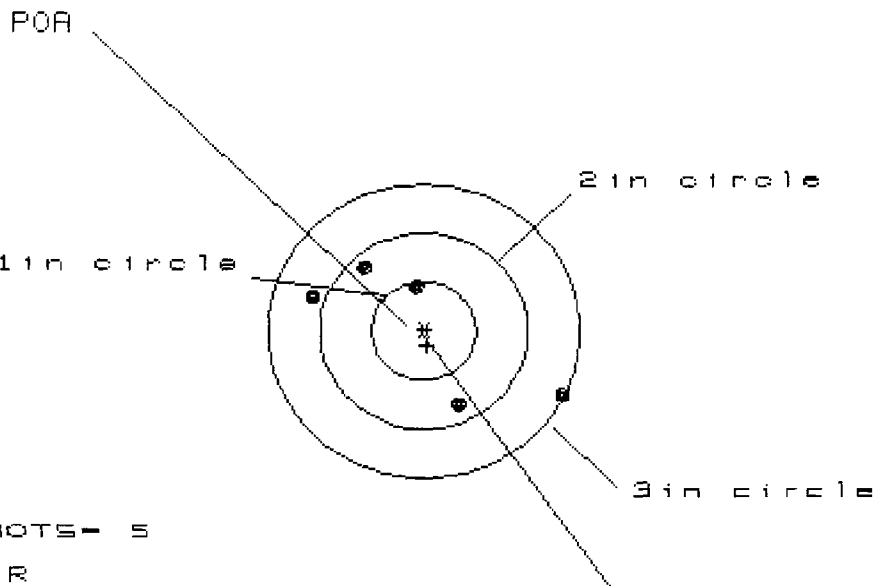
GS= 1.980

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.577	.623	.359
MINIMUM X	-.835	-.789	-.574
MAXIMUM Y	.611	.339	.167
MINIMUM Y	-1.088	-.267	-.154
CENTROID X	-.030	-.075	.188
CENTROID Y	.009	.281	.168
POA TO CENTROID in.	.031	.291	.252
ANGLE POA CENTROID	106.246	164.948	41.778
MIN RADIUS	.456	.315	.215
MEAN RADIUS	.731	.586	.401
MAX RADIUS	1.103	.859	.598
HORIZONTAL SPREAD	1.412	1.412	.933
VERTICAL SPREAD	1.699	.686	.321
EXTREME SPREAD	1.980	1.537	.987
NUMBER IN ONE INCH CIRCLE =	2		
NUMBER IN TWO INCH CIRCLE =	3		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB9419 *Ayralon F*

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 1

2in = 3

3in = 5

HS = 2.449

VS = 1.426

GS = 2.624

A.G.S. 2.584

A.M.R. .973

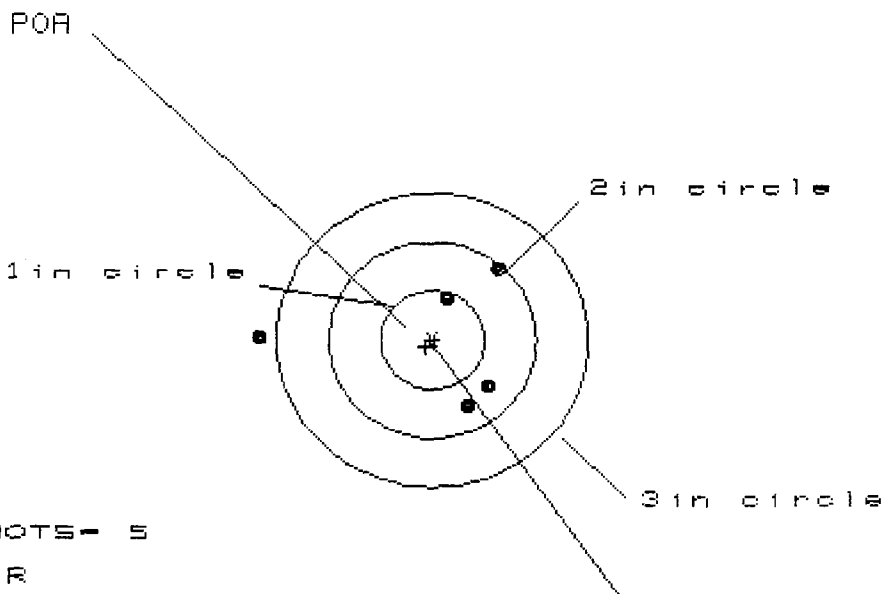
DRT.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.336	.698	.438
MINIMUM X	:	-1.113	-.779	-.453
MAXIMUM Y	:	.634	.485	.549
MINIMUM Y	:	-.792	-.942	-.877
CENTROID X	:	-.030	-.364	-.104
CENTROID Y	:	.147	.296	.232
POA TO CENTROID in.	:	.150	.469	.254
ANGLE POA CENTROID	:	168.615	129.203	155.923
MIN RADIUS	:	.417	.381	.328
MEAN RADIUS	:	.948	.719	.673
MAX RADIUS	:	1.463	1.172	.980
HORIZONTAL SPREAD	:	2.449	1.477	.891
VERTICAL SPREAD	:	1.426	1.426	1.426
EXTREME SPREAD	:	2.624	1.863	1.681
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			3	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB9419

CENTERFIRE PATTERNS # 2



OF SHOTS - 5
IN CIR
1in = 1
2in = 4
3in = 0
HS = 2.238
VS = 1.413
GS = 2.350

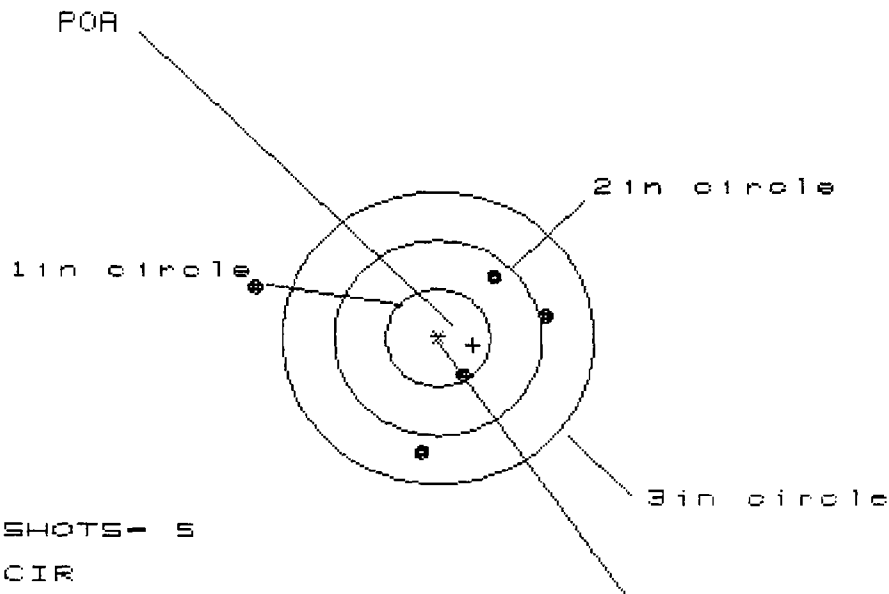
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.617	.211	.232
MINIMUM X	:	-1.621	-.313	-.242
MAXIMUM Y	:	.707	.705	.664
MINIMUM Y	:	-.706	-.708	-.473
CENTROID X	:	.062	.468	.397
CENTROID Y	:	.067	.069	-.166
POA TO CENTROID in.	:	.091	.473	.431
ANGLE POA CENTROID	:	46.865	8.361	292.715
MIN RADIUS	:	.441	.456	.301
MEAN RADIUS	:	.899	.608	.494
MAX RADIUS	:	1.621	.736	.707
HORIZONTAL SPREAD	:	2.238	.524	.474
VERTICAL SPREAD	:	1.413	1.413	1.137
EXTREME SPREAD	:	2.350	1.439	1.165
NUMBER IN ONE INCH CIRCLE	=	1		
NUMBER IN TWO INCH CIRCLE	=	4		
NUMBER IN THREE INCH CIRCLE	=		4	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/AMB9419

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 2

3in = 4

HS= 2.761

VS= 1.823

GS= 2.777

CENTROID *

PATTERN #	3
SHOTS (BEST OF)	5
MAXIMUM X	1.016
MINIMUM X	-1.745
MAXIMUM Y	.671
MINIMUM Y	-1.152
CENTROID X	-.339
CENTROID Y	.071
POA TO CENTROID in.	.346
ANGLE POA CENTROID	101.797
MIN RADIUS	.440
MEAN RADIUS	1.071
MAX RADIUS	1.831
HORIZONTAL SPREAD	2.761
VERTICAL SPREAD	1.823
EXTREME SPREAD	2.777
NUMBER IN ONE INCH CIRCLE =	1
NUMBER IN TWO INCH CIRCLE =	2
NUMBER IN THREE INCH CIRCLE =	4

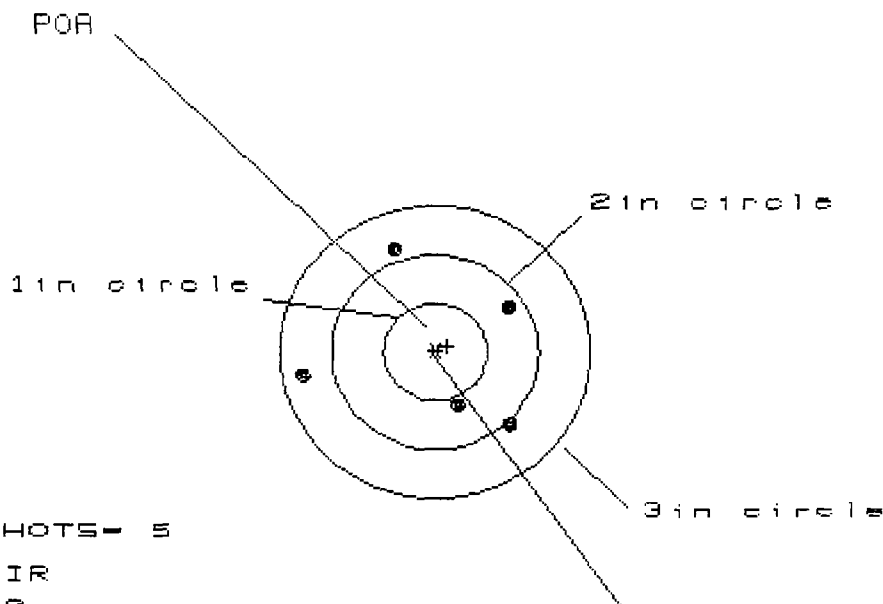
180gm BP

			1	2	3	4	5
			Ambient	250°F	-40°F		
			Average	Average	Average		
			group Size	group Size	group Size		
1	*	Control	3419	2236	2.038	2.044	1
2	*	"	3598	2075	1.618	2.012	2
3	*	"	2908	1640	1.845	2.607	3
4		Rynite	3696	1456	2.387	1.649	4
5		"	2427	2089	2.071	2.345	5
6		Ayralon F	7194	3017	1.757	1.949	6
7		"	3564	2248	1.941	1.731	7
8		"	0125	2478	1.890	2.045	8
9		"	9937	2221	1.759	2.286	9
10		"	5137	1719	2.335	1.827	10
11		"	9419	2584	2.491	2.011	11
12							12
13							13
14							14
15							15
16							16
17							17
18							18
19							19
20							20
21		3419	.743	.800			21
22		3598	.791	.666			22
23		2908	.672	.714			23
24		3696	.552	.827			24
25		2427	.790	.687			25
26		7194	1.071	.716			26
27		3564	.806	.771			27
28		0125	.772	.692			28
29		9937	.853	.697			29
30		5137	.657	.946			30
31		9419	.973	.910			31
32							32
33							33
34							34
35							35
36							36
37							37
38							38
39							39
40							40

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3419FGLJ5

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 0

2in = 2

3in = 5

HS = 1.943

VS = 1.810

GS = 2.093

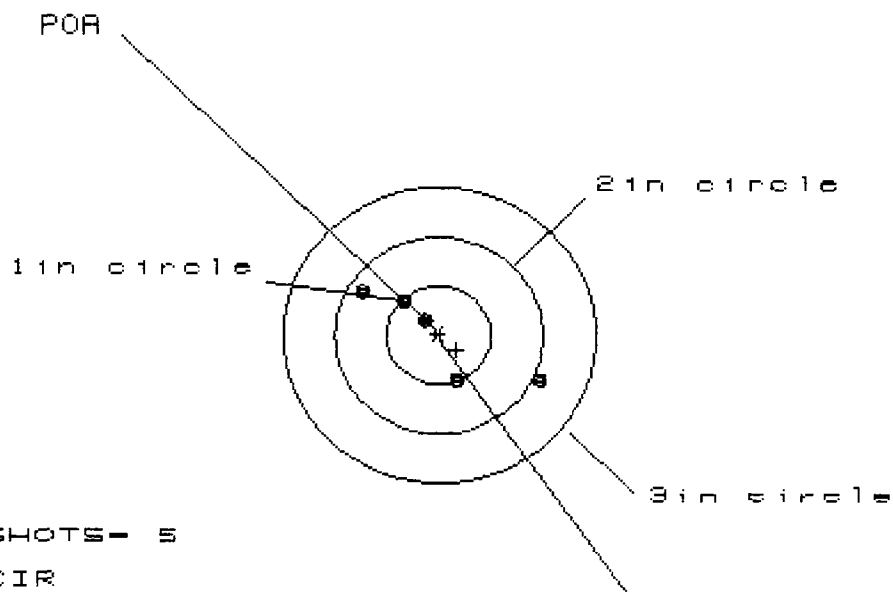
AVG = 2.044

PATTERN #	1	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.698	.387	.166
MINIMUM X	-1.245	-.663	-.333
MAXIMUM Y	1.057	.987	.731
MINIMUM Y	-.753	-.824	-.495
CENTROID X	-.115	.196	.417
CENTROID Y	-.058	.012	-.316
POA TO CENTROID in.	.129	.196	.523
ANGLE POA CENTROID	206.763	3.654	307.206
MIN RADIUS	.533	.559	.408
MEAN RADIUS	.959	.808	.560
MAX RADIUS	1.276	1.188	.750
HORIZONTAL SPREAD	1.943	1.050	.499
VERTICAL SPREAD	1.810	1.810	1.226
EXTREME SPREAD	2.093	2.093	1.226
NUMBER IN ONE INCH CIRCLE =	0		
NUMBER IN TWO INCH CIRCLE =	2		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3419FGLJS

CENTERFIRE PATTERNS # 2



OF SHOTS- 5
IN CIR
1in = 2
2in = 4
3in = 5
HS= 1.542
VS= .939
GS= 1.892

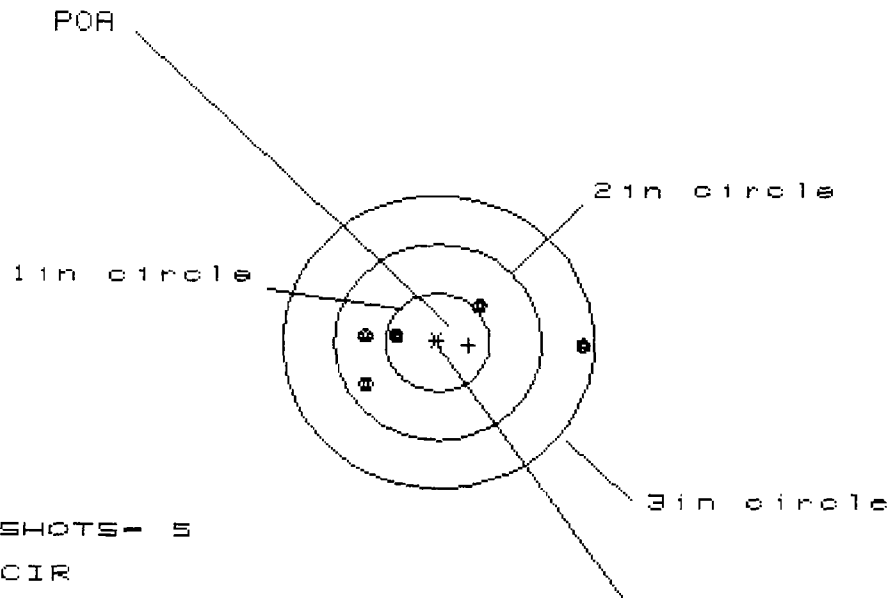
CENTROID #

PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.940	.415	.260
MINIMUM X	-.702	-.468	-.241
MAXIMUM Y	.444	.320	.335
MINIMUM Y	-.495	-.590	-.484
CENTROID X	-.168	-.402	-.247
CENTROID Y	.148	.272	.166
POA TO CENTROID in.	.224	.486	.297
ANGLE POA CENTROID	131.523	124.074	123.886
MIN RADIUS	.192	.144	.149
MEAN RADIUS	.612	.419	.371
MAX RADIUS	1.062	.722	.549
HORIZONTAL SPREAD	1.642	.883	.501
VERTICAL SPREAD	.939	.910	.819
EXTREME SPREAD	1.892	1.268	.960
NUMBER IN ONE INCH CIRCLE =	2		
NUMBER IN TWO INCH CIRCLE =	4		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3419FGLJS

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1in = 1

2in = 4

3in = 5

HS = 2.101

VS = .809

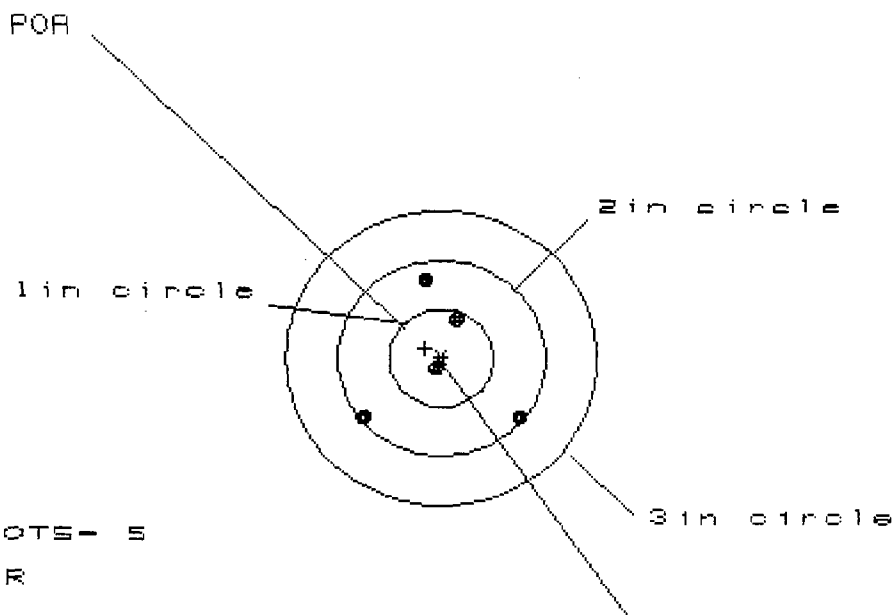
GS = 2.147

PATTERN #	3
SHOTS (BEST OF)	5
MAXIMUM X	1.393
MINIMUM X	-.708
MAXIMUM Y	.337
MINIMUM Y	-.472
CENTROID X	-.301
CENTROID Y	.025
POA TO CENTROID in.	.302
ANGLE POA CENTROID	94.745
MIN RADIUS	.420
MEAN RADIUS	.777
MAX RADIUS	1.394
HORIZONTAL SPREAD	2.101
VERTICAL SPREAD	.809
EXTREME SPREAD	2.147
NUMBER IN ONE INCH CIRCLE =	1
NUMBER IN TWO INCH CIRCLE =	4
NUMBER IN THREE INCH CIRCLE =	5

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H013419 Control

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1 in - 2

2 in - 5

3 in - 5

HS - 1.416

VS - 1.442

GS - 1.689

CENTROID *

Avg G.S. 2.038

Avg M.R. .800

JES

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.709	.352	.176
MINIMUM X	:	-.707	-.530	-.170
MAXIMUM Y	:	.850	.703	.470
MINIMUM Y	:	-.592	-.697	-.448
CENTROID X	:	.154	-.023	.153
CENTROID Y	:	-.101	.046	.279
POA TO CENTROID in.	:	.184	.052	.318
ANGLE POA CENTROID	:	303.363	153.435	61.179
MIN RADIUS	:	.068	.275	.177
MEAN RADIUS	:	.630	.566	.375
MAX RADIUS	:	.923	.875	.500
HORIZONTAL SPREAD	:	1.416	.882	.346
VERTICAL SPREAD	:	1.442	1.399	.918
EXTREME SPREAD	:	1.689	1.498	.933
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			5	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT3419

CENTERFIRE PATTERNS # 2

POA

1 in circle

2 in circle

3 in circle

CENTROID *

OF SHOTS - 5

IN CIR

1 in = 1

2 in = 4

3 in = 5

HS = 1.330

VS = 1.885

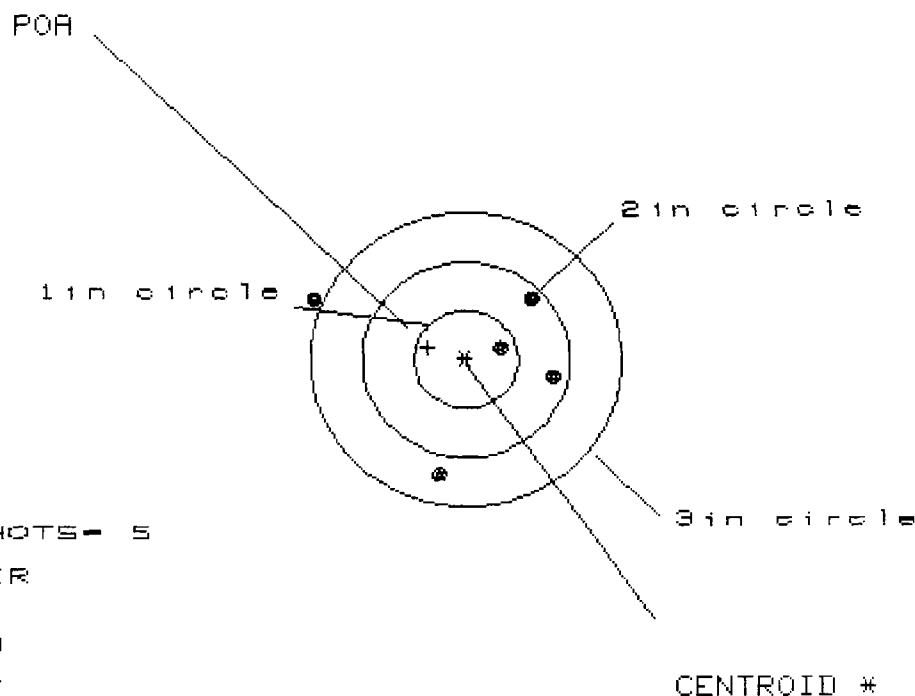
GS = 2.037

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.694	.853	.151
MINIMUM X	:	-.636	-.477	-.193
MAXIMUM Y	:	1.247	.359	.251
MINIMUM Y	:	-.638	-.327	-.364
CENTROID X	:	-.146	-.305	-.589
CENTROID Y	:	-.392	-.703	-.595
POA TO CENTROID in.	:	.418	.767	.837
ANGLE POA CENTROID	:	249.537	246.578	225.274
MIN RADIUS	:	.411	.288	.121
MEAN RADIUS	:	.806	.532	.277
MAX RADIUS	:	1.399	.913	.394
HORIZONTAL SPREAD	:	1.330	1.330	.344
VERTICAL SPREAD	:	1.885	.686	.615
EXTREME SPREAD	:	2.037	1.496	.705
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT3419

CENTERFIRE PATTERNS # 3



OF SHOTS - 5
 # IN CIR
 1in - 1
 2in - 3
 3in - 4
 HS - 2.232
 VS - 1.870
 GS - 2.387

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.812	.457	.241
MINIMUM X	:	-1.420	-.648	-.256
MAXIMUM Y	:	.669	.792	.448
MINIMUM Y	:	-1.201	-1.034	-.354
CENTROID X	:	.365	.721	.936
CENTROID Y	:	-.127	-.295	.050
POA TO CENTROID in.	:	.387	.778	.938
ANGLE POA CENTROID	:	289.194	292.232	3.057
MIN RADIUS	:	.325	.254	.273
MEAN RADIUS	:	.964	.689	.383
MAX RADIUS	:	1.570	1.220	.448
HORIZONTAL SPREAD	:	2.232	1.104	.497
VERTICAL SPREAD	:	1.870	1.826	.802
EXTREME SPREAD	:	2.387	2.027	.833
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			3	
NUMBER IN THREE INCH CIRCLE =			4	

1 Mar 1988

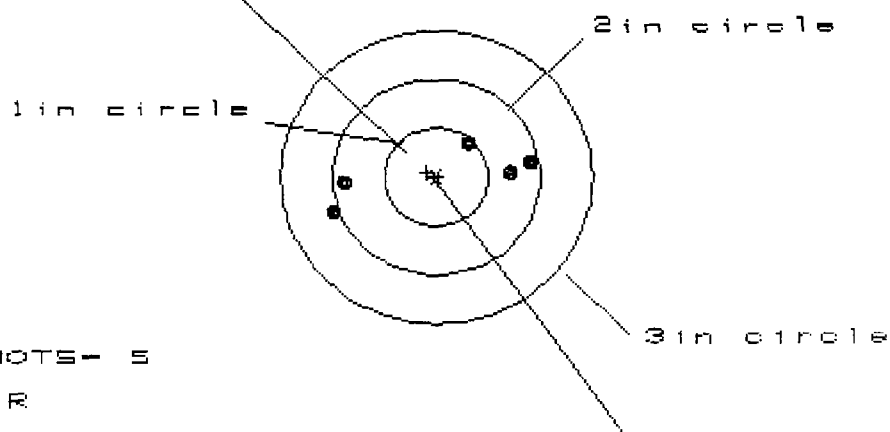
FILE:/PATTERNING/CENTERFIRE_PATT/HOT2908

Control

CENTERFIRE PATTERNS

1

POA



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 5

HS= 1.9000

VS= .722

GS= 1.964

Avg G.S 1.845

Avg MR .714

CENTROID #

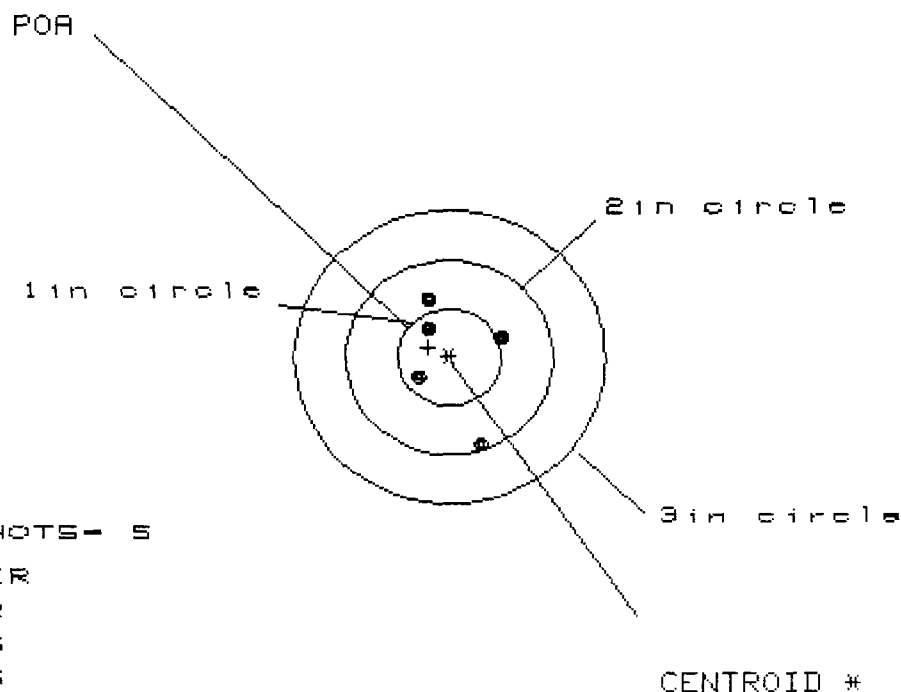
DT

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.865	.606	.617
MINIMUM X	:	-1.035	-1.121	-.919
MAXIMUM Y	:	.334	.236	.240
MINIMUM Y	:	-.388	-.157	-.153
CENTROID X	:	.090	.349	.147
CENTROID Y	:	-.049	.048	.045
POA TO CENTROID in.	:	.102	.352	.153
ANGLE POA CENTROID	:	298.369	7.917	16.938
MIN RADIUS	:	.489	.256	.385
MEAN RADIUS	:	.801	.605	.647
MAX RADIUS	:	1.105	1.132	.931
HORIZONTAL SPREAD	:	1.900	1.727	1.536
VERTICAL SPREAD	:	.722	.393	.393
EXTREME SPREAD	:	1.964	1.735	1.537
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H012908

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 2

2in = 5

3in = 5

HS= .791

VS= 1.504

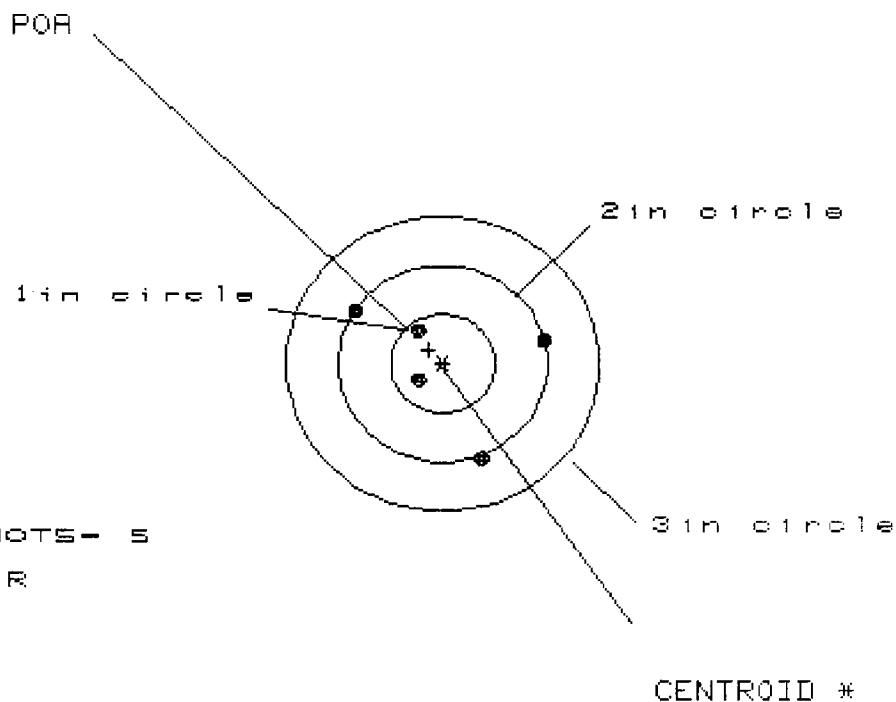
GS= 1.589

PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.495	.563	.505
MINIMUM X	-.296	-.228	-.286
MAXIMUM Y	.604	.379	.171
MINIMUM Y	-.900	-.435	-.309
CENTROID X	.202	.134	.192
CENTROID Y	-.104	.121	-.005
POA TO CENTROID in.	.227	.181	.192
ANGLE POA CENTROID	297.242	42.082	271.594
MIN RADIUS	.355	.168	.279
MEAN RADIUS	.571	.410	.408
MAX RADIUS	.940	.563	.524
HORIZONTAL SPREAD	.791	.791	.791
VERTICAL SPREAD	1.504	.814	.480
EXTREME SPREAD	1.589	.908	.908
NUMBER IN ONE INCH CIRCLE =	2		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT2908

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1 in = 2

2 in = 2

3 in = 5

HS= 1.859

VS= 1.573

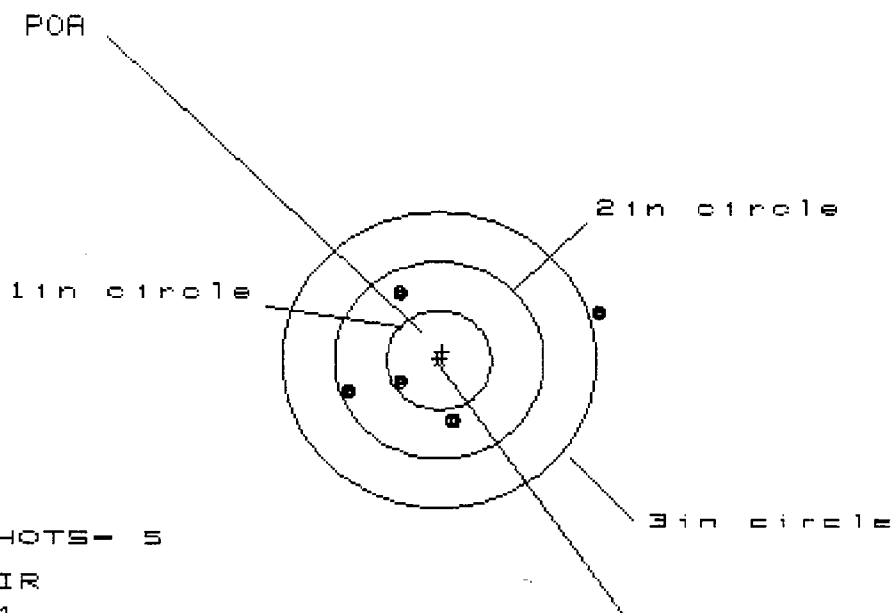
GS= 1.981

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.003	1.090	.833
MINIMUM X	:	-.856	-.769	-.418
MAXIMUM Y	:	.572	.322	.230
MINIMUM Y	:	-1.001	-.407	-.300
CENTROID X	:	-.130	.043	.300
CENTROID Y	:	-.138	.112	.005
POA TO CENTROID in.	:	.190	.120	.300
ANGLE POA CENTROID	:	316.707	68.885	.892
MIN RADIUS	:	.292	.203	.477
MEAN RADIUS	:	.771	.641	.609
MAX RADIUS	:	1.060	1.090	.836
HORIZONTAL SPREAD	:	1.859	1.859	1.251
VERTICAL SPREAD	:	1.573	.729	.530
EXTREME SPREAD	:	1.981	1.894	1.302
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			2	
NUMBER IN THREE INCH CIRCLE =			5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C2908FGLDT

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 4

HS= 2.432

VS= 1.377

GS= 2.541

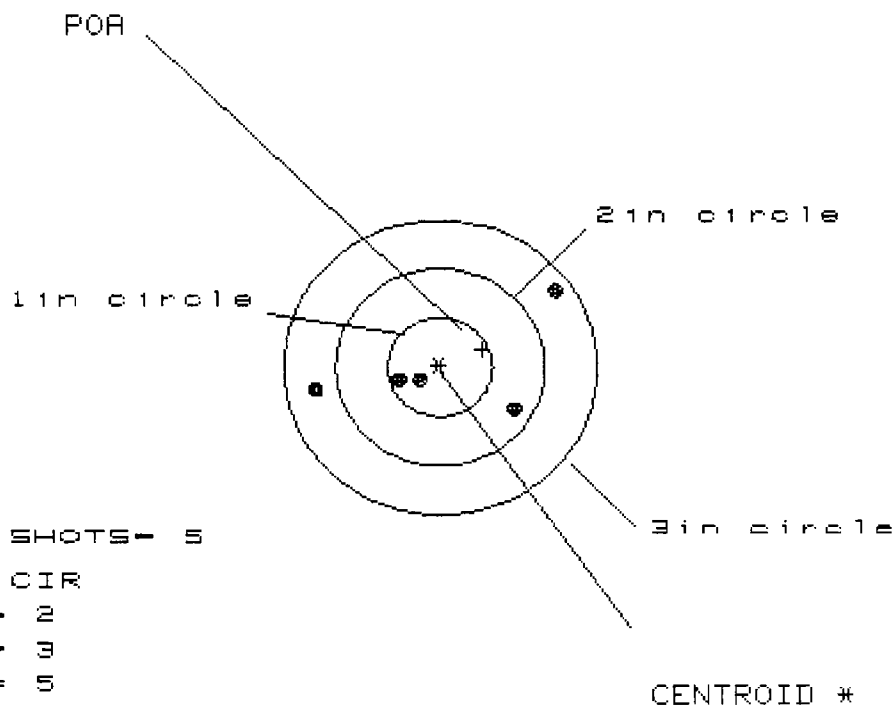
AVG = 2.607

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.531	.491	.318
MINIMUM X	:	-.901	-.519	-.192
MAXIMUM Y	:	.721	.837	.785
MINIMUM Y	:	-.656	-.540	-.592
CENTROID X	:	-.030	-.412	-.239
CENTROID Y	:	-.086	-.202	-.150
POA TO CENTROID in.	:	.091	.459	.282
ANGLE POA CENTROID	:	250.966	206.105	212.077
MIN RADIUS	:	.423	.148	.231
MEAN RADIUS	:	.891	.564	.570
MAX RADIUS	:	1.600	.837	.808
HORIZONTAL SPREAD	:	2.432	1.010	.510
VERTICAL SPREAD	:	1.377	1.377	1.377
EXTREME SPREAD	:	2.541	1.468	1.468
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			4	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C2908FGLDT

CENTERFIRE PATTERNS # 2



OF SHOTS - 5

IN CIR

1in = 2

2in = 3

3in = 5

HS = 2.2000

VS = 1.220

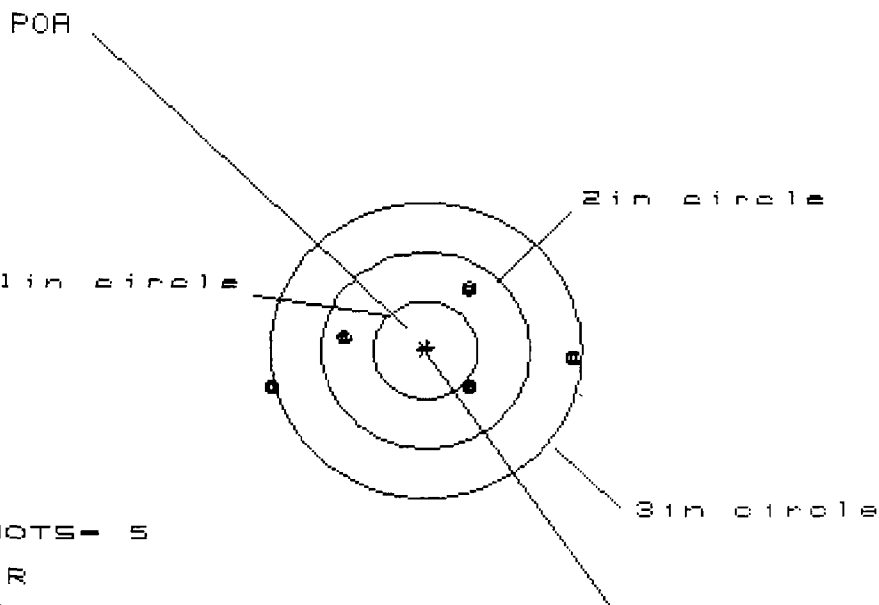
GS = 2.429

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.061	.946	.651
MINIMUM X	:	-1.148	-.883	-.429
MAXIMUM Y	:	.818	.117	.121
MINIMUM Y	:	-.402	-.197	-.193
CENTROID X	:	-.408	-.673	-.379
CENTROID Y	:	-.179	-.384	-.388
POA TO CENTROID in.	:	.446	.775	.543
ANGLE POA CENTROID	:	203.701	209.674	225.672
MIN RADIUS	:	.213	.137	.254
MEAN RADIUS	:	.786	.534	.456
MAX RADIUS	:	1.340	.966	.679
HORIZONTAL SPREAD	:	2.209	1.828	1.080
VERTICAL SPREAD	:	1.220	.314	.314
EXTREME SPREAD	:	2.429	1.840	1.112
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			3	
NUMBER IN THREE INCH CIRCLE =			5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C2908FGLDT

CENTERFIRE PATTERNS # 3



OF SHOTS- 5
 # IN CIR
 1 in = 0
 2 in = 3
 3 in = 4
 HS= 2.835
 VS= .980
 GS= 2.850

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.369	1.003	.432
MINIMUM X	-1.466	-1.142	-.808
MAXIMUM Y	.615	.533	.493
MINIMUM Y	-.365	-.447	-.487
CENTROID X	-.016	.350	.016
CENTROID Y	-.031	.051	.091
POA TO CENTROID in.	.035	.354	.093
ANGLE POA CENTROID	242.272	8.331	80.267
MIN RADIUS	.591	.458	.619
MEAN RADIUS	.997	.786	.693
MAX RADIUS	1.502	1.143	.808
HORIZONTAL SPREAD	2.835	2.145	1.240
VERTICAL SPREAD	.980	.980	.980
EXTREME SPREAD	2.850	2.151	1.330
NUMBER IN ONE INCH CIRCLE =	0		
NUMBER IN TWO INCH CIRCLE =	3		
NUMBER IN THREE INCH CIRCLE =	4		

1 Mar 1988

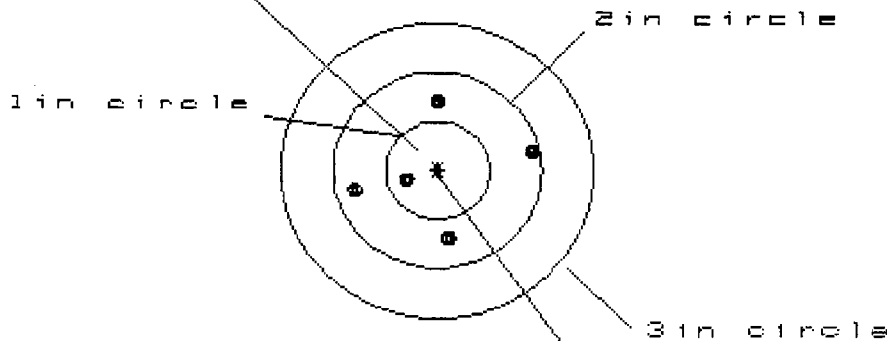
FILE:/PATTERNING/CENTERFIRE_PATT/H01359B

Control

CENTERFIRE PATTERNS

1

POA



OF SHOTS- 5

IN CIR

1in = 1

2in = 5

3in = 5

HS= 1.735

VS= 1.387

GS= 1.805

CENTROID *

A.G.S 1.618

A.M.R. .666

DT

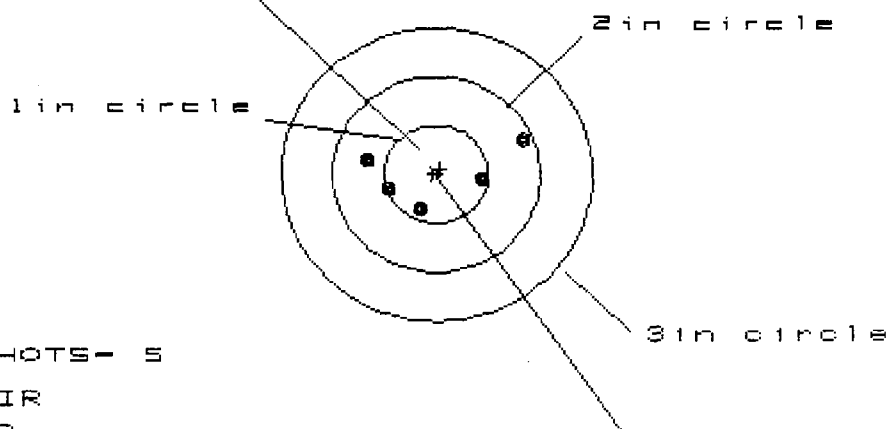
PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.936	.351	.162
MINIMUM X	:	-.799	-.565	-.228
MAXIMUM Y	:	.713	.776	.717
MINIMUM Y	:	-.674	-.611	-.670
CENTROID X	:	-.004	-.239	-.050
CENTROID Y	:	-.007	-.071	-.011
POA TO CENTROID in.	:	.008	.249	.052
ANGLE POA CENTROID	:	237.095	196.468	192.328
MIN RADIUS	:	.278	.041	.232
MEAN RADIUS	:	.696	.539	.547
MAX RADIUS	:	.970	.817	.720
HORIZONTAL SPREAD	:	1.735	.915	.390
VERTICAL SPREAD	:	1.387	1.387	1.387
EXTREME SPREAD	:	1.805	1.390	1.390
NUMBER IN ONE INCH CIRCLE =	:	1		
NUMBER IN TWO INCH CIRCLE =	:	5		
NUMBER IN THREE INCH CIRCLE =	:	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT359B

CENTERFIRE PATTERNS # 2

POA



OF SHOTS - 5

IN CIR

1in = 3

2in = 5

3in = 5

HS = 1.427

VS = .713

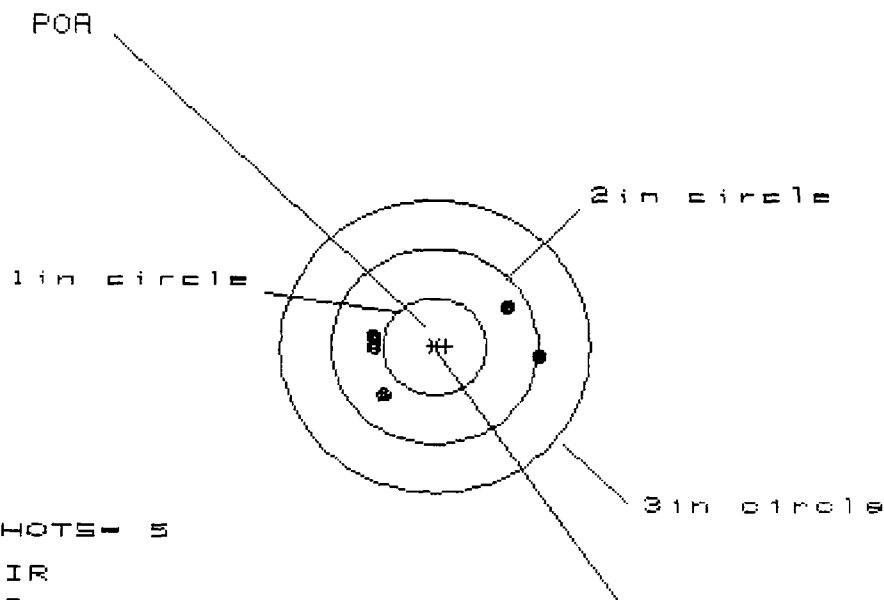
GS = 1.446

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.887	.650	.511
MINIMUM X	:	-.620	-.418	-.368
MAXIMUM Y	:	.380	.243	.112
MINIMUM Y	:	-.333	-.238	-.158
CENTROID X	:	-.038	-.240	-.101
CENTROID Y	:	-.052	-.147	-.227
POA TO CENTROID in.	:	.064	.281	.249
ANGLE POA CENTROID	:	233.487	211.401	246.116
MIN RADIUS	:	.391	.232	.212
MEAN RADIUS	:	.565	.401	.369
MAX RADIUS	:	.892	.651	.523
HORIZONTAL SPREAD	:	1.427	1.068	.879
VERTICAL SPREAD	:	.713	.481	.270
EXTREME SPREAD	:	1.446	1.089	.882
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT3598

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1 in = 0

2 in = 5

3 in = 5

HS = 1.596

VS = .908

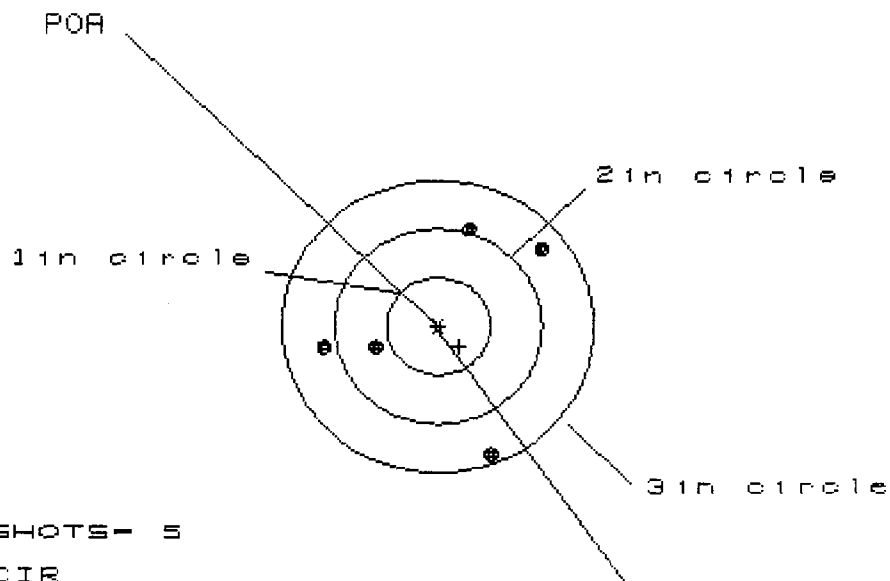
GS = 1.604

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.974	.945	.094
MINIMUM X	:	-.622	-.378	-.063
MAXIMUM Y	:	.442	.429	.233
MINIMUM Y	:	-.466	-.479	-.336
CENTROID X	:	-.107	-.351	-.666
CENTROID Y	:	-.005	.008	-.135
POA TO CENTROID in.	:	.107	.351	.679
ANGLE POA CENTROID	:	182.670	91.307	191.464
MIN RADIUS	:	.589	.348	.107
MEAN RADIUS	:	.736	.575	.233
MAX RADIUS	:	.976	1.038	.349
HORIZONTAL SPREAD	:	1.596	1.323	.157
VERTICAL SPREAD	:	.908	.908	.569
EXTREME SPREAD	:	1.604	1.478	.590
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HQ13696 Rynite

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 0

2in = 1

3in = 5

HS = 2.086

VS = 2.299

GS = 2.307

A.G.S. 2.387

A.M.R. .827

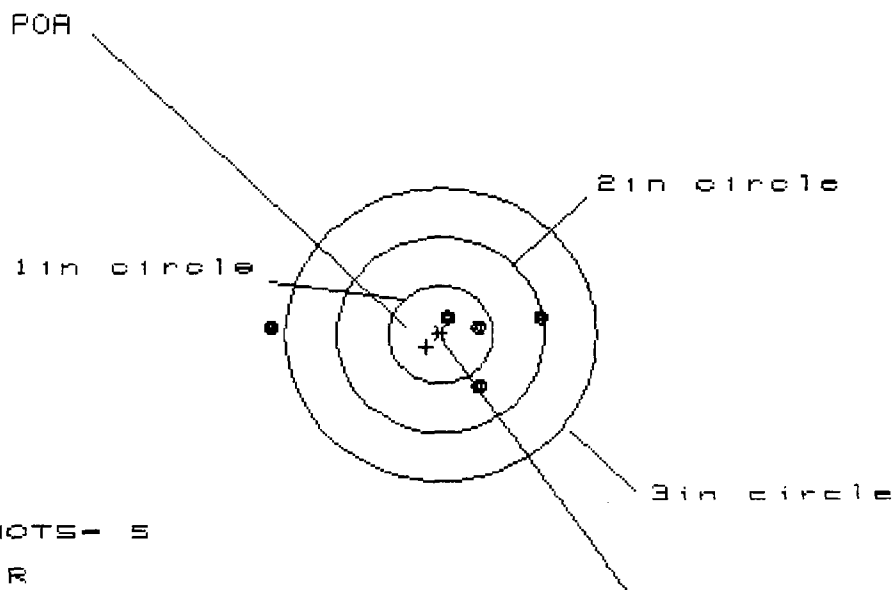
J.E.S

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.986	1.100	.748
MINIMUM X	:	-1.100	-.986	-.619
MAXIMUM Y	:	.982	.652	.792
MINIMUM Y	:	-1.317	-.536	-.397
CENTROID X	:	-.201	-.315	-.682
CENTROID Y	:	.208	.537	.398
POA TO CENTROID in.	:	.290	.623	.789
ANGLE POA CENTROID	:	135.980	149.628	120.279
MIN RADIUS	:	.643	.730	.417
MEAN RADIUS	:	1.082	.946	.747
MAX RADIUS	:	1.394	1.177	1.089
HORIZONTAL SPREAD	:	2.086	2.086	1.367
VERTICAL SPREAD	:	2.299	1.189	1.189
EXTREME SPREAD	:	2.307	2.293	1.810
NUMBER IN ONE INCH CIRCLE =			0	
NUMBER IN TWO INCH CIRCLE =			1	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT3696

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 2

2in = 4

3in = 4

HS= 2.622

VS= .774

GS= 2.624

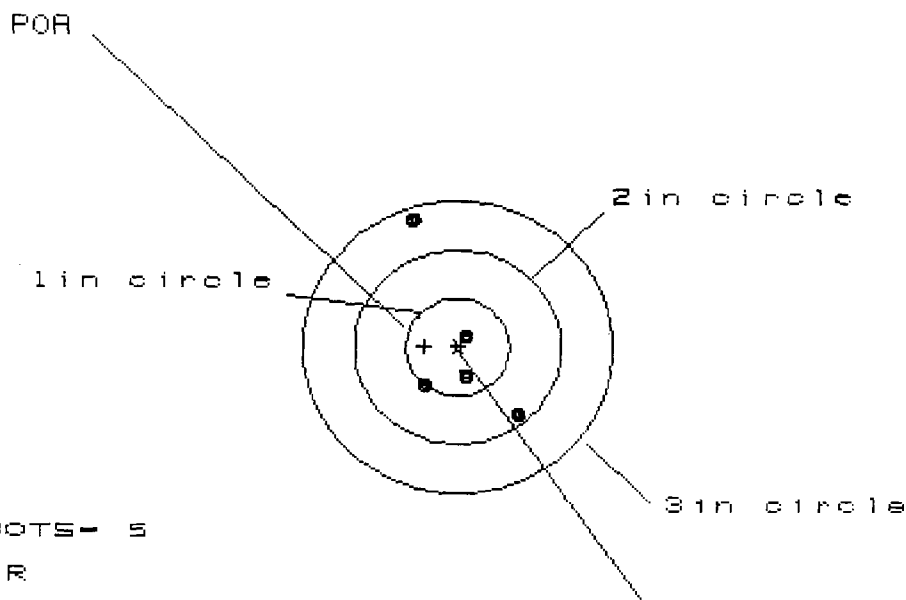
CENTROID #

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.969	.555	.099
MINIMUM X	:	-1.653	-.388	-.195
MAXIMUM Y	:	.204	.232	.272
MINIMUM Y	:	-.570	-.542	-.465
CENTROID X	:	.136	.549	.364
CENTROID Y	:	.124	.096	.019
POA TO CENTROID in.	:	.184	.558	.365
ANGLE POA CENTROID	:	42.270	9.910	2.933
MIN RADIUS	:	.170	.144	.216
MEAN RADIUS	:	.762	.431	.342
MAX RADIUS	:	1.657	.602	.475
HORIZONTAL SPREAD	:	2.622	.936	.294
VERTICAL SPREAD	:	.774	.774	.737
EXTREME SPREAD	:	2.624	1.007	.793
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		4	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT3696

CENTERFIRE PATTERNS # 3



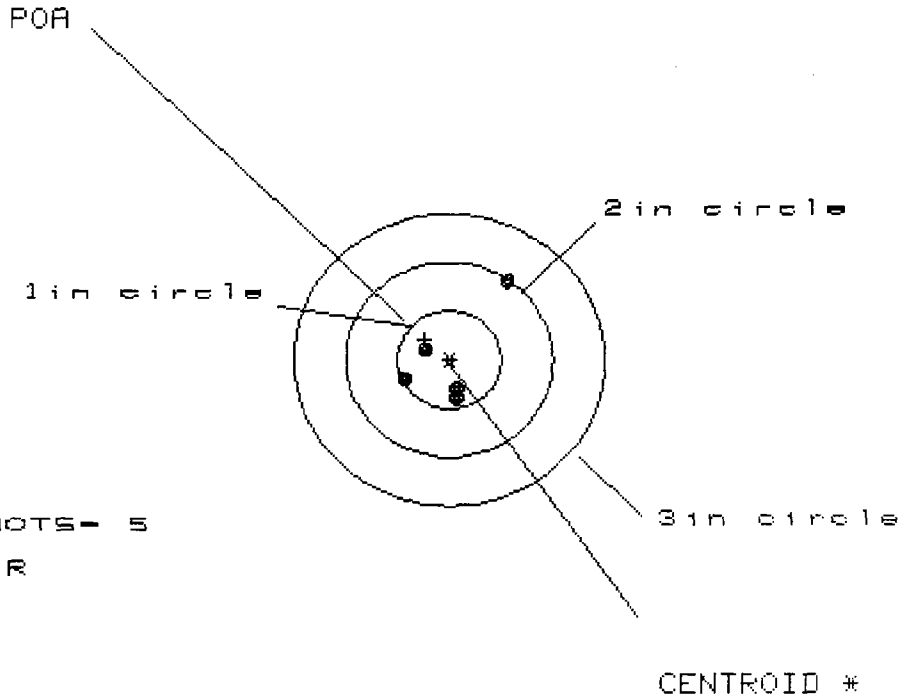
OF SHOTS- 5
 # IN CIR
 1in = 2
 2in = 4
 3in = 5
 HS= 1.012
 VS= 1.986
 GS= 2.229

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.548	.432	.140
MINIMUM X	:	-.454	-.396	-.252
MAXIMUM Y	:	1.313	.393	.278
MINIMUM Y	:	-.673	-.344	-.211
CENTROID X	:	.322	.438	.294
CENTROID Y	:	-.010	-.339	-.224
POA TO CENTROID in.	:	.322	.554	.370
ANGLE POA CENTROID	:	271.849	387.783	387.273
MIN RADIUS	:	.106	.048	.155
MEAN RADIUS	:	.636	.350	.261
MAX RADIUS	:	1.393	.552	.329
HORIZONTAL SPREAD	:	1.012	.828	.392
VERTICAL SPREAD	:	1.986	.737	.489
EXTREME SPREAD	:	2.229	.870	.610
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C353BFGLJS

CENTERFIRE PATTERNS # 1



OF SHOTS - 5
 # IN CIR
 1 in - 4
 2 in - 5
 3 in - 5
 HS - .953
 VS - 1.160
 GS - 1.374

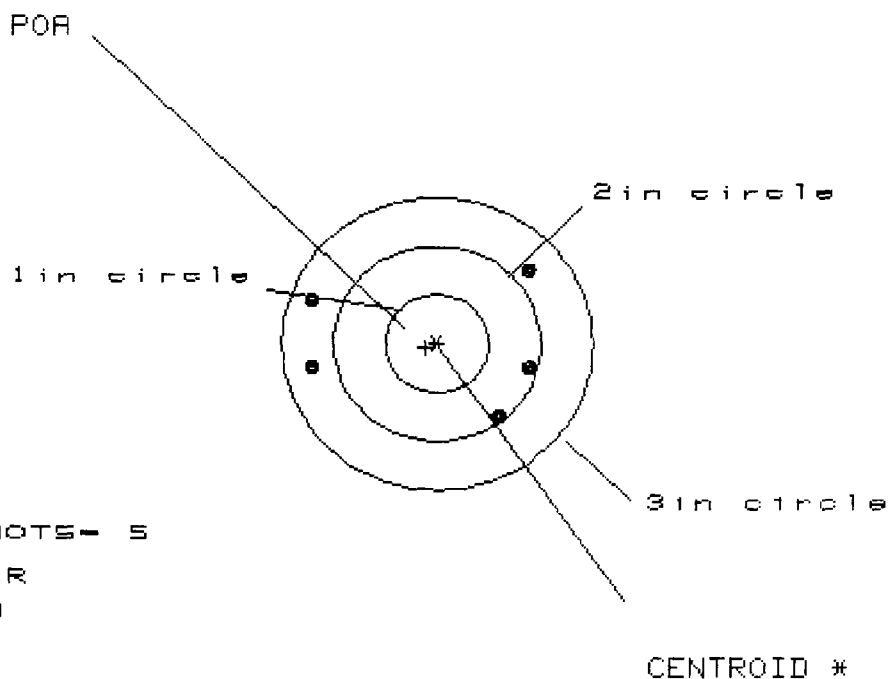
AVG: 2.012

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.550	.225	.136
MINIMUM X	:	-.403	-.265	-.227
MAXIMUM Y	:	.800	.274	.278
MINIMUM Y	:	-.360	-.160	-.156
CENTROID X	:	.236	.098	.187
CENTROID Y	:	-.208	-.408	-.412
POA TO CENTROID in.	:	.315	.420	.452
ANGLE POA CENTROID	:	311.443	346.468	335.608
MIN RADIUS	:	.286	.218	.151
MEAN RADIUS	:	.480	.267	.239
MAX RADIUS	:	.971	.387	.358
HORIZONTAL SPREAD	:	.953	.490	.363
VERTICAL SPREAD	:	1.160	.434	.434
EXTREME SPREAD	:	1.374	.566	.566
NUMBER IN ONE INCH CIRCLE =			4	
NUMBER IN TWO INCH CIRCLE =			5	
NUMBER IN THREE INCH CIRCLE =			5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C359BFLJS

CENTERFIRE PATTERNS # 2



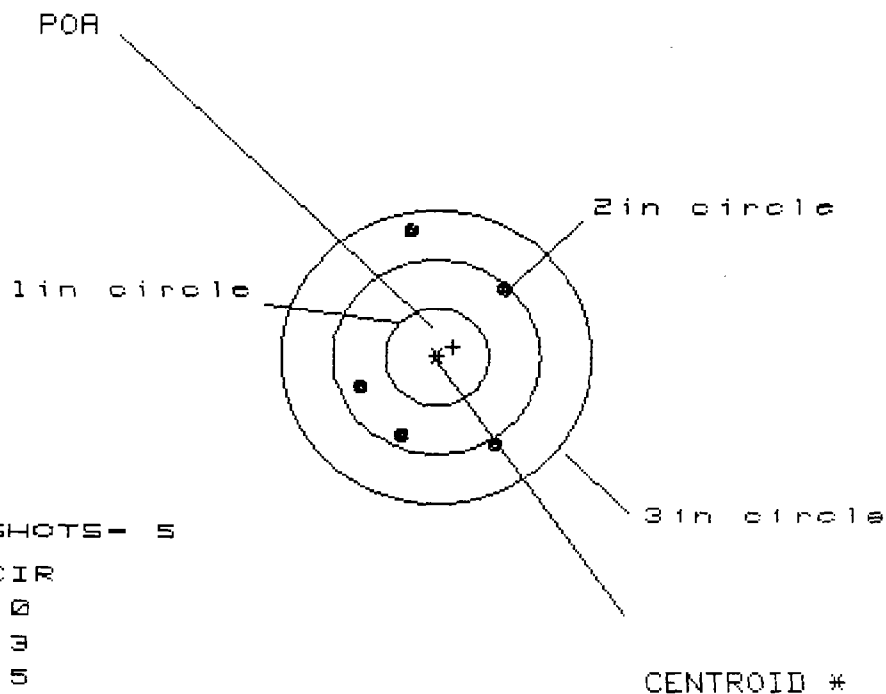
OF SHOTS- 5
 # IN CIR
 1 in = 0
 2 in = 2
 3 in = 5
 HS= 2.172
 VS= 1.468
 GS= 2.391

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.931	.627	.112
MINIMUM X	:	-1.241	-1.545	-.224
MAXIMUM Y	:	.753	.877	.836
MINIMUM Y	:	-.715	-.591	-.632
CENTROID X	:	.113	.417	.932
CENTROID Y	:	.044	-.080	-.039
POA TO CENTROID in.	:	.121	.424	.932
ANGLE POA CENTROID	:	21.221	280.900	272.377
MIN RADIUS	:	.930	.648	.232
MEAN RADIUS	:	1.136	.984	.582
MAX RADIUS	:	1.313	1.550	.843
HORIZONTAL SPREAD	:	2.172	2.172	.336
VERTICAL SPREAD	:	1.468	1.468	1.468
EXTREME SPREAD	:	2.391	2.391	1.506
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		2	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C359BFGJJS

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 0

2in = 3

3in = 5

HS= 1.407

VS= 2.132

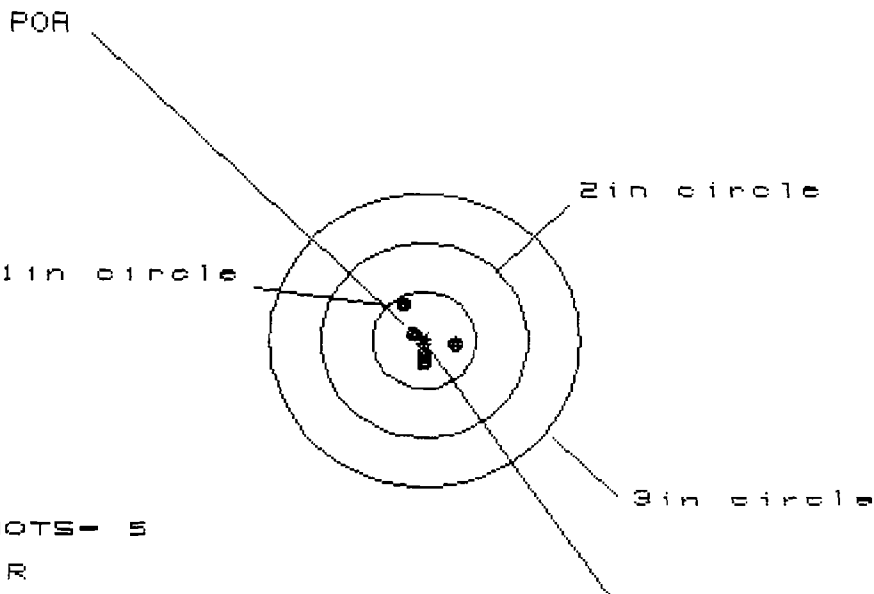
GS= 2.274

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.674	.626	.809
MINIMUM X	-.733	-.781	-.598
MAXIMUM Y	1.269	.985	.803
MINIMUM Y	-.863	-.546	-.636
CENTROID X	-.159	-.111	-.294
CENTROID Y	-.102	-.419	-.237
POA TO CENTROID in.	.189	.434	.378
ANGLE POA CENTROID	212.746	255.235	218.944
MIN RADIUS	.794	.601	.621
MEAN RADIUS	.984	.831	.810
MAX RADIUS	1.284	1.167	1.140
HORIZONTAL SPREAD	1.407	1.407	1.407
VERTICAL SPREAD	2.132	1.531	1.439
EXTREME SPREAD	2.274	1.763	1.763
NUMBER IN ONE INCH CIRCLE =	0		
NUMBER IN TWO INCH CIRCLE =	3		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3584RYFDT

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 5

2in = 5

3in = 5

HS = .410

VS = .658

GS = .668

AVG = 1.731

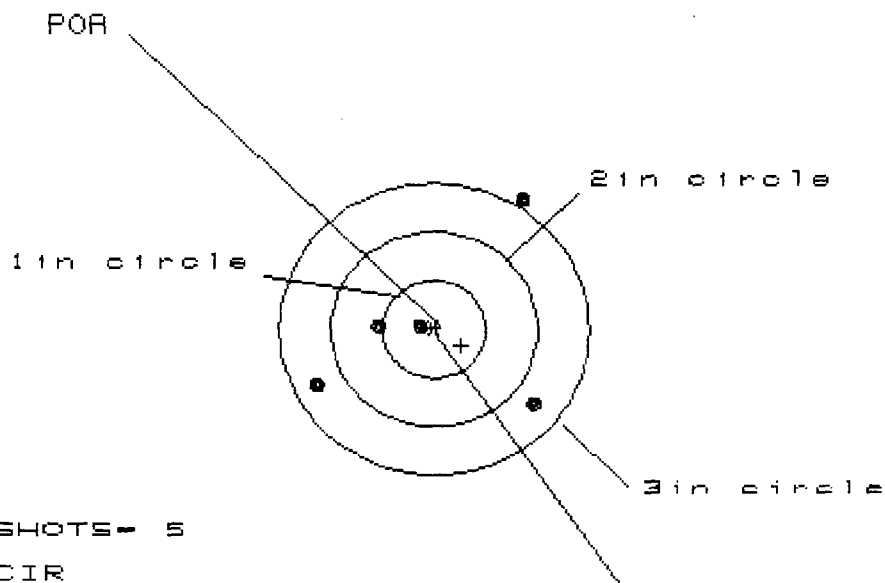
CENTROID #

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.257	.218	.193
MINIMUM X	:	-.153	-.139	-.164
MAXIMUM Y	:	.379	.153	.092
MINIMUM Y	:	-.279	-.184	-.066
CENTROID X	:	.003	.042	.067
CENTROID Y	:	.035	-.060	.001
POA TO CENTROID in.	:	.035	.073	.067
ANGLE POA CENTROID	:	84.746	325.330	1.134
MIN RADIUS	:	.106	.006	.072
MEAN RADIUS	:	.235	.158	.152
MAX RADIUS	:	.409	.221	.194
HORIZONTAL SPREAD	:	.410	.357	.357
VERTICAL SPREAD	:	.658	.337	.158
EXTREME SPREAD	:	.668	.376	.376
NUMBER IN ONE INCH CIRCLE	=	5		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3564AYFDT

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1 in = 1

2 in = 2

3 in = 4

HS= 2.037

VS= 2.137

GS= 2.766

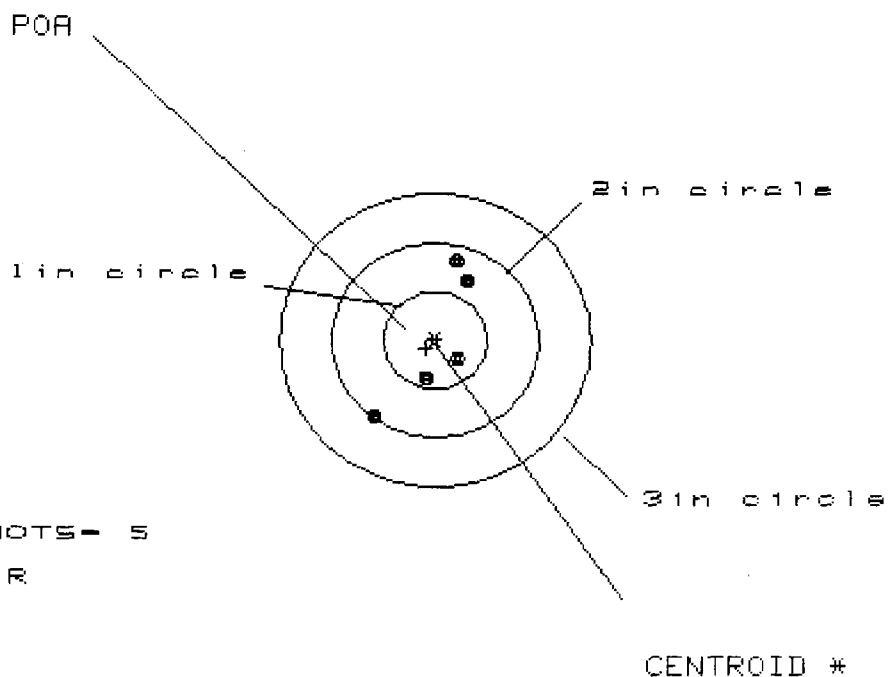
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.924	1.144	.847
MINIMUM X	:	-1.113	-.893	-.620
MAXIMUM Y	:	1.350	.355	.279
MINIMUM Y	:	-.787	-.449	-.525
CENTROID X	:	-.261	-.481	-.184
CENTROID Y	:	.166	-.172	-.096
POA TO CENTROID in.	:	.309	.511	.207
ANGLE POA CENTROID	:	122.394	199.667	207.514
MIN RADIUS	:	.150	.362	.359
MEAN RADIUS	:	.954	.742	.674
MAX RADIUS	:	1.612	1.229	.996
HORIZONTAL SPREAD	:	2.037	2.037	1.467
VERTICAL SPREAD	:	2.137	.804	.804
EXTREME SPREAD	:	2.766	2.049	1.658
NUMBER IN ONE INCH CIRCLE	=	1		
NUMBER IN TWO INCH CIRCLE	=	2		
NUMBER IN THREE INCH CIRCLE	=	4		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3564AYFDT

CENTERFIRE PATTERNS # 3



OF SHOTS - 5
 # IN CIR
 1 in = 2
 2 in = 5
 3 in = 5
 HS = .915
 VS = 1.540
 GS = 1.760

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.312	.161	.194
MINIMUM X	:	-.603	-.280	-.247
MAXIMUM Y	:	.792	.605	.611
MINIMUM Y	:	-.748	-.607	-.405
CENTROID X	:	.089	.240	.207
CENTROID Y	:	.083	.270	.068
POA TO CENTROID in.	:	.122	.361	.218
ANGLE POA CENTROID	:	42.938	48.366	18.241
MIN RADIUS	:	.279	.408	.212
MEAN RADIUS	:	.636	.532	.443
MAX RADIUS	:	.961	.668	.641
HORIZONTAL SPREAD	:	.915	.441	.441
VERTICAL SPREAD	:	1.540	1.212	1.016
EXTREME SPREAD	:	1.760	1.270	1.108
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H013584

ARY F

CENTERFIRE PATTERNS

1

POA

1in circle

2in circle

3in circle

OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 4

HS= 2.283

VS= 1.039

GS= 2.284

CENTROID *

AGS. 1.941

AMR. .771

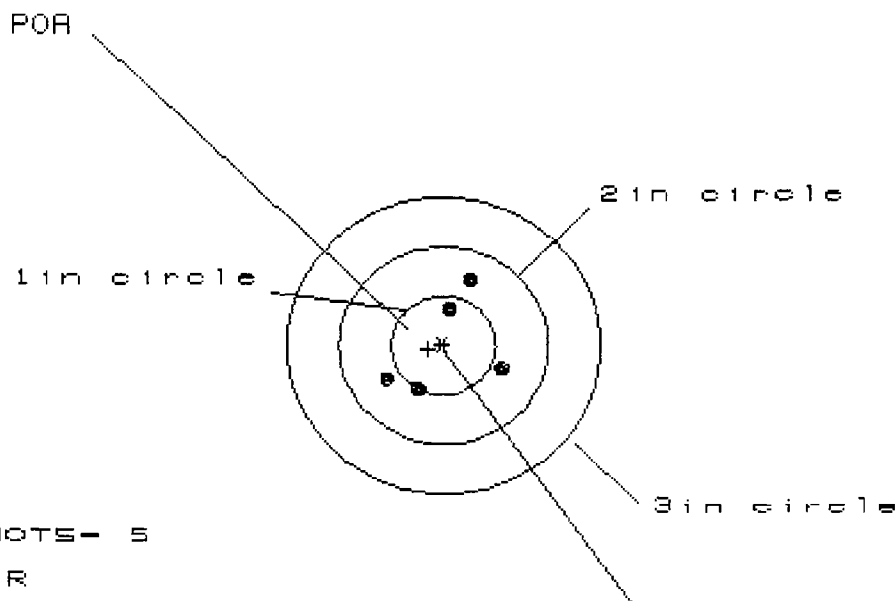
D.R.T.

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.702	.306	.225
MINIMUM X	-1.581	-.245	-.297
MAXIMUM Y	.721	.641	.045
MINIMUM Y	-.318	-.251	-.037
CENTROID X	.040	.436	.517
CENTROID Y	-.045	.035	-.179
POA TO CENTROID in.	.060	.437	.547
ANGLE POA CENTROID	317.956	4.560	289.086
MIN RADIUS	.229	.294	.082
MEAN RADIUS	.772	.410	.203
MAX RADIUS	1.613	.686	.297
HORIZONTAL SPREAD	2.283	.551	.522
VERTICAL SPREAD	1.039	.892	.082
EXTREME SPREAD	2.294	.980	.525
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	4		
NUMBER IN THREE INCH CIRCLE =	4		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT3564

CENTERFIRE PATTERNS # 2



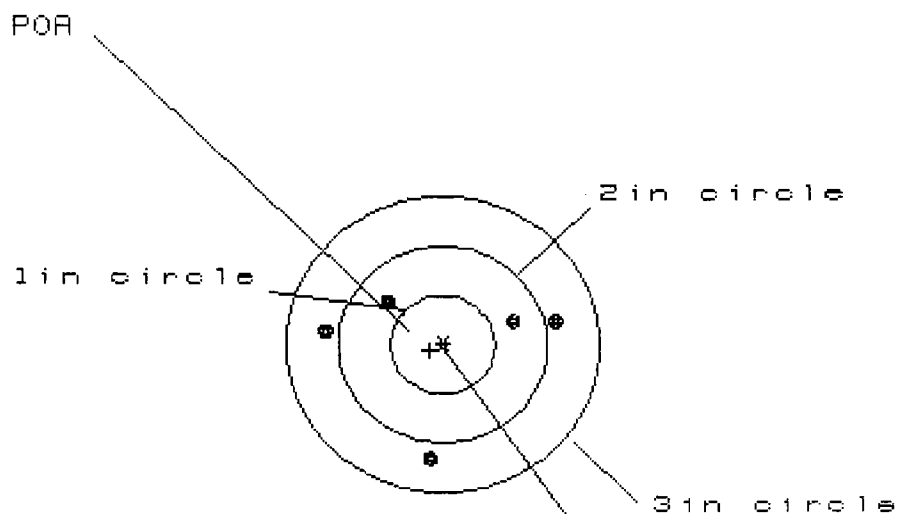
OF SHOTS- 5
 # IN CIR
 1in = 1
 2in = 5
 3in = 5
 HS= 1.160
 VS= 1.137
 GS= 1.353

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.589	.651	.481
MINIMUM X	:	-.571	-.509	-.389
MAXIMUM Y	:	.711	.530	.467
MINIMUM Y	:	-.426	-.248	-.311
CENTROID X	:	.143	.081	.251
CENTROID Y	:	.034	-.144	-.081
POA TO CENTROID in.	:	.147	.165	.264
ANGLE POA CENTROID	:	13.374	330.524	287.816
MIN RADIUS	:	.352	.331	.476
MEAN RADIUS	:	.588	.517	.493
MAX RADIUS	:	.753	.657	.505
HORIZONTAL SPREAD	:	1.160	1.160	.870
VERTICAL SPREAD	:	1.137	.778	.778
EXTREME SPREAD	:	1.353	1.164	.884
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1986

FILE:/PATTERNING/CENTERFIRE_PATT/HOT3584

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 0

2in = 2

3in = 5

HS= 2.174

VS= 1.644

GS= 2.175

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.078	1.046	.670
MINIMUM X	:	-1.096	-1.128	-.905
MAXIMUM Y	:	.489	.200	.165
MINIMUM Y	:	-1.155	-.104	-.090
CENTROID X	:	.125	.157	.533
CENTROID Y	:	.058	.347	.382
POA TO CENTROID in.	:	.138	.381	.656
ANGLE POA CENTROID	:	25.007	65.637	35.612
MIN RADIUS	:	.690	.566	.247
<u>MEAN RADIUS</u>	:	<u>.953</u>	.840	.614
<u>MAX RADIUS</u>	:	<u>1.162</u>	1.133	.920
HORIZONTAL SPREAD	:	2.174	2.174	1.575
VERTICAL SPREAD	:	1.644	.304	.255
EXTREME SPREAD	:	2.175	2.175	1.596
NUMBER IN ONE INCH CIRCLE	=	0		
NUMBER IN TWO INCH CIRCLE	=	2		
NUMBER IN THREE INCH CIRCLE	=	5		

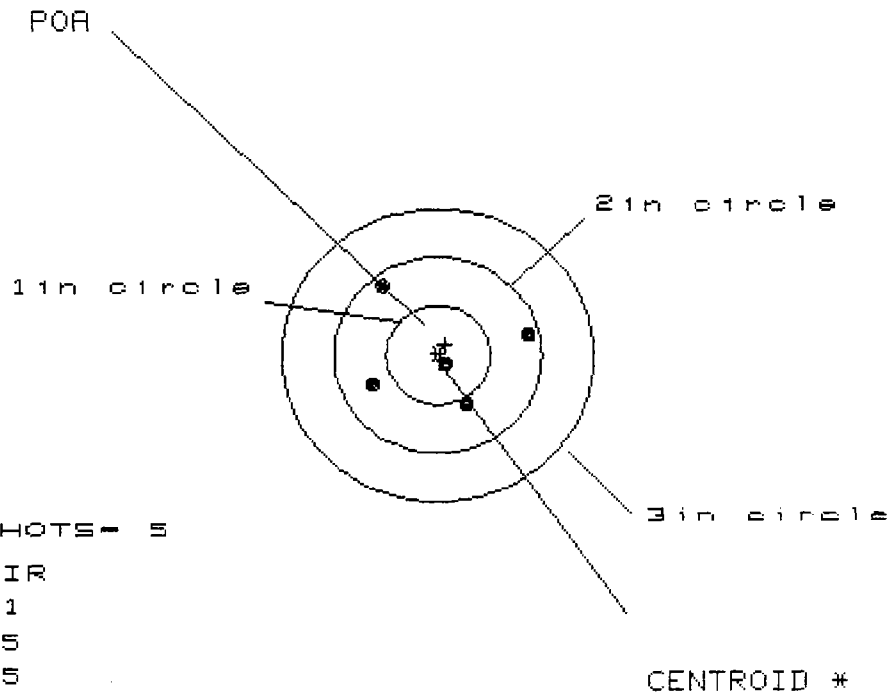
	13/8/88	Cold
2427	Rynite	DS
13696	Rynite	DT
2419 -	ARY-F	J.S.
5137	ARY-F	DT
1931.	" "	J.S.
10125	" "	DT
1794	" "	J.S.
3564	" "	DT (WINNER)
2419 -	FIB. GLASS-	J.S.
2908	" "	DT
3598	" "	J.S.

880181

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C2427RJS

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 1

2in = 5

3in = 5

HS= 1.456

VS= 1.234

GS= 1.557

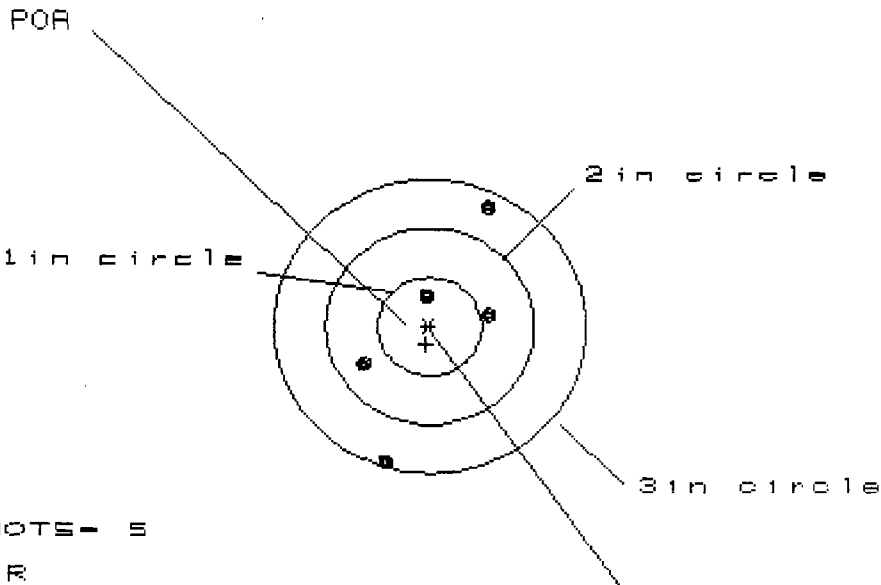
AVG = 2.345

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.868	.724	.319
MINIMUM X	-.588	-.732	-.491
MAXIMUM Y	.747	.347	.167
MINIMUM Y	-.487	-.300	-.185
CENTROID X	-.071	.073	-.168
CENTROID Y	-.111	-.297	-.413
POA TO CENTROID in.	.131	.306	.446
ANGLE POA CENTROID	237.495	346.168	247.881
MIN RADIUS	.154	.086	.240
MEAN RADIUS	.634	.485	.367
MAX RADIUS	.943	.803	.491
HORIZONTAL SPREAD	1.456	1.456	.810
VERTICAL SPREAD	1.234	.648	.352
EXTREME SPREAD	1.557	1.523	.835
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C2427RJS

CENTERFIRE PATTERNS # 2



OF SHOTS - 5
 # IN CIR
 1 in - 1
 2 in - 3
 3 in - 5
 HS= 1.216
 VS= 2.593
 GS= 2.788

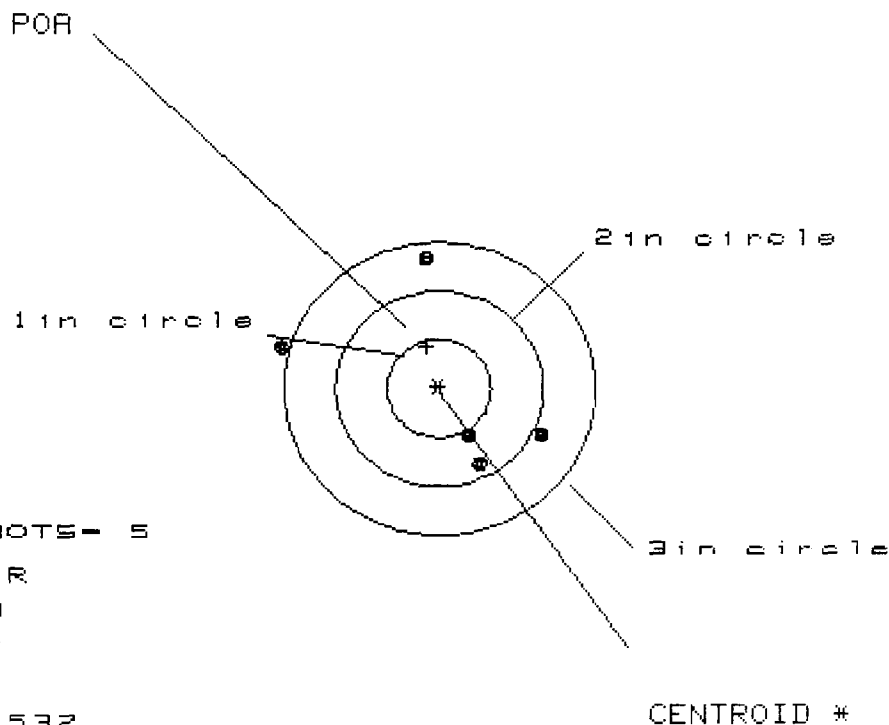
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.593	.485	.576
MINIMUM X	:	-.623	-.731	-.570
MAXIMUM Y	:	1.257	.923	.283
MINIMUM Y	:	-1.336	-.718	-.411
CENTROID X	:	.033	.141	-.020
CENTROID Y	:	.181	.514	.207
POA TO CENTROID in.	:	.184	.534	.208
ANGLE POA CENTROID	:	79.584	74.648	174.381
MIN RADIUS	:	.315	.170	.283
MEAN RADIUS	:	.877	.673	.525
MAX RADIUS	:	1.404	1.043	.702
HORIZONTAL SPREAD	:	1.216	1.216	1.146
VERTICAL SPREAD	:	2.593	1.642	.694
EXTREME SPREAD	:	2.788	2.043	1.266
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			3	
NUMBER IN THREE INCH CIRCLE =			5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C2427RJS

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1in = 0

2in = 2

3in = 4

HS = 2.532

VS = 2.155

GS = 2.689

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.018	.639	.461
MINIMUM X	:	-1.514	-.535	-.290
MAXIMUM Y	:	1.354	1.458	.105
MINIMUM Y	:	-.801	-.697	-.211
CENTROID X	:	.120	.498	.677
CENTROID Y	:	-.431	-.535	-1.021
POA TO CENTROID in.	:	.447	.731	1.225
ANGLE POA CENTROID	:	344.428	317.036	326.461
MIN RADIUS	:	.554	.397	.271
MEAN RADIUS	:	1.101	.848	.351
MAX RADIUS	:	1.571	1.553	.473
HORIZONTAL SPREAD	:	2.532	1.175	.751
VERTICAL SPREAD	:	2.155	2.155	.316
EXTREME SPREAD	:	2.689	2.222	.751
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		2	
NUMBER IN THREE INCH CIRCLE	=		4	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H012422

Rynite

CENTERFIRE PATTERNS

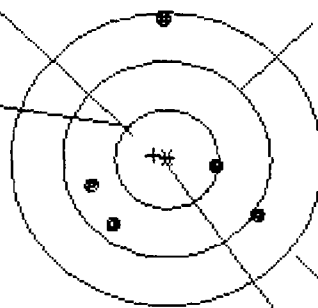
1

POA

1in circle

2in circle

3in circle



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 5

HS= 1.560

VS= 2.053

GS= 2.124

CENTROID #

A.G.S. 2.071

A.M.R. .687

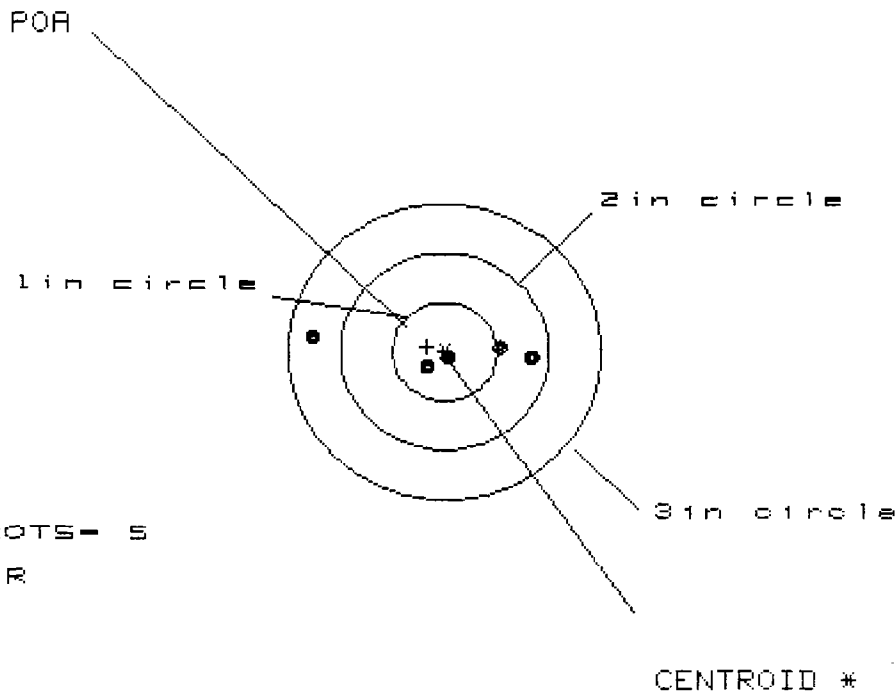
D.R.T.

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.825	.818	.717
MINIMUM X	-.735	-.742	-.470
MAXIMUM Y	1.418	.338	.280
MINIMUM Y	-.635	-.280	-.338
CENTROID X	.126	.133	-.139
CENTROID Y	-.041	-.396	-.338
POA TO CENTROID in.	.133	.418	.366
ANGLE POA CENTROID	288.080	341.359	247.665
MIN RADIUS	.452	.558	.418
MEAN RADIUS	.888	.684	.554
MAX RADIUS	1.419	.835	.770
HORIZONTAL SPREAD	1.560	1.560	1.187
VERTICAL SPREAD	2.053	.618	.618
EXTREME SPREAD	2.124	1.586	1.208
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	4		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H012427

CENTERFIRE PATTERNS # 2



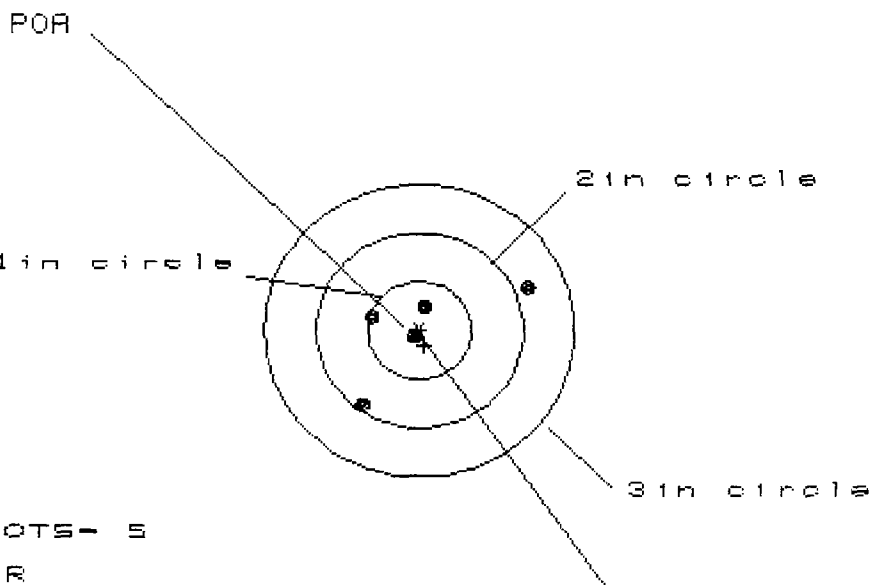
OF SHOTS- 5
 # IN CIR
 1 in = 2
 2 in = 4
 3 in = 5
 HS= 2.111
 VS= .318
 GS= 2.120

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.843	.526	.388
MINIMUM X	:	-1.268	-.497	-.321
MAXIMUM Y	:	.145	.134	.130
MINIMUM Y	:	-.173	-.137	-.141
CENTROID X	:	.169	.486	.310
CENTROID Y	:	-.053	-.089	-.085
POA TO CENTROID in.	:	.177	.494	.322
ANGLE POA CENTROID	:	287.308	280.354	285.260
MIN RADIUS	:	.078	.242	.067
MEAN RADIUS	:	.597	.384	.276
MAX RADIUS	:	1.276	.526	.409
HORIZONTAL SPREAD	:	2.111	1.023	.709
VERTICAL SPREAD	:	.318	.271	.271
EXTREME SPREAD	:	2.120	1.031	.759
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			4	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H012427

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 3

2in = 4

3in = 5

HS= 1.551

VS= 1.211

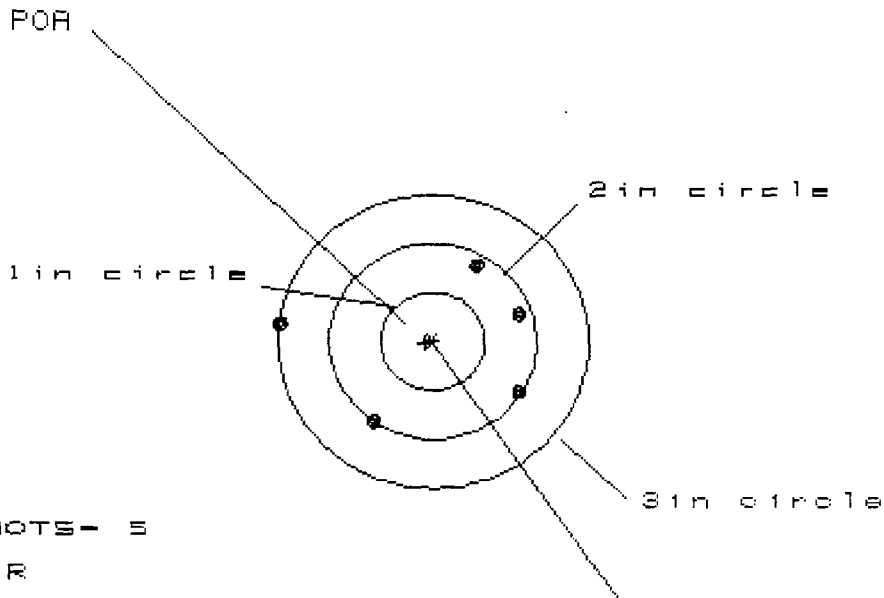
GS= 1.968

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.028	.283	.194
MINIMUM X	:	-.523	-.266	-.307
MAXIMUM Y	:	.421	.379	.151
MINIMUM Y	:	-.790	-.684	-.153
CENTROID X	:	-.045	-.302	-.213
CENTROID Y	:	.160	.054	.282
POA TO CENTROID in.	:	.166	.307	.354
ANGLE POA CENTROID	:	164.320	100.192	142.968
MIN RADIUS	:	.063	.215	.190
MEAN RADIUS	:	.577	.435	.248
MAX RADIUS	:	1.111	.734	.387
HORIZONTAL SPREAD	:	1.551	.549	.501
VERTICAL SPREAD	:	1.211	1.063	.304
EXTREME SPREAD	:	1.968	1.196	.522
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C369BROT

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1 in = 0

2 in = 4

3 in = 5

HS = 2.259

VS = 1.613

GS = 2.352

AVG = 1.649

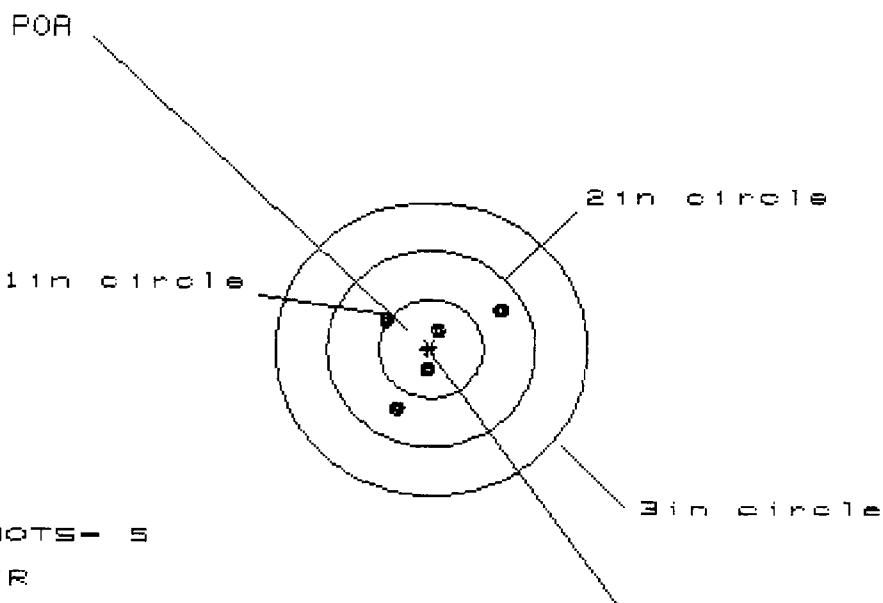
CENTROID #

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.788	.420	.107
MINIMUM X	-1.471	-.941	-.208
MAXIMUM Y	.807	.855	.603
MINIMUM Y	-.806	-.758	-.683
CENTROID X	.073	.441	.754
CENTROID Y	.017	-.032	.221
POA TO CENTROID in.	.075	.442	.786
ANGLE POA TO CENTROID	13.442	274.090	16.336
MIN RADIUS	.838	.536	.134
MEAN RADIUS	1.033	.801	.487
MAX RADIUS	1.484	1.208	.690
HORIZONTAL SPREAD	2.259	1.361	.315
VERTICAL SPREAD	1.613	1.613	1.286
EXTREME SPREAD	2.352	1.922	1.323
NUMBER IN ONE INCH CIRCLE =	0		
NUMBER IN TWO INCH CIRCLE =	4		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3636RDT

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= 1.079

VS= .922

GS= 1.410

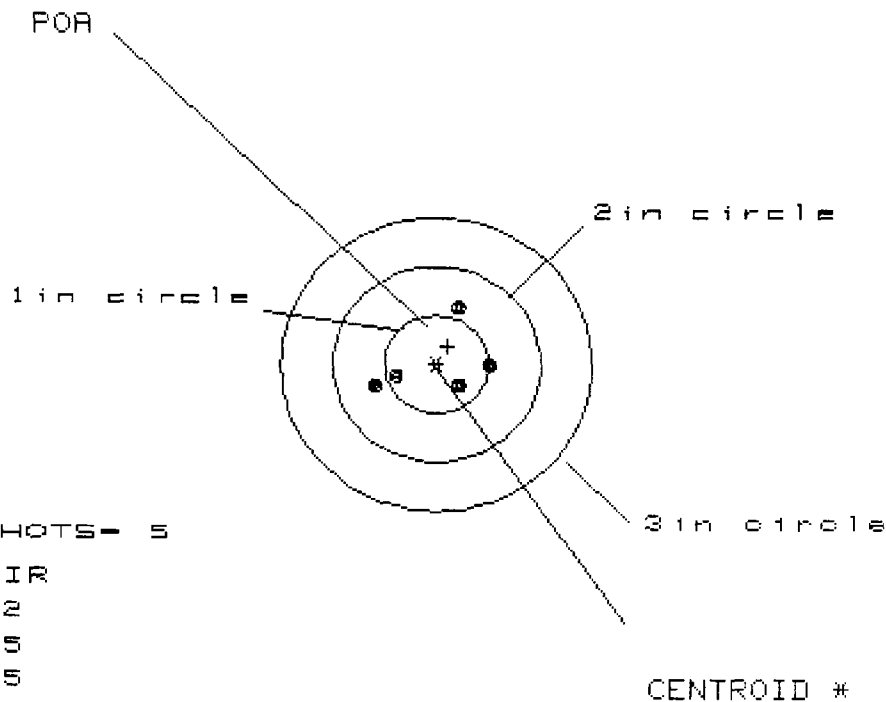
CENTROID *

PATTERN #	2	2	2
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.693	.257	.190
MINIMUM X	-.386	-.212	-.279
MAXIMUM Y	.351	.396	.235
MINIMUM Y	-.571	-.483	-.315
CENTROID X	.033	-.141	-.074
CENTROID Y	.004	-.084	.077
POA TO CENTROID in.	.033	.164	.107
ANGLE POA CENTROID	6.995	210.754	136.262
MIN RADIUS	.175	.219	.206
MEAN RADIUS	.474	.386	.300
MAX RADIUS	.777	.523	.365
HORIZONTAL SPREAD	1.079	.469	.469
VERTICAL SPREAD	.922	.879	.550
EXTREME SPREAD	1.410	.879	.662
NUMBER IN ONE INCH CIRCLE =	3		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3636ROT

CENTERFIRE PATTERNS # 3



OF SHOTS - 5
 # IN CIR
 1 in = 2
 2 in = 5
 3 in = 5
 HS = 1.093
 VS = .876
 GS = 1.184

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.549	.612	.451
MINIMUM X	:	-.544	-.481	-.515
MAXIMUM Y	:	.625	.117	.085
MINIMUM Y	:	-.251	-.094	-.119
CENTROID X	:	-.111	-.174	-.013
CENTROID Y	:	-.187	-.344	-.312
POA TO CENTROID in.	:	.218	.385	.313
ANGLE POA CENTROID	:	239.452	243.185	267.556
MIN RADIUS	:	.292	.240	.135
MEAN RADIUS	:	.509	.428	.370
MAX RADIUS	:	.674	.623	.516
HORIZONTAL SPREAD	:	1.093	1.093	.966
VERTICAL SPREAD	:	.876	.211	.204
EXTREME SPREAD	:	1.184	1.113	.967
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			5	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

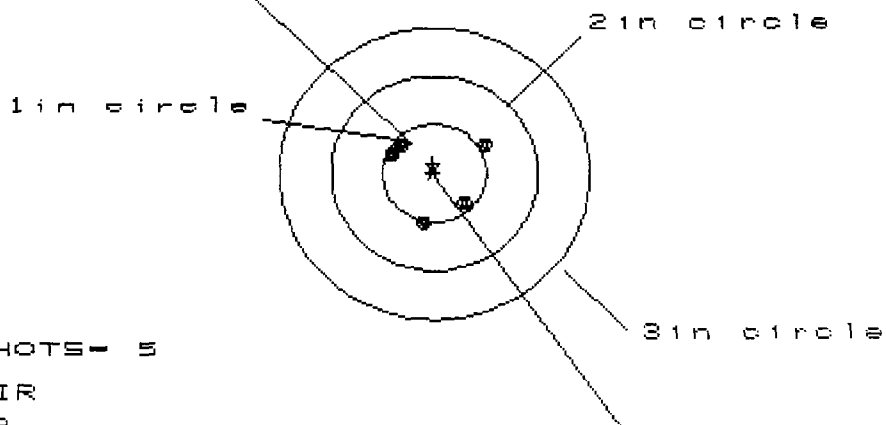
FILE:/PATTERNING/CENTERFIRE_PATT/HQ17194

ARY F

CENTERFIRE PATTERNS

1

POA



OF SHOTS - 5

IN CIR

1in = 3

2in = 2

3in = 0

HS = .078

VS = .854

GS = 1.008

CENTROID *

A.G.S. 1.757

A.M.R. .716

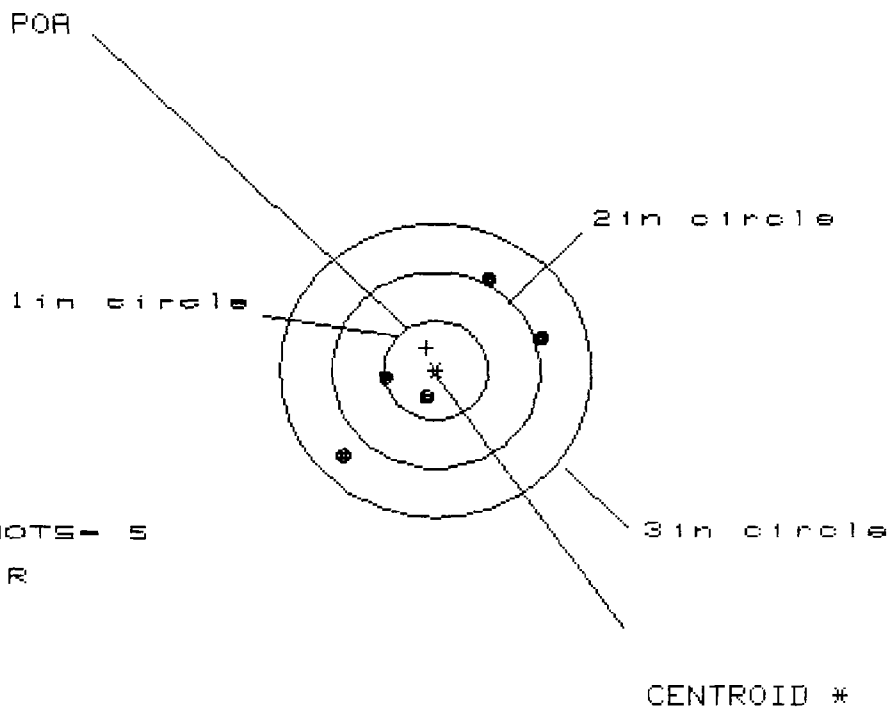
JES

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.464	.423	.438
MINIMUM X	:	-.414	-.298	-.283
MAXIMUM Y	:	.325	.325	.176
MINIMUM Y	:	-.529	-.448	-.345
CENTROID X	:	.012	-.104	-.119
CENTROID Y	:	-.093	-.174	-.025
POA TO CENTROID in.	:	.094	.203	.122
ANGLE POA CENTROID	:	352.648	239.169	191.864
MIN RADIUS	:	.376	.367	.235
MEAN RADIUS	:	.473	.430	.374
MAX RADIUS	:	.566	.466	.558
HORIZONTAL SPREAD	:	.878	.721	.721
VERTICAL SPREAD	:	.854	.773	.521
EXTREME SPREAD	:	1.008	.885	.885
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT7194

CENTERFIRE PATTERNS # 2



OF SHOTS - 5

IN CIR

1 in = 1

2 in = 2

3 in = 5

HS = 1.974

VS = 1.826

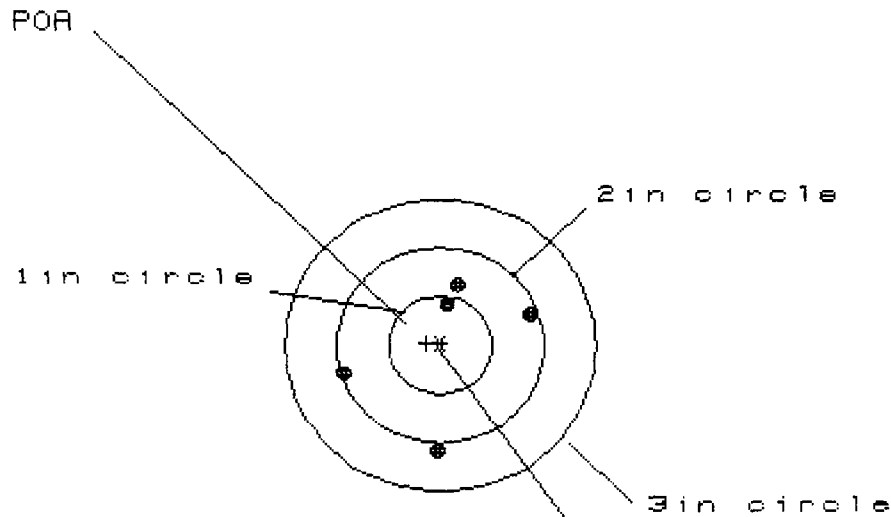
GS = 2.342

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.049	.818	.584
MINIMUM X	:	-.925	-.765	-.492
MAXIMUM Y	:	.940	.718	.750
MINIMUM Y	:	-.886	-.495	-.463
CENTROID X	:	.088	.319	.046
CENTROID Y	:	-.231	-.009	-.041
POA TO CENTROID in.	:	.247	.319	.061
ANGLE POA CENTROID	:	339.199	271.617	311.479
MIN RADIUS	:	.304	.615	.472
MEAN RADIUS	:	.862	.762	.664
MAX RADIUS	:	1.281	.828	.950
HORIZONTAL SPREAD	:	1.974	1.583	1.076
VERTICAL SPREAD	:	1.826	1.213	1.213
EXTREME SPREAD	:	2.342	1.636	1.494
NUMBER IN ONE INCH CIRCLE	=	1		
NUMBER IN TWO INCH CIRCLE	=	2		
NUMBER IN THREE INCH CIRCLE	=	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT7194

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 3

3in = 5

HS= 1.844

VS= 1.731

GS= 1.921

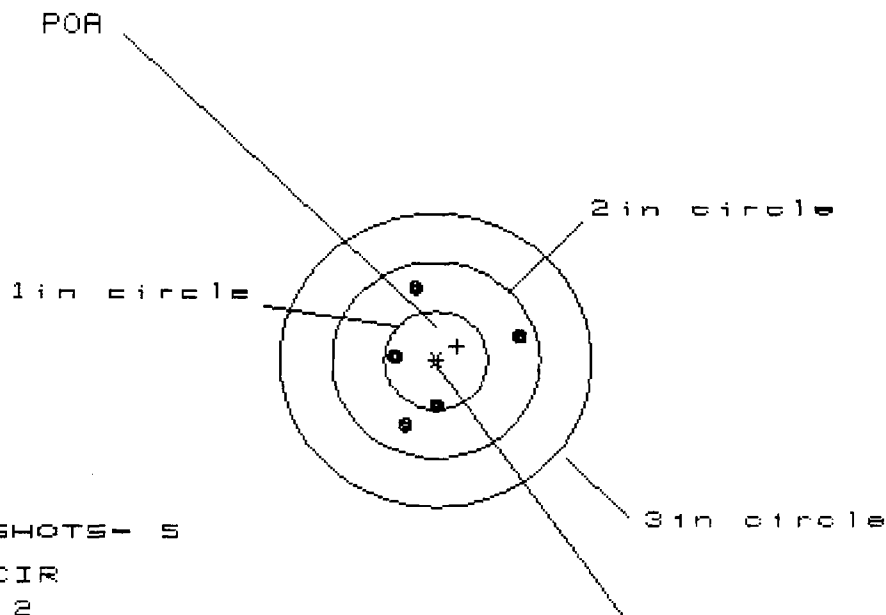
CENTROID *

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.866	.848	.516
MINIMUM X	-.978	-.996	-.296
MAXIMUM Y	.637	.364	.194
MINIMUM Y	-1.094	-.509	-.141
CENTROID X	.133	.151	.483
CENTROID Y	-.020	.253	.423
POA TO CENTROID in.	.135	.295	.642
ANGLE POA CENTROID	278.695	59.211	41.208
MIN RADIUS	.393	.122	.294
MEAN RADIUS	.812	.617	.377
MAX RADIUS	1.096	1.118	.535
HORIZONTAL SPREAD	1.844	1.844	.812
VERTICAL SPREAD	1.731	.873	.335
EXTREME SPREAD	1.921	1.921	.817
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	3		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C7194AYFJS

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1 in = 2

2 in = 5

3 in = 5

HS= 1.215

VS= 1.393

GS= 1.417

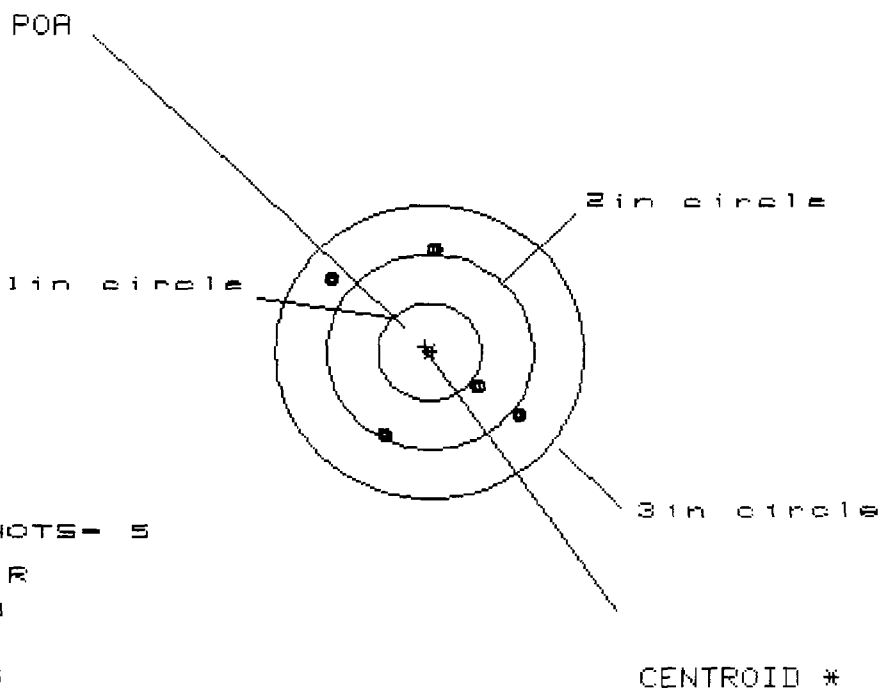
AVG: 1.949

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.819	.199	.210
MINIMUM X	:	-.396	-.191	-.180
MAXIMUM Y	:	.733	.801	.401
MINIMUM Y	:	-.660	-.592	-.325
CENTROID X	:	-.204	-.409	-.420
CENTROID Y	:	-.141	-.209	-.476
POA TO CENTROID in.:	:	.248	.460	.635
ANGLE POA CENTROID	:	214.561	207.081	228.596
MIN RADIUS	:	.401	.233	.224
MEAN RADIUS	:	.627	.506	.330
MAX RADIUS	:	.864	.802	.440
HORIZONTAL SPREAD	:	1.215	.390	.390
VERTICAL SPREAD	:	1.393	1.393	.726
EXTREME SPREAD	:	1.417	1.395	.741
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C7194AYFJS

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 0

2in = 2

3in = 5

HS= 1.753

VS= 1.846

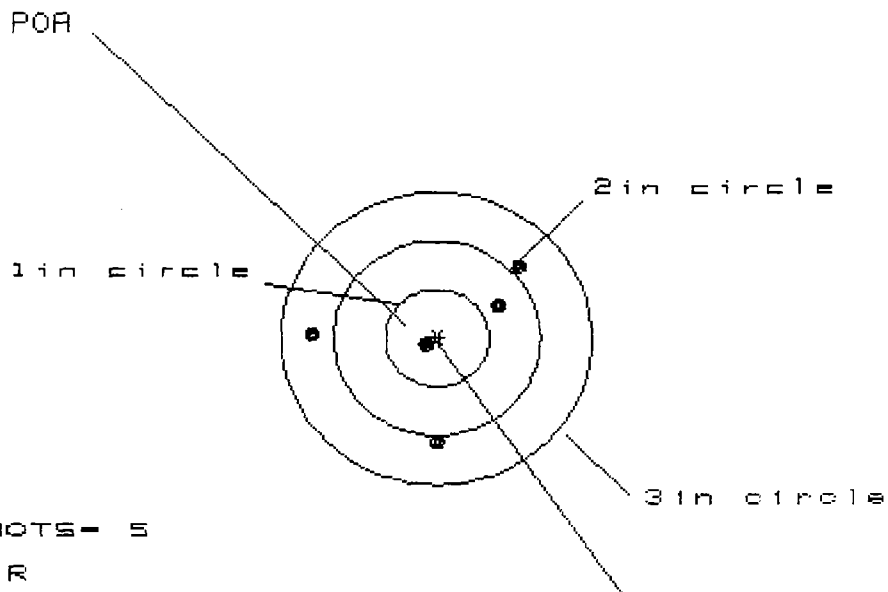
GS= 2.283

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.847	.621	.413
MINIMUM X	:	-.906	-.683	-.476
MAXIMUM Y	:	1.021	1.221	1.066
MINIMUM Y	:	-.825	-.625	-.780
CENTROID X	:	.044	.270	.063
CENTROID Y	:	-.054	-.254	-.099
POA TO CENTROID in.	:	.070	.371	.118
ANGLE POA CENTROID	:	321.186	313.251	327.616
MIN RADIUS	:	.545	.245	.503
MEAN RADIUS	:	.959	.794	.828
MAX RADIUS	:	1.208	1.229	1.068
HORIZONTAL SPREAD	:	1.753	1.304	.889
VERTICAL SPREAD	:	1.846	1.846	1.846
EXTREME SPREAD	:	2.283	1.923	1.923
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		2	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C7194AYFJS

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1 in = 1

2 in = 2

3 in = 5

HS= 2.031

VS= 1.790

GS= 2.147

CENTROID #

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.811	.506	.412
MINIMUM X	:	-1.220	-.398	-.230
MAXIMUM Y	:	.740	.751	.580
MINIMUM Y	:	-1.050	-1.039	-.789
CENTROID X	:	.106	.411	.243
CENTROID Y	:	.063	.052	-.198
POA TO CENTROID in.	:	.124	.415	.313
ANGLE POA CENTROID	:	30.757	7.206	309.259
MIN RADIUS	:	.107	.400	.310
MEAN RADIUS	:	.822	.703	.611
MAX RADIUS	:	1.221	1.097	.810
HORIZONTAL SPREAD	:	2.031	.904	.642
VERTICAL SPREAD	:	1.790	1.790	1.369
EXTREME SPREAD	:	2.147	1.985	1.493
NUMBER IN ONE INCH CIRCLE =			1	
NUMBER IN TWO INCH CIRCLE =			2	
NUMBER IN THREE INCH CIRCLE =			5	

1 Mar 1988

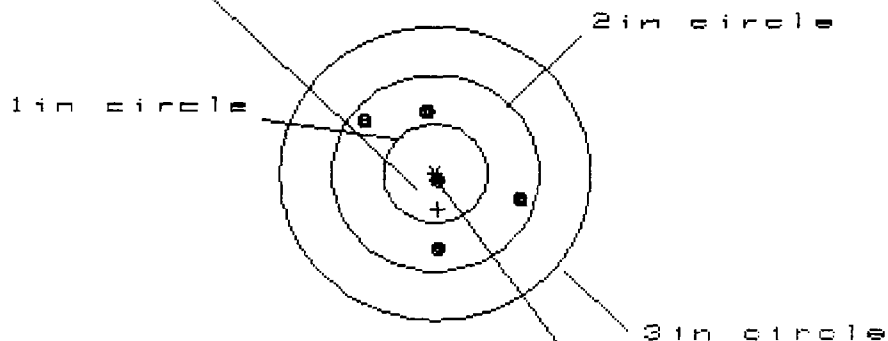
FILE:/PATTERNING/CENTERFIRE_PATT/HOT0125

ARY F

CENTERFIRE PATTERNS

1

POA



OF SHOTS- 5

IN CIR

1in = 1

2in = 5

3in = 5

HS= 1.469

VS= 1.339

GS= 1.674

CENTROID #

A.G.S. 1.890

A.M.R. .692

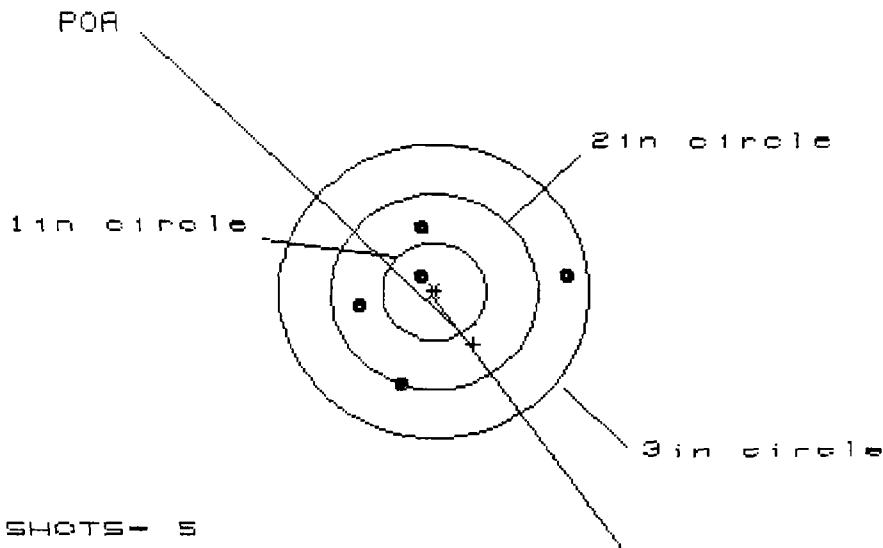
J.E.S.

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.779	.607	.059
MINIMUM X	-.690	-.298	-.096
MAXIMUM Y	.598	.729	.681
MINIMUM Y	-.741	-.610	-.658
CENTROID X	-.022	.150	-.052
CENTROID Y	.364	.233	.281
POA TO CENTROID in.	.365	.277	.286
ANGLE POA CENTROID	176.482	57.200	169.438
MIN RADIUS	.111	.145	.064
MEAN RADIUS	.632	.547	.470
MAX RADIUS	.868	.788	.688
HORIZONTAL SPREAD	1.469	.905	.155
VERTICAL SPREAD	1.339	1.339	1.339
EXTREME SPREAD	1.674	1.345	1.345
NUMBER IN ONE INCH CIRCLE	= 1		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT0125

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 5

HS= 1.983

VS= 1.580

GS= 1.994

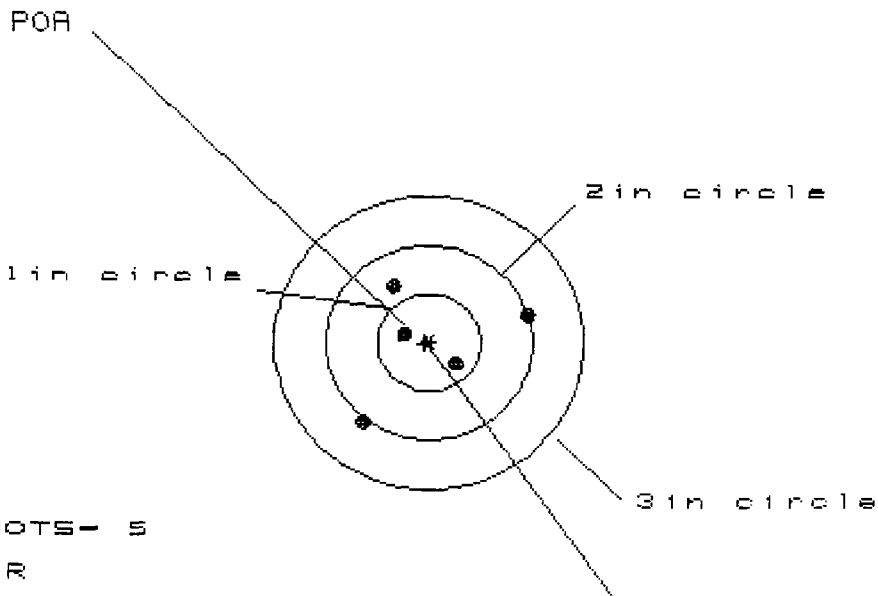
CENTROID *

PATTERN #	2	2	2
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.257	.217	.226
MINIMUM X	-.726	-.411	-.402
MAXIMUM Y	.673	.702	.410
MINIMUM Y	-.907	-.878	-.353
CENTROID X	-.376	-.691	-.700
CENTROID Y	.538	.509	.801
POA TO CENTROID in.	.657	.858	1.064
ANGLE POA CENTROID	145.032	126.372	138.861
MIN RADIUS	.229	.321	.233
MEAN RADIUS	.773	.584	.405
MAX RADIUS	1.263	.878	.535
HORIZONTAL SPREAD	1.983	.628	.628
VERTICAL SPREAD	1.580	1.580	.763
EXTREME SPREAD	1.994	1.586	.957
NUMBER IN ONE INCH CIRCLE =	1		
NUMBER IN TWO INCH CIRCLE =	4		
NUMBER IN THREE INCH CIRCLE =	5		

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT0125

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 5

HS= 1.616

VS= 1.413

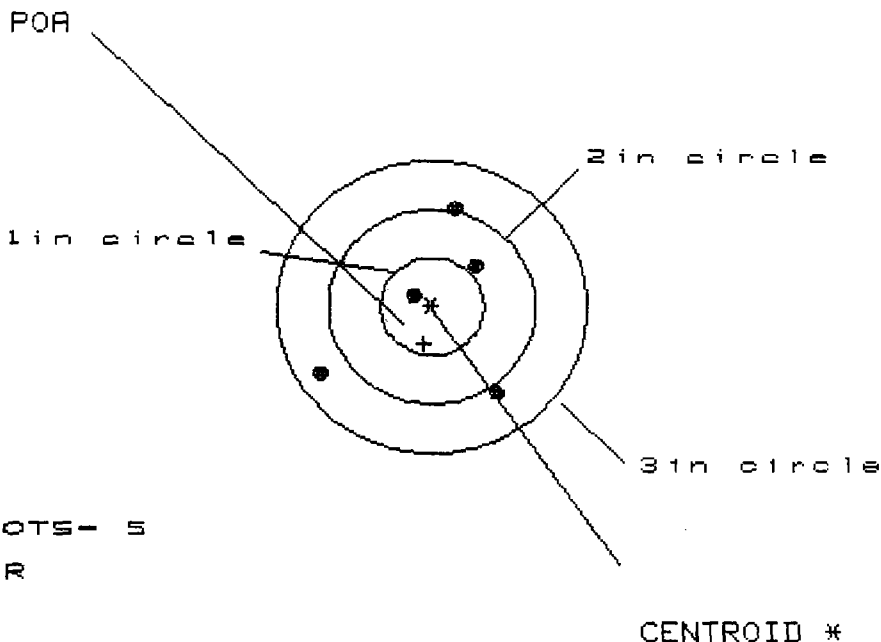
ES= 2.003

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.004	.478	.357
MINIMUM X	:	-.612	-.360	-.220
MAXIMUM Y	:	.562	.645	.389
MINIMUM Y	:	-.851	-.768	-.351
CENTROID X	:	.042	-.210	-.089
CENTROID Y	:	.014	-.069	.187
POA TO CENTROID in.	:	.044	.221	.207
ANGLE POA CENTROID	:	18.600	198.291	154.426
MIN RADIUS	:	.288	.218	.143
MEAN RADIUS	:	.671	.551	.364
MAX RADIUS	:	1.058	.848	.501
HORIZONTAL SPREAD	:	1.616	.838	.577
VERTICAL SPREAD	:	1.413	1.413	.740
EXTREME SPREAD	:	2.003	1.437	.938
NUMBER IN ONE INCH CIRCLE =			2	
NUMBER IN TWO INCH CIRCLE =			3	
NUMBER IN THREE INCH CIRCLE =			5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C0125AYFDT

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 1

2in = 2

3in = 5

HS= 1.694

VS= 1.946

GS= 2.165

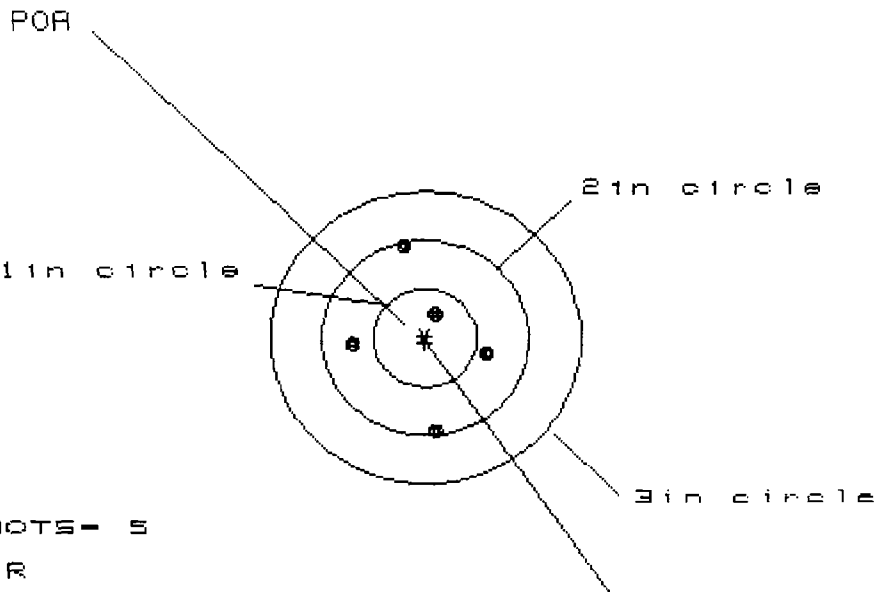
AUG = 2.045

PATTERN #	1	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.588	.312	.293
MINIMUM X	-1.106	-.446	-.464
MAXIMUM Y	1.063	.901	.526
MINIMUM Y	-.883	-1.045	-.745
CENTROID X	.079	.355	.374
CENTROID Y	.381	.543	.243
POA TO CENTROID in.	.389	.649	.446
ANGLE POA CENTROID	78.292	56.799	33.013
MIN RADIUS	.187	.295	.513
MEAN RADIUS	.844	.685	.622
MAX RADIUS	1.282	1.091	.801
HORIZONTAL SPREAD	1.694	.757	.757
VERTICAL SPREAD	1.946	1.946	1.271
EXTREME SPREAD	2.165	1.980	1.277
NUMBER IN ONE INCH CIRCLE =		1	
NUMBER IN TWO INCH CIRCLE =		2	
NUMBER IN THREE INCH CIRCLE =		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C0125AYFDT

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 1

2in = 5

3in = 5

HS= 1.311

VS= 1.876

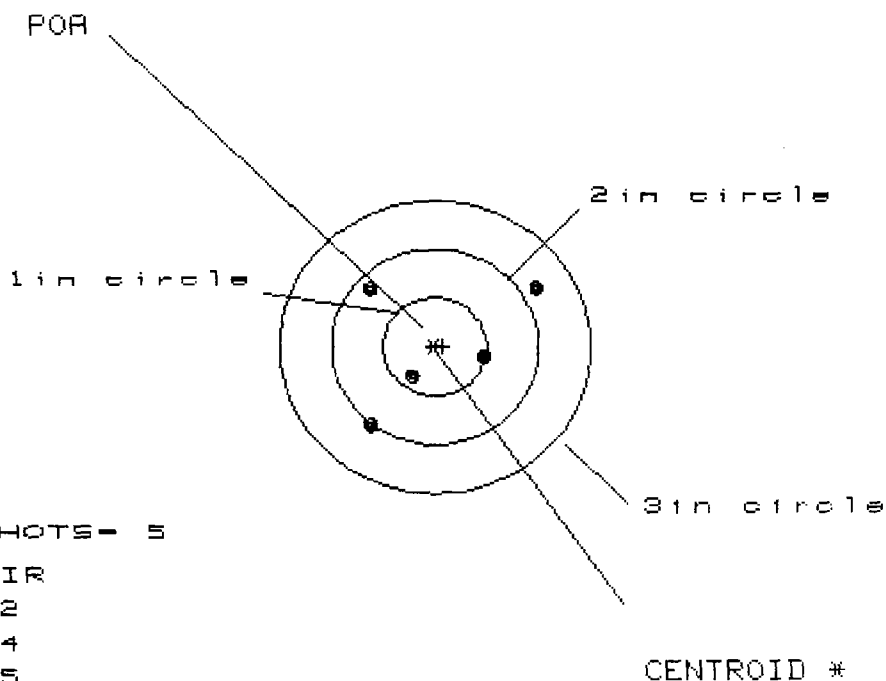
GS= 1.904

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.642	.588	.606
MINIMUM X	:	-.669	-.723	-.705
MAXIMUM Y	:	.929	.460	.222
MINIMUM Y	:	-.947	-.715	-.186
CENTROID X	:	.007	.061	.043
CENTROID Y	:	.051	-.181	.057
POA TO CENTROID in.	:	.052	.191	.072
ANGLE POA CENTROID	:	82.435	341.304	53.130
MIN RADIUS	:	.265	.467	.243
MEAN RADIUS	:	.702	.631	.528
MAX RADIUS	:	.954	.751	.706
HORIZONTAL SPREAD	:	1.311	1.311	1.311
VERTICAL SPREAD	:	1.876	1.175	.408
EXTREME SPREAD	:	1.904	1.320	1.320
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C0125AYFDT

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1in = 2

2in = 4

3in = 5

HS = 1.549

VS = 1.441

GS = 2.067

PATTERN #	1	3	4	5
SHOTS (BEST OF)	5	4	3	
MAXIMUM X	.962	.699	.583	
MINIMUM X	-.587	-.346	-.451	
MAXIMUM Y	.632	.772	.549	
MINIMUM Y	-.809	-.669	-.346	
CENTROID X	-.077	-.318	-.202	
CENTROID Y	-.002	-.142	.081	
POA TO CENTROID in.	.077	.348	.218	
ANGLE POA CENTROID	181.488	204.096	111.850	
MIN RADIUS	.368	.124	.370	
MEAN RADIUS	.762	.605	.566	
MAX RADIUS	1.113	.842	.710	
HORIZONTAL SPREAD	1.549	1.045	1.034	
VERTICAL SPREAD	1.441	1.441	.895	
EXTREME SPREAD	2.067	1.441	1.279	
NUMBER IN ONE INCH CIRCLE =		2		
NUMBER IN TWO INCH CIRCLE =		4		
NUMBER IN THREE INCH CIRCLE =		5		

1 Mar 1988

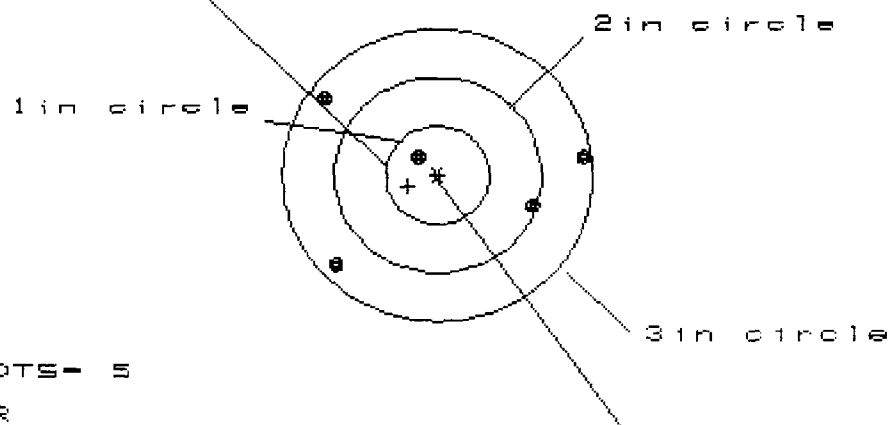
FILE:/PATTERNING/CENTERFIRE_PATT/H019937

ARY F

CENTERFIRE PATTERNS

1

POA



OF SHOTS- 5

IN CIR

1in = 1

2in = 2

3in = 5

HS= 2.420

VS= 1.732

GS= 2.672

AGS. 1.759

AMR .697

CENTROID *

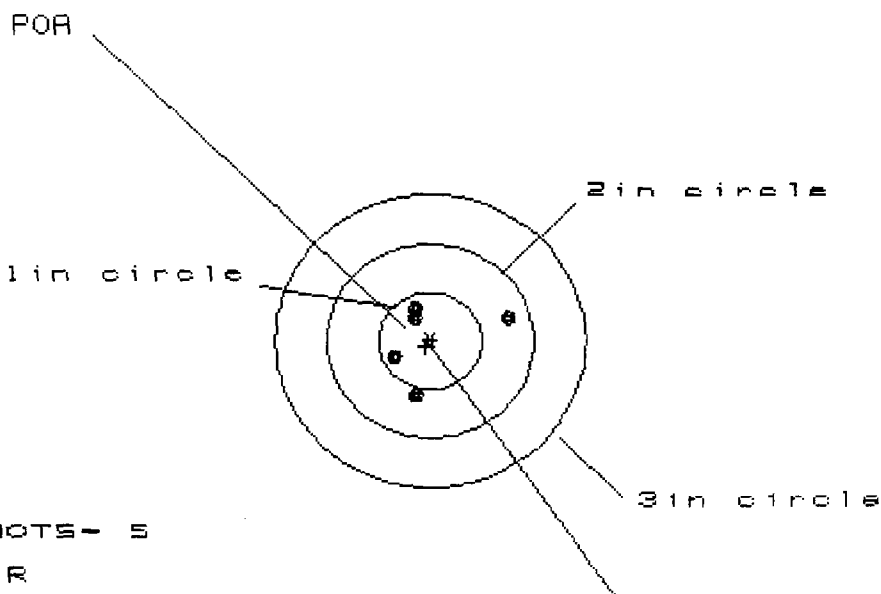
D.R.T.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.371	1.113	1.045
MINIMUM X	:	-1.049	-1.307	-.936
MAXIMUM Y	:	.795	.560	.559
MINIMUM Y	:	-.937	-.504	-.505
CENTROID X	:	.286	.544	.173
CENTROID Y	:	.112	.347	.348
POA TO CENTROID in.	:	.307	.645	.389
ANGLE POA CENTROID	:	21.442	32.502	63.523
MIN RADIUS	:	.286	.482	.121
MEAN RADIUS	:	1.071	.965	.791
MAX RADIUS	:	1.394	1.422	1.160
HORIZONTAL SPREAD	:	2.420	2.420	1.981
VERTICAL SPREAD	:	1.732	1.064	1.064
EXTREME SPREAD	:	2.672	2.485	2.249
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		2	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT9937

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= 1.024

VS= .887

GS= 1.162

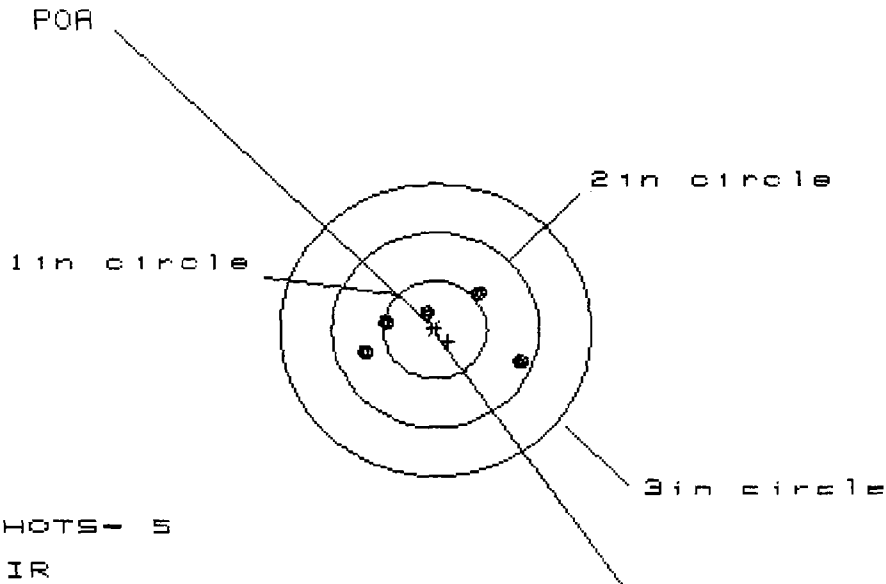
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.729	.073	.090
MINIMUM X	:	-.295	-.112	-.095
MAXIMUM Y	:	.300	.348	.169
MINIMUM Y	:	-.587	-.538	-.241
CENTROID X	:	.045	-.138	-.155
CENTROID Y	:	.060	.011	.191
POA TO CENTROID in.	:	.075	.138	.246
ANGLE POA CENTROID	:	53.253	94.781	141.000
MIN RADIUS	:	.231	.128	.115
MEAN RADIUS	:	.452	.320	.181
MAX RADIUS	:	.755	.541	.259
HORIZONTAL SPREAD	:	1.024	.185	.185
VERTICAL SPREAD	:	.887	.887	.410
EXTREME SPREAD	:	1.162	.889	.422
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT9937

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 5

3in = 5

HS= 1.442

VS= .693

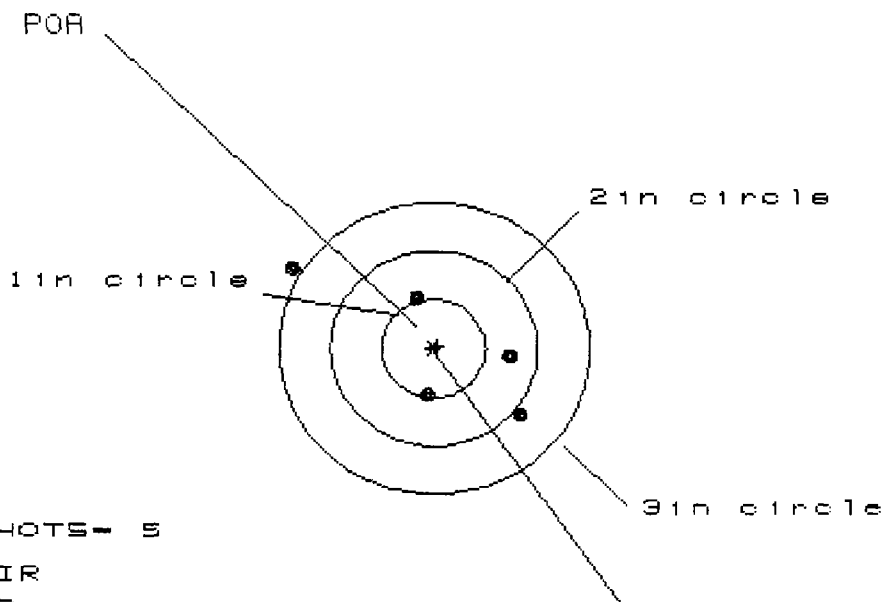
GS= 1.443

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.812	.651	.508
MINIMUM X	:	-.630	-.427	-.442
MAXIMUM Y	:	.381	.302	.190
MINIMUM Y	:	-.312	-.339	-.138
CENTROID X	:	-.123	-.326	-.183
CENTROID Y	:	.123	.201	.314
POA TO CENTROID in.	:	.174	.383	.364
ANGLE POA CENTROID	:	135.186	121.759	149.793
MIN RADIUS	:	.188	.098	.084
MEAN RADIUS	:	.567	.415	.363
MAX RADIUS	:	.870	.717	.542
HORIZONTAL SPREAD	:	1.442	1.078	.950
VERTICAL SPREAD	:	.693	.641	.328
EXTREME SPREAD	:	1.443	1.254	1.005
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C3937AYFJS

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1in = 0

2in = 3

3in = 4

HS = 2.176

VS = 1.483

GS = 2.639

CENTROID *

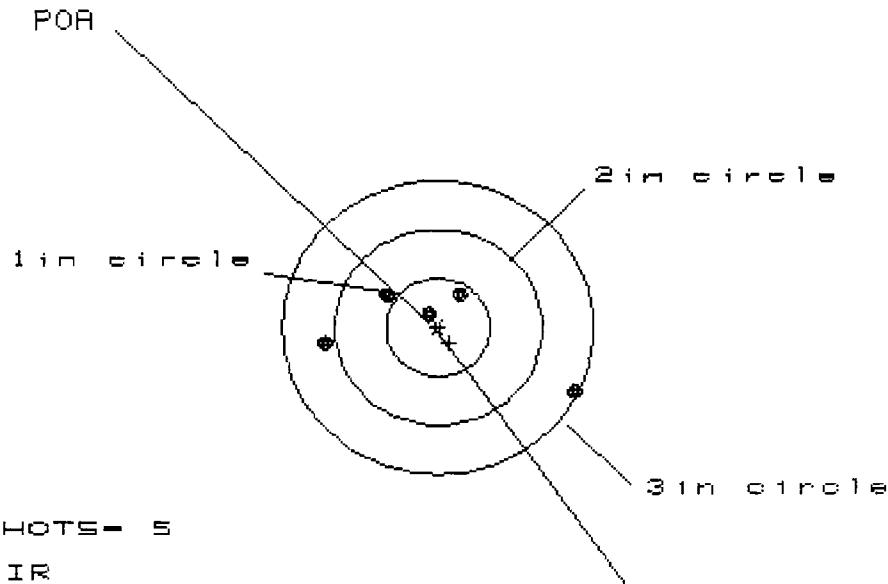
AVG = 2.286

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.813	.472	.566
MINIMUM X	:	-1.363	-.488	-.330
MAXIMUM Y	:	.783	.732	.561
MINIMUM Y	:	-.710	-.514	-.485
CENTROID X	:	-.035	.306	.148
CENTROID Y	:	-.023	-.219	-.048
POA TO CENTROID in.	:	.042	.376	.156
ANGLE POA CENTROID	:	213.539	305.613	287.815
MIN RADIUS	:	.512	.419	.539
MEAN RADIUS	:	.895	.625	.587
MAX RADIUS	:	1.572	.880	.651
HORIZONTAL SPREAD	:	2.176	.960	.896
VERTICAL SPREAD	:	1.493	1.246	1.046
EXTREME SPREAD	:	2.639	1.573	1.099
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		4	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C9937AYFJS

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 4

HS= 2.406

VS= 1.068

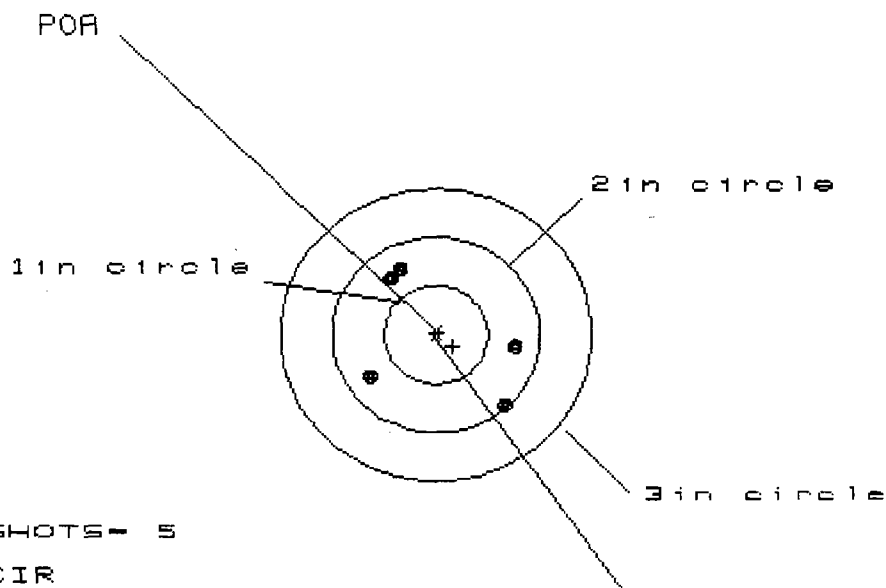
GS= 2.472

PATTERN #	2		
SHOTS (BEST OF)	5	4	3
MAXIMUM X	1.353	.554	.315
MINIMUM X	-1.053	-.715	-.349
MAXIMUM Y	.361	.184	.078
MINIMUM Y	-.707	-.317	-.148
CENTROID X	-.111	-.449	-.210
CENTROID Y	.159	.336	.442
POA TO CENTROID in.	.194	.561	.489
ANGLE POA CENTROID	145.211	126.824	154.535
MIN RADIUS	.150	.207	.151
MEAN RADIUS	.746	.462	.277
MAX RADIUS	1.526	.782	.355
HORIZONTAL SPREAD	2.406	1.269	.664
VERTICAL SPREAD	1.068	.501	.226
EXTREME SPREAD	2.472	1.364	.664
NUMBER IN ONE INCH CIRCLE =		2	
NUMBER IN TWO INCH CIRCLE =		3	
NUMBER IN THREE INCH CIRCLE =		4	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C9B37AYFJ5

CENTERFIRE PATTERNS # 3



OF SHOTS = 5

IN CIR

1in = 0

2in = 5

3in = 5

HS = 1.420

VS = 1.447

GS = 1.748

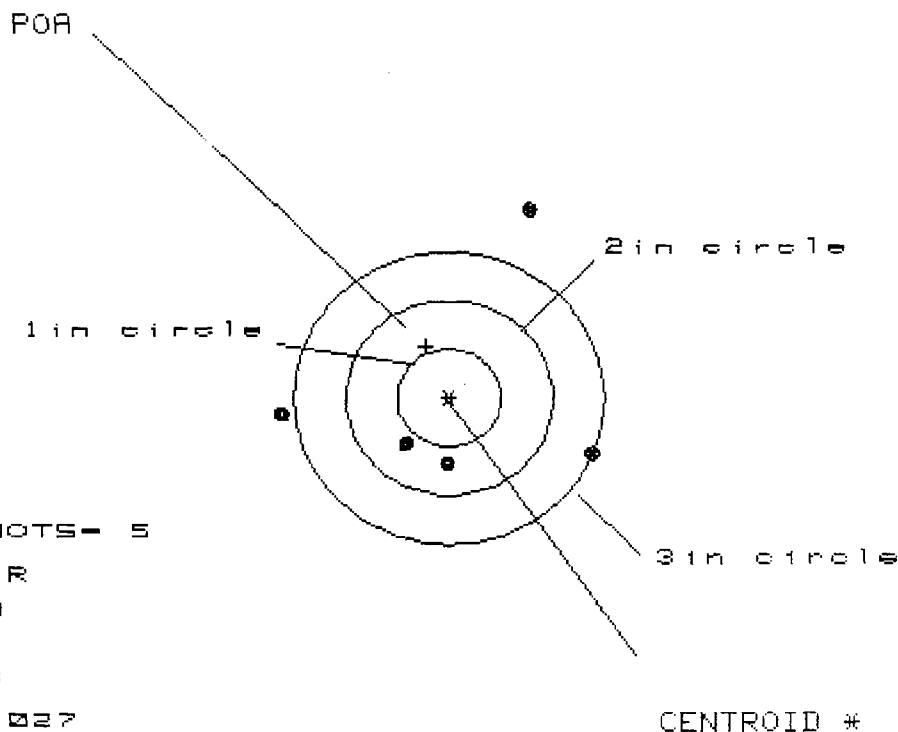
CENTROID *

PATTERN #	3	3	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.775	.938	.169
MINIMUM X	-.645	-.483	-.170
MAXIMUM Y	.690	.501	.409
MINIMUM Y	-.757	-.618	-.710
CENTROID X	-.161	-.324	-.636
CENTROID Y	.120	.309	.401
POA TO CENTROID in.	.201	.447	.752
ANGLE POA CENTROID	126.653	133.687	122.232
MIN RADIUS	.751	.501	.301
MEAN RADIUS	.812	.696	.491
MAX RADIUS	.998	.977	.730
HORIZONTAL SPREAD	1.420	1.420	.339
VERTICAL SPREAD	1.447	1.119	1.119
EXTREME SPREAD	1.748	1.461	1.169
NUMBER IN ONE- INCH CIRCLE =		0	
NUMBER IN TWO- INCH CIRCLE =		5	
NUMBER IN THREE INCH CIRCLE =		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H015132 ARY F

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 0

2in = 2

3in = 3

HS= 3.027

VS= 2.621

GS= 3.204

A.G.S. 2.335
A.M.R. .946

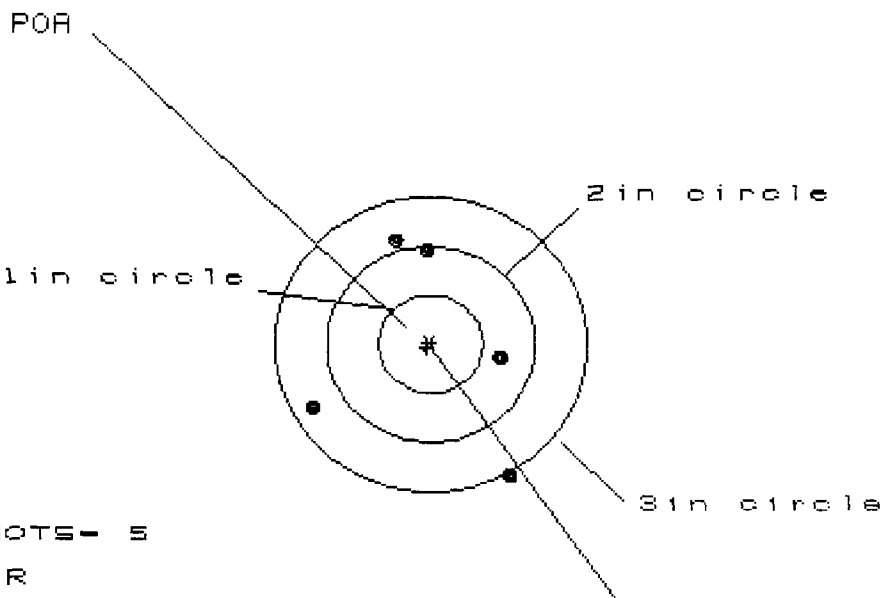
J.E.S.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.388	1.580	1.098
MINIMUM X	:	-1.639	-1.447	-.743
MAXIMUM Y	:	1.921	.290	.094
MINIMUM Y	:	-.700	-.220	-.123
CENTROID X	:	.220	.028	.510
CENTROID Y	:	-.530	-1.010	-1.107
POA TO CENTROID in.:	:	.574	1.011	1.219
ANGLE POA CENTROID :	:	337.420	358.427	335.264
MIN RADIUS	:	.662	.254	.376
MEAN RADIUS	:	1.316	.893	.741
MAX RADIUS	:	2.070	1.582	1.098
HORIZONTAL SPREAD :	:	3.027	3.027	1.841
VERTICAL SPREAD :	:	2.621	.510	.217
EXTREME SPREAD :	:	3.204	3.048	1.842
NUMBER IN ONE- INCH CIRCLE =	:		0	
NUMBER IN TWO- INCH CIRCLE =	:		2	
NUMBER IN THREE INCH CIRCLE =	:		3	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H075137

CENTERFIRE PATTERNS # 2



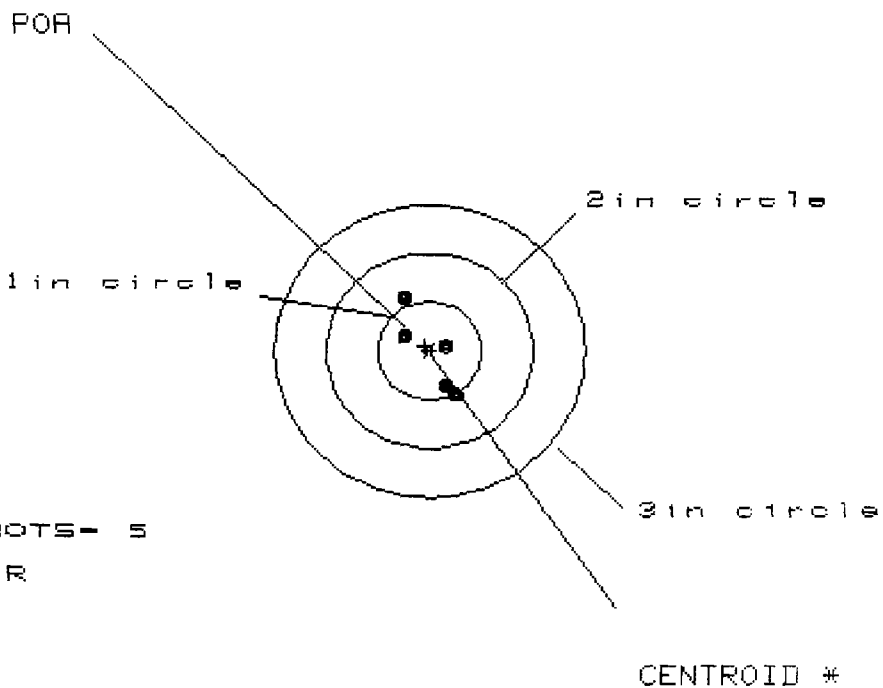
OF SHOTS- 5
 # IN CIR
 1 in = 0
 2 in = 2
 3 in = 4
 HS= 1.941
 VS= 2.437
 GS= 2.704

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.804	.899	.587
MINIMUM X	:	-1.137	-.936	-.479
MAXIMUM Y	:	1.111	.780	.472
MINIMUM Y	:	-1.326	-.925	-.765
CENTROID X	:	.034	-.167	.145
CENTROID Y	:	.036	.367	.675
POA TO CENTROID in.	:	.049	.403	.691
ANGLE POA CENTROID	:	46.317	155.533	77.882
MIN RADIUS	:	.709	.636	.313
MEAN RADIUS	:	1.129	.939	.650
MAX RADIUS	:	1.550	1.316	.965
HORIZONTAL SPREAD	:	1.941	1.835	1.066
VERTICAL SPREAD	:	2.437	1.705	1.237
EXTREME SPREAD	:	2.704	1.906	1.633
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		2	
NUMBER IN THREE INCH CIRCLE	=		4	

1 Mar 1986

FILE:/PATTERNING/CENTERFIRE_PATT/HOT5137

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= .516

VS= .996

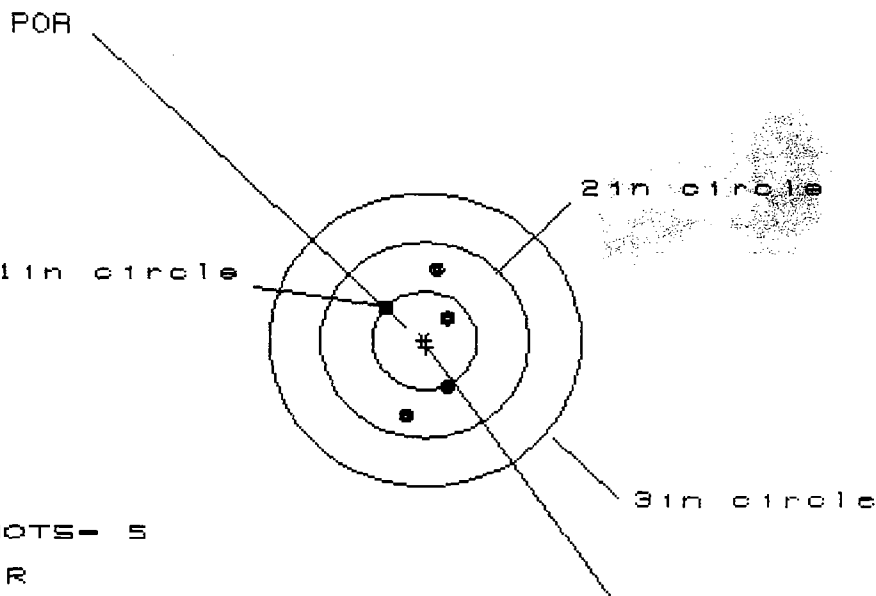
GS= 1.097

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.223	.165	.182
MINIMUM X	:	-.293	-.352	-.297
MAXIMUM Y	:	.532	.283	.173
MINIMUM Y	:	-.464	-.331	-.290
CENTROID X	:	.047	.106	.051
CENTROID Y	:	-.047	-.180	-.070
POA TO CENTROID in.	:	.066	.209	.087
ANGLE POA CENTROID	:	315.488	329.694	324.232
MIN RADIUS	:	.208	.189	.216
MEAN RADIUS	:	.394	.317	.290
MAX RADIUS	:	.582	.452	.344
HORIZONTAL SPREAD	:	.516	.516	.479
VERTICAL SPREAD	:	.996	.614	.463
EXTREME SPREAD	:	1.097	.802	.619
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C5137AFDT

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= .621

VS= 1.481

GS= 1.511

CENTROID #

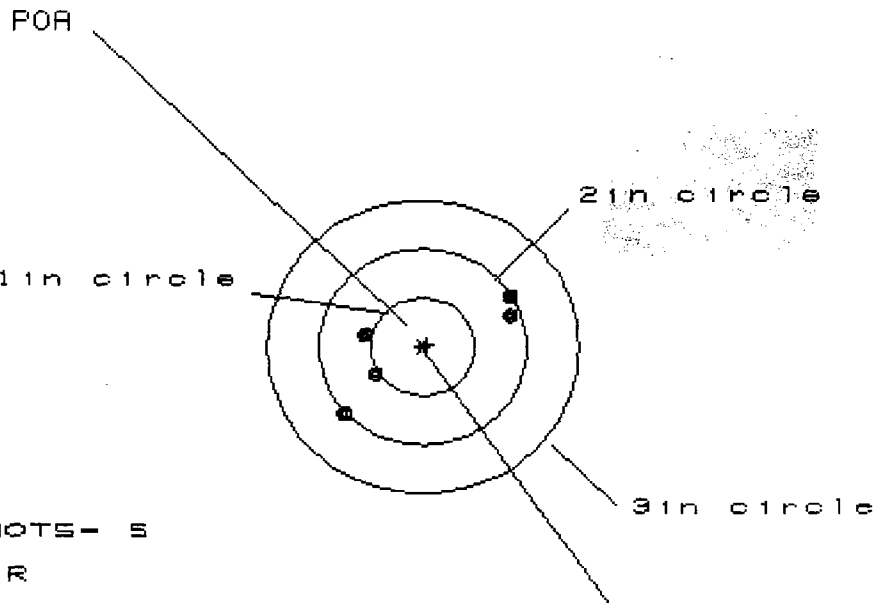
AVG= 1.827

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.227	.186	.217
MINIMUM X	-.394	-.435	-.404
MAXIMUM Y	.692	.494	.254
MINIMUM Y	-.789	-.620	-.455
CENTROID X	-.016	.025	-.006
CENTROID Y	.069	.267	.102
POA TO CENTROID in.	.071	.268	.102
ANGLE POA CENTROID	167.017	84.593	176.447
MIN RADIUS	.326	.189	.296
MEAN RADIUS	.558	.444	.422
MAX RADIUS	.806	.639	.492
HORIZONTAL SPREAD	.621	.621	.621
VERTICAL SPREAD	1.481	1.114	.709
EXTREME SPREAD	1.511	1.116	.922
NUMBER IN ONE INCH CIRCLE =	3		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C5137AYFDT

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1 in = 1

2 in = 4

3 in = 5

HS= 1.617

VS= 1.156

GS= 1.988

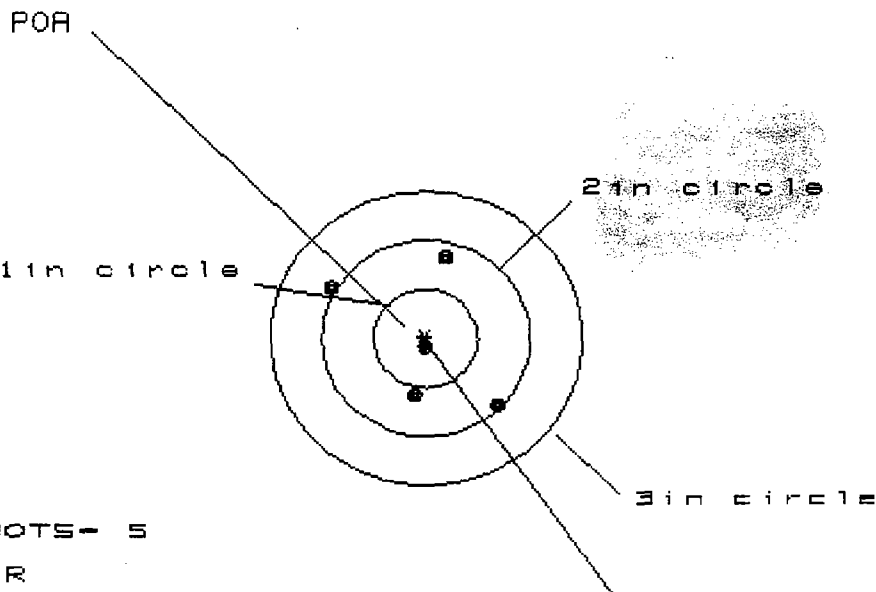
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.884	1.093	.922
MINIMUM X	:	-.733	-.512	-.534
MAXIMUM Y	:	.495	.445	.266
MINIMUM Y	:	-.661	-.537	-.294
CENTROID X	:	-.041	-.262	-.091
CENTROID Y	:	-.021	-.145	.034
POA TO CENTROID in.	:	.046	.299	.097
ANGLE POA CENTROID	:	207.677	209.027	110.303
MIN RADIUS	:	.499	.246	.487
MEAN RADIUS	:	.804	.646	.660
MAX RADIUS	:	1.013	1.180	.960
HORIZONTAL SPREAD	:	1.617	1.605	1.456
VERTICAL SPREAD	:	1.156	.982	.560
EXTREME SPREAD	:	1.988	1.882	1.475
NUMBER IN ONE- INCH CIRCLE	=		1	
NUMBER IN TWO- INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C5137AYFDT

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 5

HS= 1.580

VS= 1.570

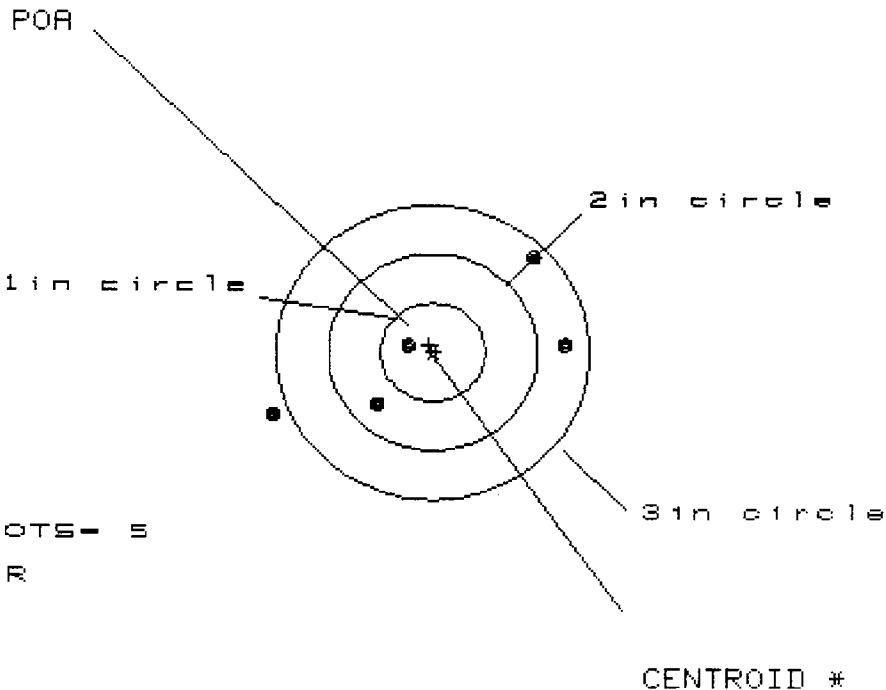
GS= 1.982

PATTERN #	3	3	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.706	.415	.183
MINIMUM X	-.874	-.698	-.146
MAXIMUM Y	.858	.679	.781
MINIMUM Y	-.712	-.718	-.616
CENTROID X	.009	-.167	.065
CENTROID Y	.076	.255	.153
POA TO CENTROID in.	.077	.305	.166
ANGLE POA CENTROID	83.134	146.688	66.832
MIN RADIUS	.092	.332	.170
MEAN RADIUS	.706	.653	.535
MAX RADIUS	1.003	.796	.802
HORIZONTAL SPREAD	1.580	1.113	.329
VERTICAL SPREAD	1.570	1.397	1.397
EXTREME SPREAD	1.982	1.435	1.435
NUMBER IN ONE- INCH CIRCLE =		1	
NUMBER IN TWO- INCH CIRCLE =		4	
NUMBER IN THREE INCH CIRCLE =		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/H019419 ARY f

CENTERFIRE PATTERNS # 1



OF SHOTS - 5

IN CIR

1 in = 1

2 in = 2

3 in = 4

HS = 2.874

VS = 1.589

GS = 3.015

AGS 2.491

AMR .910

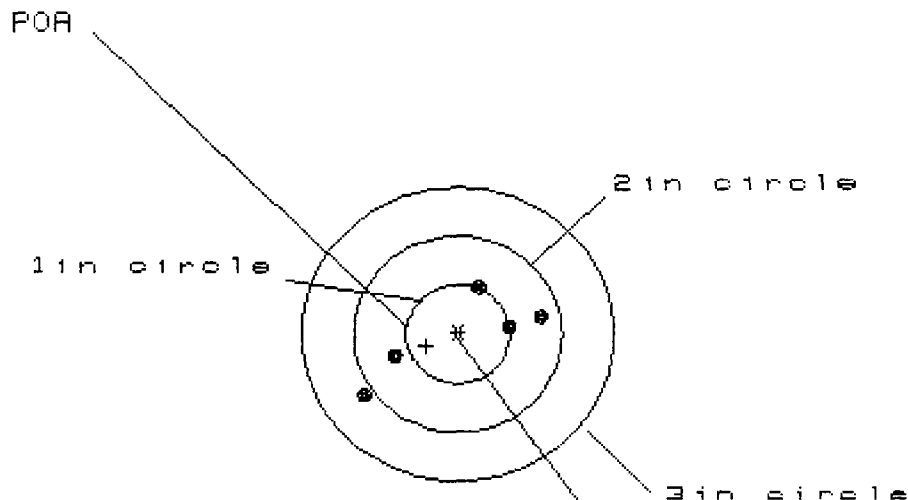
D.R.T.

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.310	.919	1.119
MINIMUM X	:	-1.564	-.921	-.721
MAXIMUM Y	:	.990	.838	.201
MINIMUM Y	:	-.609	-.649	-.369
CENTROID X	:	.036	.427	.227
CENTROID Y	:	-.072	.080	-.200
POA TO CENTROID in.	:	.081	.435	.302
ANGLE POA CENTROID	:	333.435	10.573	311.334
MIN RADIUS	:	.211	.608	.432
MEAN RADIUS	:	1.066	.922	.793
MAX RADIUS	:	1.678	1.127	1.137
HORIZONTAL SPREAD	:	2.874	1.840	1.840
VERTICAL SPREAD	:	1.599	1.487	.570
EXTREME SPREAD	:	3.015	2.128	1.926
NUMBER IN ONE INCH CIRCLE	=		1	
NUMBER IN TWO INCH CIRCLE	=		2	
NUMBER IN THREE INCH CIRCLE	=		4	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT9419

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 1

2in = 4

3in = 5

HS= 1.726

VS= 1.044

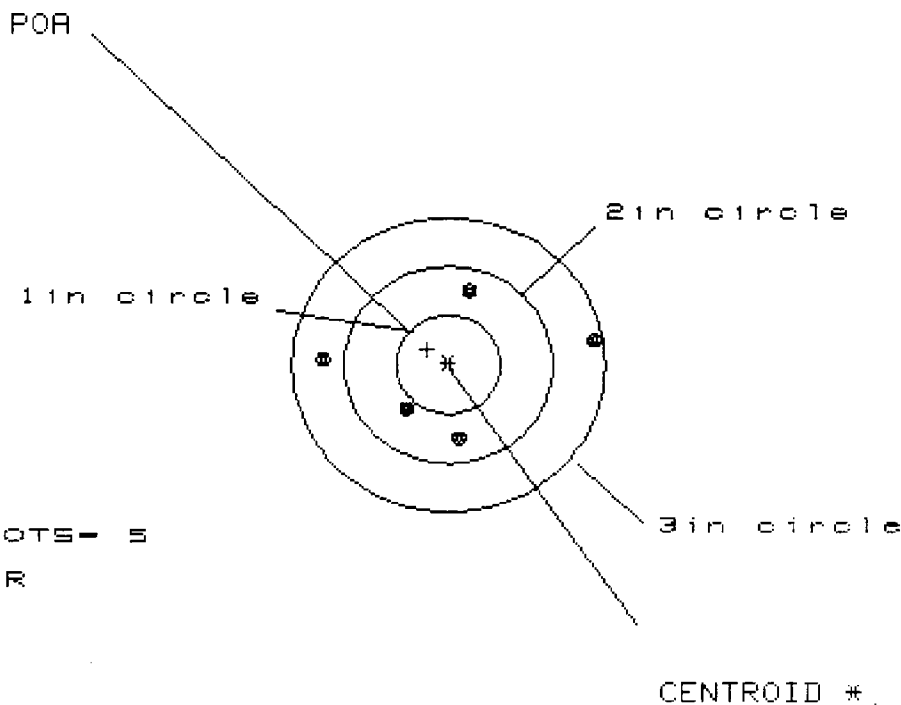
GS= 1.897

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.810	.581	.437
MINIMUM X	:	-.916	-.838	-.644
MAXIMUM Y	:	.467	.322	.344
MINIMUM Y	:	-.577	-.323	-.301
CENTROID X	:	.302	.531	.337
CENTROID Y	:	.120	.265	.243
POA TO CENTROID in.	:	.325	.593	.416
ANGLE POA CENTROID	:	21.703	26.479	35.730
MIN RADIUS	:	.479	.252	.402
MEAN RADIUS	:	.712	.514	.517
MAX RADIUS	:	1.083	.898	.711
HORIZONTAL SPREAD	:	1.726	1.419	1.081
VERTICAL SPREAD	:	1.044	.645	.645
EXTREME SPREAD	:	1.897	1.471	1.111
NUMBER IN ONE - INCH CIRCLE	=		1	
NUMBER IN TWO - INCH CIRCLE	=		4	
NUMBER IN THREE INCH CIRCLE	=		5	

1 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/HOT9419

CENTERFIRE PATTERNS # 3



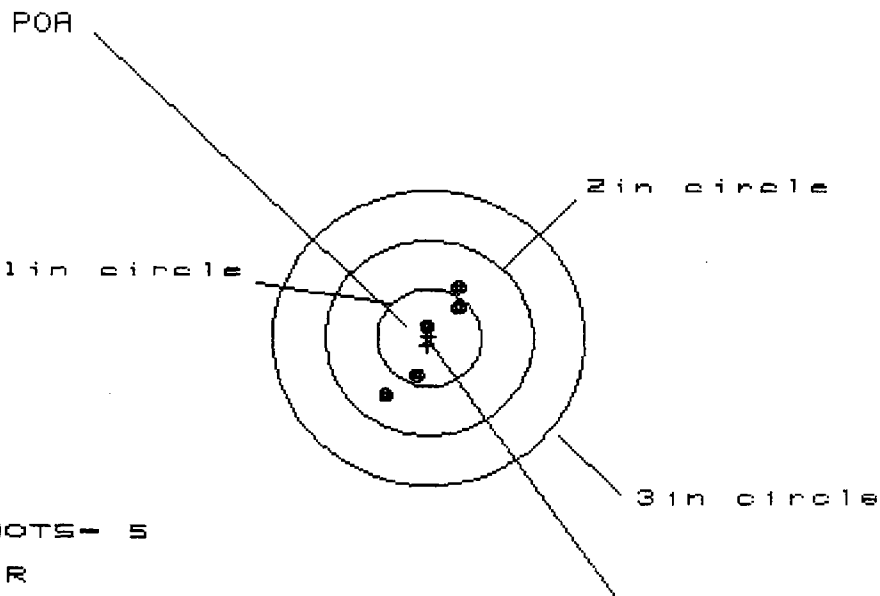
OF SHOTS- 5
 # IN CIR
 1in - 0
 2in - 3
 3in - 5
 HS- 2.552
 VS- 1.549
 GS- 2.561

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	1.356	.539	.254
MINIMUM X	:	-1.196	-.857	-.383
MAXIMUM Y	:	.785	.859	.911
MINIMUM Y	:	-.764	-.690	-.638
CENTROID X	:	.202	-.137	.148
CENTROID Y	:	-.157	-.231	-.283
POA TO CENTROID in.	:	.256	.268	.320
ANGLE POA CENTROID	:	307.954	239.256	332.339
MIN RADIUS	:	.591	.340	.471
MEAN RADIUS	:	.951	.758	.689
MAX RADIUS	:	1.388	1.014	.946
HORIZONTAL SPREAD	:	2.552	1.396	.637
VERTICAL SPREAD	:	1.549	1.549	1.549
EXTREME SPREAD	:	2.561	1.563	1.554
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		3	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C9419AYFJS

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1 in = 3

2 in = 5

3 in = 5

HS= .734

VS= 1.152

GS= 1.345

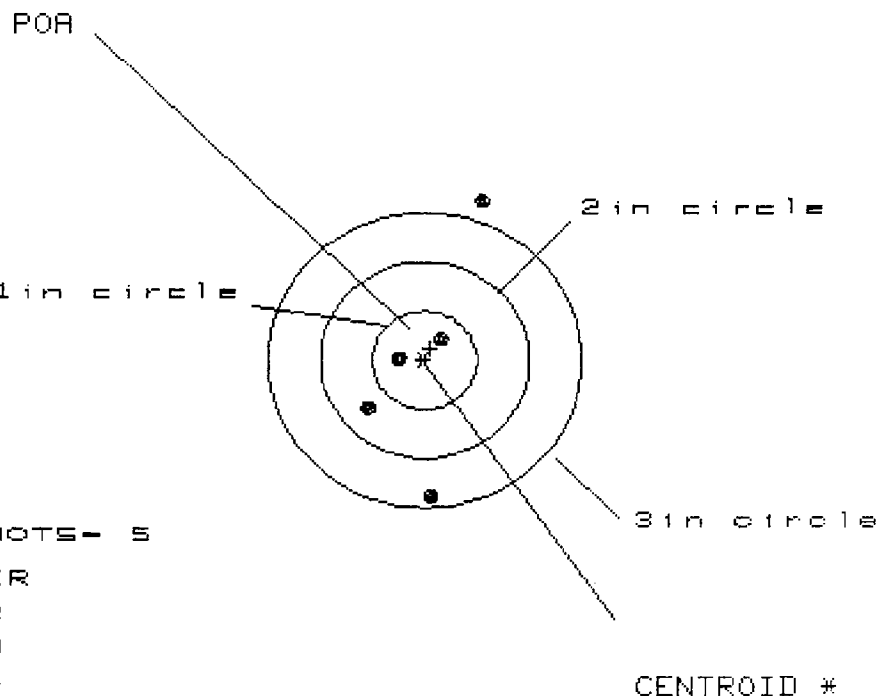
AVE 2.011

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.291	.180	.226
MINIMUM X	:	-.443	-.214	-.168
MAXIMUM Y	:	.538	.385	.328
MINIMUM Y	:	-.614	-.538	-.410
CENTROID X	:	.019	.130	.084
CENTROID Y	:	.083	.236	.108
POA TO CENTROID in.	:	.085	.270	.137
ANGLE POA CENTROID	:	76.844	61.157	52.321
MIN RADIUS	:	.108	.115	.101
MEAN RADIUS	:	.463	.343	.314
MAX RADIUS	:	.757	.580	.443
HORIZONTAL SPREAD	:	.734	.394	.394
VERTICAL SPREAD	:	1.152	.923	.738
EXTREME SPREAD	:	1.345	.989	.837
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/CS419AYFJS

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 2

2in = 3

3in = 4

HS= 1.066

VS= 3.014

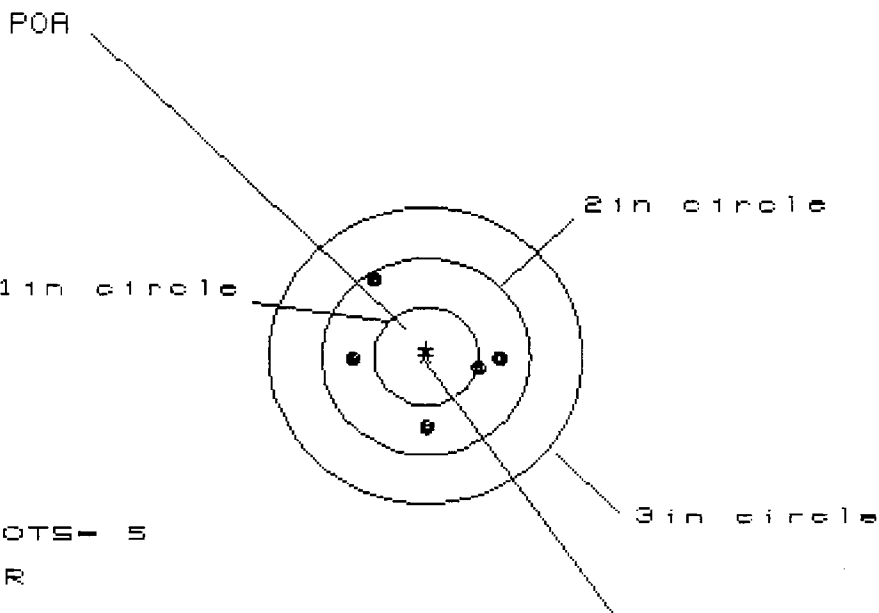
GS= 3.046

PATTERN #	2	3	4
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.520	.311	.382
MINIMUM X	-.546	-.416	-.345
MAXIMUM Y	1.639	.617	.296
MINIMUM Y	-1.375	-.966	-.393
CENTROID X	-.055	-.185	-.256
CENTROID Y	-.119	-.528	-.207
POA TO CENTROID in.	.131	.560	.329
ANGLE POA CENTROID	245.158	250.708	218.950
MIN RADIUS	.237	.422	.104
MEAN RADIUS	.868	.634	.370
MAX RADIUS	1.719	.989	.523
HORIZONTAL SPREAD	1.066	.727	.727
VERTICAL SPREAD	3.014	1.583	.689
EXTREME SPREAD	3.046	1.586	1.002
NUMBER IN ONE INCH CIRCLE =		2	
NUMBER IN TWO INCH CIRCLE =		3	
NUMBER IN THREE INCH CIRCLE =		4	

12 Mar 1988

FILE:/PATTERNING/CENTERFIRE_PATT/C9419AYFJS

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 0

2in = 5

3in = 5

HS= 1.456

VS= 1.551

GS= 1.641

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.711	.582	.291
MINIMUM X	:	-.745	-.874	-.397
MAXIMUM Y	:	.830	.213	.281
MINIMUM Y	:	-.721	-.514	-.443
CENTROID X	:	-.004	.125	.416
CENTROID Y	:	-.081	-.288	-.359
POA TO CENTROID in.	:	.081	.314	.550
ANGLE POA CENTROID	:	267.449	336.556	310.797
MIN RADIUS	:	.539	.408	.193
MEAN RADIUS	:	.739	.613	.398
MAX RADIUS	:	.976	.900	.595
HORIZONTAL SPREAD	:	1.456	1.456	.688
VERTICAL SPREAD	:	1.551	.727	.724
EXTREME SPREAD	:	1.641	1.456	.999
NUMBER IN ONE INCH CIRCLE	=		0	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

2427-✓

"RYANITE" CAMO - D.R.T.

3696 ✓

"

"

J.E.S.

9419 ✓

EXP

D.T.

5137 ✓

EXP.

J.S.

9937 ✓

EXP

D.R.T.

0125 ✓

EXP

J.S

8564 ✓

EXP

D.R.T

7194 ✓

EXP

J.S.

3598 ✓

Control

D.T

3419 ✓

"

J.S.

2908 ✓

"

D.T.

11.55
35
11.90

12.25
11.55
170 = 35

30-06

Me	Gerry	DT	JS
1.845	2.038	2.248	2.236
1.618	1.757	1.456	3.017
1.941	1.890	2.089	1.64
1.759	2.335	2.221	2.075
2.491	2.387	2.584	2.478
2.071			<u>1.719</u>
		2.120	2.194
1.954	2.081		

JS 2.138

DT 2.037

700 CLASSIC
350 REM MAG

PECO-TYPE EVALUATION

843631

G-88

DON'T SAY IT—WRITE IT

To Fred

Date 1-9-85

From Chuck

.350 Rem Mag Strength Test

56.5gr. 4198 powder

250 gr Bullet.

125Kpsi Approx. Pressure

Bbl. took a set of 200 w/i

#B6357123

"THE SAFE WAY IS THE SMART WAY"

G.88

DON'T SAY IT—WRITE IT

To _____

Date 1-10-85

From _____

.350 Rem Mag

Gun #B6324792

56.5 gr 4198

250 gr Bullet

Bone obstructed with 250gr. Bullet

"THE SAFE WAY IS THE SMART WAY"

CHAMBER STRAIN TO P. S. I.

MODEL: _____

SERIAL No.: _____

CALIBER: _____

DATE: _____

GAUGE: _____

DISTANCE FROM BOLT FACE: _____

INSIDE DIA.: _____

OUTSIDE DIA. : _____

$$\text{PRESSURE} = \text{Strain} \times \left(\frac{E}{2} \times \left(\frac{R_o^2}{R_i^2} - 1 \right) \right) = \text{Strain} \times \frac{128}{103}$$

REFERENCE AMMO: _____

	Uin / in	P.S.I.
1		
2		
3		
4		
5		
Avg.		

$$D_o = 1.079'' = 1.094$$

$$D_i = .350 = .390$$

$$D = 2R$$

$$100,000 = 4 \cdot 128$$

$$\mu = .78 \frac{\text{min}}{\text{in}}$$

100.

High Pressure 523 $\frac{\text{min}}{\text{in}}$ Factory Rd 1000 $\frac{\text{min}}{\text{in}}$ Volt

(1211 " $\approx$ 125,000 PSI)

RRL took a set of 200 $\frac{\text{min}}{\text{in}}$

REMINGTON ARMS COMPANY, INC.
Ilion Research Division

SUMMARY OF INTENTIONAL GUN ABUSE TEST

DATA

By C. Stephens
Date 1-9-85

FIREARM: Make Remington Model 700
Grade _____ Caliber .350 Rem Serial Number B6357123
Origin _____
Test Number Assigned 843631
Comments _____

HISTORY: Condition New
Previous Rounds Fired _____
Headspace at Test .004
Test Date 1-9-85

ABUSIVE
LOAD USED: Powder Type 4198
Powder Weight 56.5gr
Case Make and Type Rem.
Total Bullet Weight 250gr.
Total Shot Weight _____
Estimated Pressure 125K

ADDITIONAL
COMMENTS: Barrel took a 200w/i set

REMINGTON ARMS COMPANY, INC.
Ilion Research Division

SUMMARY OF INTENTIONAL GUN ABUSE TEST

DATA

By C. Stephens
Date 1-10-85

FIREARM: Make Remington Model 700
Grade _____ Caliber .350 Rem Mag Serial Number B6324792
Origin _____
Test Number Assigned 843631
Comments _____

HISTORY: Condition New
Previous Rounds Fired _____
Headspace at Test .004
Test Date 1-10-85

ABUSIVE
LOAD USED: Powder Type 4198
Powder Weight 56.5
Case Make and Type Rem.
Total Bullet Weight 250 (2) 500 gr.
Total Shot Weight _____
Estimated Pressure 125 K

ADDITIONAL
COMMENTS: Bore obstructed with 250 gr. bullet

CAL. 350 Rem. Mag. SERIAL NO. B6324767

TEST TITLE: Design Acceptance

NO# E-0235-306

"MALFUNCTIONS"

Q412 (11)

TTL. RDS. FIRED:

TTL MALFUNCTIONS:

MALFUNCTION RATE:

[illegible]

REMARKS

DIAGRAMS (IF NEEDED)

Cal. 350 Rem. Mag. SERIAL NO. B6324611

0

NO# E-0235-306

"MALFUNCTIONS"

TTL. RDS. FIRED:

TTL. MALFUNCTIONS:

MALFUNCTION RATE:

9

[illegible]

Cal. 350 Rem. Mag. SERIAL NO. B6324792

TEST TITLE. Design Acceptance

NO# E-0235-306

"MALFUNCTIONS"

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

Rem.
350 Rem. Mag

REPORT NO.: 843631

PAGE NO. 1

DATE: 1-3-85

MODEL: 700 Classic

CALC. 350 Rem M

**PREVIOUS
ROUNDS**

0

TEST TITLE

Design Acceptance.

NO# E-0235-306

ABOLITIONISM,

TTL. RDS. FIRED!

TTL. MALFUNCTIONS:

Malfunction Date:

②

[illegible]

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

"MALFUNCTIONS"

[illegible]

FIELD CYCLE TEST - CENTERFIRE

REPORT NO.: 843631

PAGE NO. 1

DATE: 1-3-85

MODEL: 700 Classic

CAL. 350 Rem. Mag. SERIAL NO. B6324331

PREVIOUS ROUNDS

0

TEST TITLE: Design Acceptance

NO# E-0235-306

TTL. RDS. FIRED:

TTL. MALFUNCTIONS:

MALFUNCTION RATE:

10

"MALFUNCTIONS"

Rem. 350 Rem. Mag.	SHOOTER	NO. OF ROUNDS FIRED	FIRING	TRAPPED SHELL	DO NOT EXHAUST	DO NOT LOCK BACK	DO NOT LOCK CHAM	FEED FROM MAG.	SHELL STOPS MAG.	POWER OVERRIDE	DO NOT LOCK UP	STEM CHAMBER	RIGHT	LOW	HIGH	LEFT	SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION HANG UP	DO NOT EXTRACT	RETRACTS	ADJUSTMENTS	MALFUNCTIONS
200 Gr.	SRW	5																							
P.S.P.	M	5																							
	FRW	5																							
250 Gr.	SRW	5																							
P.S.P.	M	5																							
	FRW	5																							

Report No. 843631

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☒ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> <table> <tr> <td>☐ Safety Related</td> <td>☐ Litigation</td> </tr> <tr> <td>☐ Competitive Evaluation</td> <td>☐ Warehouse Audit</td> </tr> <tr> <td>☐ New Design</td> <td>☐ Cost Reduction</td> </tr> <tr> <td>☐ Design Change</td> <td>Stake <u>AGREAT DEAL</u></td> </tr> <tr> <td>☐ Plant Assistance</td> <td>☒ Other</td> </tr> </table>		☐ Safety Related	☐ Litigation	☐ Competitive Evaluation	☐ Warehouse Audit	☐ New Design	☐ Cost Reduction	☐ Design Change	Stake <u>AGREAT DEAL</u>	☐ Plant Assistance	☒ Other
☐ Safety Related	☐ Litigation											
☐ Competitive Evaluation	☐ Warehouse Audit											
☐ New Design	☐ Cost Reduction											
☐ Design Change	Stake <u>AGREAT DEAL</u>											
☐ Plant Assistance	☒ Other											
<u>FIREARM STAT'S.</u> MODEL: <u>700 CLASSIC</u> CAL. or GAGE: <u>350 REM. MAG.</u> BARREL TYPE: <u>ST. O.</u> PROOFED: YES ☒ NO ☐	<u>REPORT REQ'D.</u> FORMAL ☒ TEST RESULTS ONLY ☐	DATE REQUESTED: <u>12-28-84</u> DATE NEEDED BY: <u>1-11-85</u> REQUESTED BY: <u>F. SMITH</u> WORK ORDER NO: <u>E-0235-306</u>										

<u>TEST TYPE</u>			
☒ Strength Test ☒ Function Test ☒ Accuracy Test	☐ Ammunition Test ☐ Environmental Test ☐ Customer Complaint	☐ Dry Cycle Test ☐ Measurements ☐ Endurance Test	☐ Photo/Video ☐ Other _____

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

SEE ATTACHED LETTER FOR DETAILS.

GUNS REQUIRED: 1 - 700 CLASSIC 350 REM. MAG.

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: _____
 TEST COMPLETED BY: _____
 REPORT DATE: _____

M-700 CLASSIC .350 REM. MAG.

AMMO: 200 GR. PSP "CORE-LOKT" CODE: M02G PETERS

3 X 5 SHOT GROUPS. COOL BETWEEN GROUPS - FIRE ONE FOLLOWING SHOT

LEUPOLD 24X SCOPE. 100 YDS.

B 6324806 - GUN #2

GROUPS

<u>1</u>	<u>2</u>	<u>3</u>	<u>AVG.</u>
.79	1.46"	2.30"	1.516"

B 6356446 GUN #4	2.30"	2.08"	2.50"	2.29"
------------------	-------	-------	-------	-------

B 6324310 GUN #5	1.94"	1.90"	2.26"	2.03"
------------------	-------	-------	-------	-------

B 6354679 GUN #6	1.78"	2.08"	2.80"	2.22"
------------------	-------	-------	-------	-------

B 6324611 GUN #9	1.94"	2.34"	2.80"	2.36"
------------------	-------	-------	-------	-------

AMMO CONFIRMATION: 5 X 5 SHOT GROUPS. 100 YDS.

350 REM. MAG. "PETERS" 200 GR. PSP "CORE-LOKT" CODE: M02G

40XB SER. # 17793 LYMAN 25X SUPER TARGET SPOT 100 YD

GROUPS

1 . 1.22"

2 .88"

3 1.28" AUG. 1.27"

4 1.70"

5 1.28"

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



xc: J.R. Snedeker
F.H. Smith

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

November 27, 1984

TO: J.W. Bower

FROM: R.S. Murphy **RSM**

Model 700 Classic .350 Rem. Mag Test Design

Before we transmit the .350 Rem. Mag the following feeding, accuracy, and strength tests should be performed. We will build 10 rifles to be used as test vehicles.

The test should run as follows:

- Done • Proof *DONE BY GALLERY*
- Done • Live Load/Unload *- DONE BY DANTE*
- Done • Field Cycle *- SCHEDULED FOR FRIDAY JAN 4, 1985*
 - Accuracy *- TO BE DONE JAN 10 - (Guns 4, 5, 6, 8, 9) (Jerry Selan)*
 - Ultimate Strength *- BY RE NIGHTINGALE*

Live Load/Unload: After proof cycle, 50 rounds each of Rem. 200 gr. PSP and 250 gr. SP ammo through each of the 10 rifles. This test should be performed in the shooting jacks. Record all malfunctions and note any bullet deformation.

Field Cycle: The field cycle test is to be shot with all 10 rifles on the hill. Ten rounds of each of the two Remington ammo types is to be fired in each gun. Since this is a magnum caliber, I would suggest that the test be conducted on two successive mornings, unless the shooters feel otherwise.

Accuracy: After sighting (and cooling if necessary), shoot 3 5-shot groups using the 200 gr. PSP ammunition. Cool and shoot one fouling shot between each group. Five of the ten rifles are to be randomly selected for this test.

Ultimate Strength: Work up several progressively increasing high pressure loads to the point where the barreled action yields or a maximum pressure is reached.

RSM:spa

Cal. 350 Rem. Mag. SERIAL NO. B6324806

0

TEST TITLE: Design Acceptance

NO# E-0235-306

"MALFUNCTIONS"

TTL, RDS. FIRED: _____
TTL, MALFUNCTIONS: _____
MALFUNCTION RATE: _____

Gar (2)

[illegible]

SERIAL NO R6357085

"MALFUNCTIONS"

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

3

[illegible]

Cal. 350 Rem. Mag. SERIAL NO. B635644C

0

NO# E-0235-306

"MALFUNCTIONS"

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

④

[illegible]

FIELD CYCLE TEST - CENTERFIRE

REPORT NO.: 843631

PAGE NO. 1

DATE: 1-3-85

MODEL: 700 Classic

CAL. 350 Rem Mag. SERIAL NO. B6324310

PREVIOUS ROUNDS

0

TEST TITLE:

Design Acceptance

NO# E-2235-306

TTL. RDS. FIRED:

TTL. MALFUNCTIONS:

MALFUNCTION RATE:

5

"MALFUNCTIONS"

Rem. 350 Rem. Mag.	SHOOTER	NO. OF ROUNDS FIRED	FIRE	TAKEN	DOWN 1 KICK	DOWN 1 KICK BACK	DOWN 1 LOCK OPEN	FEED FROM MAG.	SHELL STOPS MAG.	POWER OVERRIDE	DOWN 1 LOCK UP	STEP CHAMBER	SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION HANG UP	DOWN 1 EXTRACT	RETRACT	ADJUSTMENTS	RETRACT
200 Gr. S	5	OK																			
P.S.P. M	5	OK																			
F	5	OK																			
250 Gr. S	5	OK																			
P.S.P. M	5	OK																			
F	5	OK																			
TOTAL (PER MAL.)																					

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

cc: W.H. Coleman, II
J.W. Bower
J.R. Snedeker
R.S. Murphy
F.H. Smith
R.E. Nightingale
F.L. Supry
File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 843631

MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

ABSTRACT:

The Test and Measurement Lab finds the Prototype Evaluation of the Model 700 Classic 350 Rem. Mag., to be acceptable. There were no breakages or malfunctions related to the introduction of the 350 Rem. Mag. caliber in the Model 700 Classic rifle.

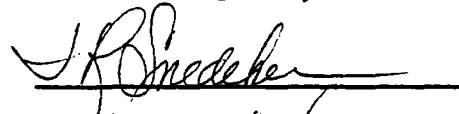
Prepared by: F.L. SUPRY
Date Prepared: 1/18/85

proofread and cleared by:

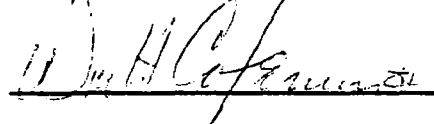
R.E. NIGHTINGALE, Foreman
Test, Measurement & Mech. Analysis Lab



J.R. SNEDEKER, Research Supervisor
Test, Measurement & Mech. Analysis Lab



W.H. COLEMAN, II
New Products Research Lab Director



MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

TO: R.E. NIGHTINGALE
FROM: F.L. SUPRY

TITLE: MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

INTRODUCTION:

On December 28, 1984 a request to conduct a Prototype Evaluation of the Model 700 Classic Rifle, chambered in the 350 Rem Mag. caliber, was received by the test lab. The Prototype Evaluation was to consist of: Proof, Live load/unload, Field Function, Accuracy, and Ultimate Strength. Eleven (11) rifles, from a sample of eleven (11) rifles were to be utilized in the evaluation.

SCOPE OF TEST:

To determine if the Prototype samples meet Remington Specifications set by the Research Design Section, prior to the transmittal of the design to production.

TEST RESULTS:

The Prototype rifles were found to meet specifications set by Research, for each phase of the test. The sample lot was found to be acceptable, and the designs were transmitted to production.

MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

REPORT TEXT:

1. PROOF:

A. All eleven (11) rifles were found to be acceptable.

2. LIVE LOAD/UNLOAD:

A. Rifle # B6324331 experienced two (2) "fail to eject" malfunctions.

B. There was no bullet deformation, resulting from the Live load/unload test.

3. FIELD FUNCTION:

A. Ten (10) rifles were subjected to a thirty (30) round per rifle, Field Function Test and the following results were obtained:

a. Nine (9) rifles experienced no malfunctions.

b. Rifle # B6324331 experienced eleven (11) "fail to eject" malfunctions.

i. Upon examination of this rifle, it was determined to have a weak ejector spring.

4. ACCURACY:

A. Five (5) rifles were tested for 100 yard accuracy and the following average was established:

a. Group Size: 2.08 inches

B. Accuracy results per individual rifle are located in the appendix of this report.

5. ULTIMATE STRENGTH:

A. Rifle # B6357123 was found to be acceptable, when subjected to the firing of a high pressure round (approximately 125,000 psi).

a. The bolt jammed in the chamber and was opened by using a mallet.

b. The barrel took a 200 ui/i set. (Refer to appendix for graph)

B. Rifle # B6324792 was found to be acceptable, when subjected to an obstructed bore and fired with a high pressure round (approximately 125,000 psi).

a. The bolt jammed and had to be cut from the chamber.

b. The barrel was returned to F.H. Smith.

MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

TEST PROCEDURE:

1. PROOF:

- A. The rifles were proofed, inspected, and stamped in the Plant Gallery by experienced Gallery personnel.

2. LIVE LOAD/UNLOAD:

- A. Ten of the rifles were subjected to the loading and function, without firing, of fifty (50) 200 gr. PSP and fifty (50) 250 gr. SP Remington ammunition.

- a. The test was conducted in Shooting Room 112, Booth #3.

- b. Slow, Medium, and Fast cycle speeds were utilized.

3. FIELD FUNCTION:

- A. Ten (10) of the rifles were subjected to the loading and firing of thirty (30) rounds of Remington ammunition. The round robin method of firing the rifles was used. Fifteen (15) rounds were fired; five (5) at a slow feeding cycle speed, five (5) at a medium feeding cycle speed, and five (5) at a fast feeding cycle speed. The rifles were then cooled before the firing of the next ammunition type.

- B. The following ammunition was used in the field test:

- a. Remington: R350M1 200-psp code# M02G
 250- sp (Not Available)

- C. All malfunctions were recorded; per rifle, per ammunition type, per feeding cycle speed, and per shooter. Individual and overall malfunction rates were calculated.

MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

4. ACCURACY:

A. The following five (5) rifles were used in the 100 yard accuracy test:

B6324806	B6324310	B6356446
B6354679	B634611	

B. The accuracy was shot by J. Selan, Research - Test Lab, at the R & D 100 yard range.

C. Leupold mounts and rings were used in conjunction with a Leupold 24X scope.

D. Remington Peters ammunition, index R350M1 ; code M02G, 200 grain pointed soft point, was used for the 100 yard accuracy test.

E. Before shooting the 100 yard accuracy test, the bores on each rifle were brushed with Hoppe's No. 9 solvent and patched dry.

F. A total of three (3), five (5) shot groups were shot with each rifle. The rifles were cooled between each group, and one (1) "warmer" shot was fired before the next group was shot.

G. The patterns were analyzed for group size. An average was calculated for each rifle.

5. ULTIMATE STRENGTH:

A. The following two rifles were used for Ultimate Strength:

a. B6357123 - unobstructed bore - high pressure load

i. 56.5 grains - 4198 powder - 250 grain bullet

b. B6324792 - obstructed bore - high pressure load

i. 56.5 grains - 4198 powder - 250 grain bullet

ii. Bore obstructed with a 250 grain bullet

B. The Ultimate Strength Test was conducted by C. Stephens, Research - Measurement Lab.

a. Each rifle was placed in an iron lung, and fired with a lanyard.

b. A strain gauge was attached to rifle # B6357123.

TandP_843631

MODEL 700 CLASSIC 350 REM. MAG.

-7-

MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

APPENDIX

MODEL 700 CLASSIC 350 REM. MAG. PROTOTYPE EVALUATION

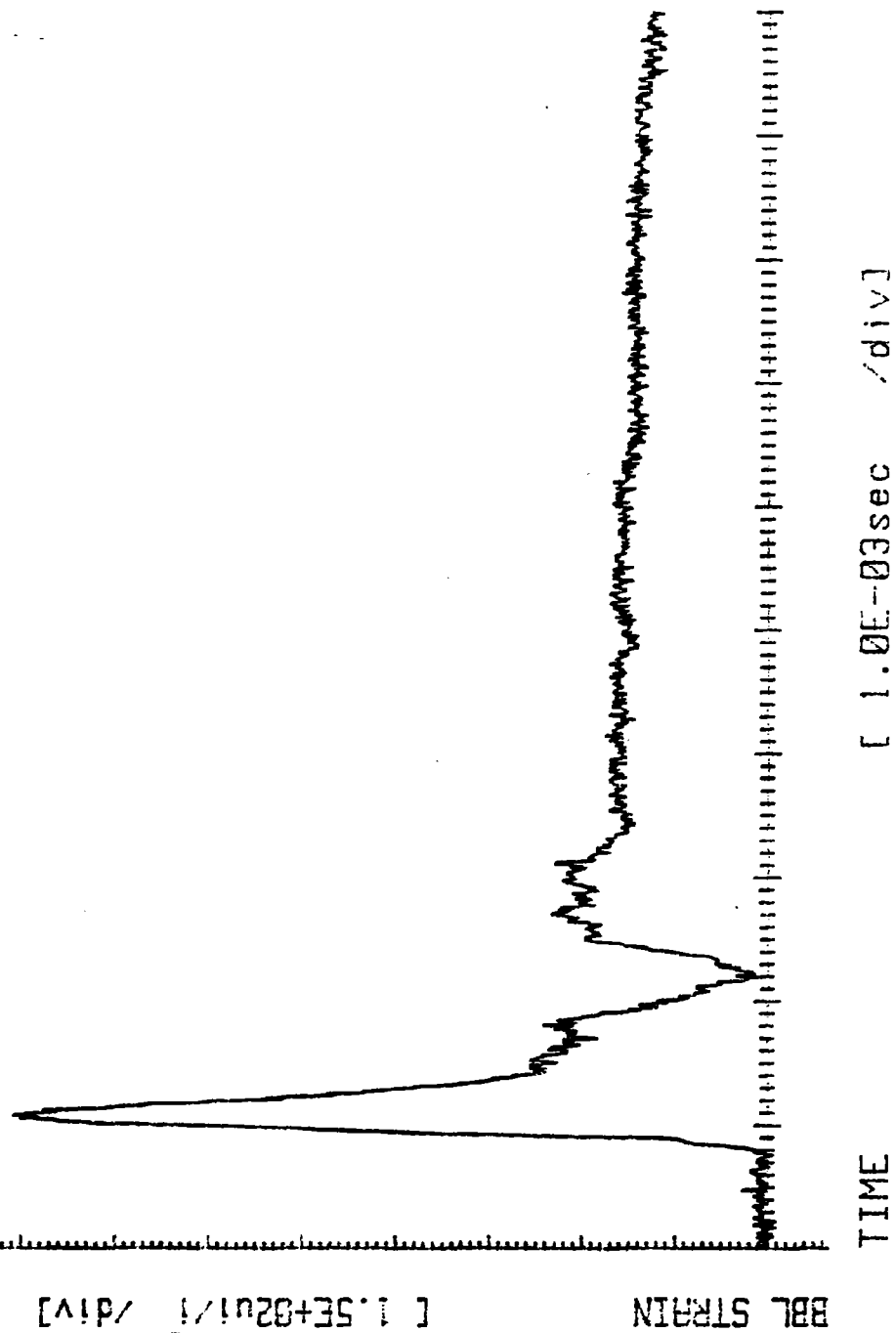
MODEL 700 CLASSIC 350 REM. MAG.
AMMO: 200 GRAIN PSP "CORE-LOKT" CODE: MO2G PETERS
3 X 5 SHOT GROUPS: COOL BETWEEN GROUPS - FIRE ONE "WARMER" SHOT
LEUPOLD 24X SCOPE 100 YARDS

RIFLE NUMBER	GROUP 1 (IN.)	GROUP 2 (IN.)	GROUP 3 (IN.)	AVERAGE (IN.)
B6324806	0.79	1.46	2.30	1.52
B6356446	2.30	2.08	2.50	2.29
B6324310	1.94	1.90	2.26	2.03
B6354679	1.78	2.08	2.80	2.22
B6324611	1.94	2.34	2.80	2.36

AMMO CONFORMATION: 5 X 5 SHOT GROUPS 100 YARDS
350 REM. MAG. "PETERS" 200 GRAIN "CORE-LOKT" CODE: MO2G
RIFLE: 40XB SERIAL# 17793 SCOPE: LYMAN 25X SUPER TARGET

GROUP 1 (IN.)	GROUP 2 (IN.)	GROUP 3 (IN.)	GROUP 4 (IN.)	GROUP 5 (IN.)	AVERAGE (IN.)
1.22	0.88	1.28	1.70	1.28	1.27

.350 REM MAG-56.5 GR 4198





RECORDS CONTROL SCHEDULE

RECORDS CATEGORY OR TITLE:

M 700 LUBRICATION INVESTIGATION

COPY "O" (OFFICIAL) ☐

"X" (EXTRA) ☒

TOTAL RETENTION: _____

GS-11050 Rev. 8/78

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



Distribution: C.B. Workman
C.E. Ritchie
J.P. Linde
J.W. Brooks
R.J. Pohl
Petroleum Lab
Chambers Works
A.B. Hughes
ESD-Louviers

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

RESEARCH TEST and MEASUREMENT REPORT - Report No. 82 0331

Lubricant Evaluation: M700 Cock and Fire Simulation

Prepared by: Fred Supry

Date Prepared: 3-22-82

Proofread and Cleared By:

J.H. Hennings, / R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

James Hennings 4-30-82
Signature Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Mech. & Mech. Analysis Lab

C.E. Ritchie 4/30/82
Signature Date

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 82 0331
REPORT TITLE: Lubricant Evaluation: M700 Cock and Fire Simulation
MODEL(S): 700
GAUGE OR CALIBER: 30.06
DATE: 3-22-82
WORK ORDER NO.: C-1803-000
PART NAME:
DESIGNER/ENGINEER:

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____

NO. OF ROUNDS PER GUN: _____

TOTAL ROUNDS FIRED IN TEST: _____

AMMO TYPE: MAGS. _____; TARGET: _____

RIM FIRE _____ CENTER FIRE _____

10. DRY CYCLE - NO. OF SAMPLES TESTED 5
MAX. NO. OF CYCLES 25000

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

April 13, 1982

TO: J.H. Hennings

FROM: F.L. Supry

REPORT TITLE: Evaluation of Lubricants on Firearms M700 Cock and Fire Simulation

ABSTRACT

C.E. Ritchie requested that the Test Lab conduct a cock and fire evaluation on five spray lubricants.

1. Du Pont - Synthetic Diester
2. Krylon - Ten - 4
3. Sprayon - 711
4. CRC - 3-36
5. Houghton - HLP

These five lubricants were selected for evaluation from the results of a preliminary evaluation conducted by A.B. Hughes, Senior Consultant, ESD Maintenance Engineering Group, Du Pont. A copy of his evaluation for each of the five lubricants is located in Appendix "C".

SCOPE OF TEST

To compare the five lubricants in a Model 700 cock and fire simulation test.

TEST RESULTS

In their order of finish, from the best performing lubricant to the poorest performing lubricant, the following results were obtained.

<u>LUBRICANT</u>	<u>AVERAGE CYCLE LIFE (5 Samples)</u>
1. Du Pont - Synthetic Diester	21,181 cys.
2. Sprayon - 711	17,646 cys.
3. CRC - 3-36	14,382 cys.
4. Houghton - HLP	8,333 cys.
5. Krylon - Ten-4	2,830 cys.

REPORT TEXT

- A. Trigger pull, sear lift, sear engagement, safe on, safe off, and bolt lift measurements were taken on each test vehicle at the start of the test, and at 5000 cycle intervals. Remington specifications for the M700 components used are:

- | | |
|---------------------|-------------------|
| ● Trigger Pull | 3½ lbs. — 6½ lbs. |
| ● Sear Lift | .005" — .018" |
| ● Sear Engagement | .015" — .020" |
| ● Safe "On" — "Off" | None Established |
| ● Bolt Lift | None Established |

Refer to Appendix "A", data sheets No. 1 through No. 5, for individual results.

The Rc hardness was measured, at the cocking cam area, on each M700 bolt.

Refer to Appendix "A", data sheet No. 6, for individual hardness, lubricant used, simulator used and cycles completed.

A graphical analysis comparing the lubricants tested to their cycle life, and their cycle life to the simulator used is found in Appendix "B".

TEST PROCEDUREA. Measurements

1. Trigger Pull
Trigger Pull measurements were conducted using a Chatillon Model IN-10 pull scale.
2. Sear Lift and Sear Engagement
Sear lift and sear engagement measurements were conducted using a Model FC-14 optical comparator and measuring machine.
3. Safe "ON" and "OFF" Forces.
Safe On and Off forces were taken using a Chatillon Model DPP-25, push-pull scale.
4. Bolt Lift
Bolt lift forces, both cocked and fired, were taken utilizing a Chatillon Model 80D pull scale mounted on a machine designed to be used for bolt lift measurements.
5. Rc Hardness
The Rc hardness measurements were taken by George Catta, a production inspector, utilizing a Wilson Rockwell Hardness Tester.

B. Lubrication - (Pictorial presentation - Appendix "D")

1. Lubrication Points
 - a. Receiver: Locking lug area.
Track on receiver tang.
 - b. Bolt: Cocking cam
Locking lugs
 - c. Firing Pin: Threads
Striker radius and track.
 - d. Trigger Assembly: Sear safety cam face.
Interior of trigger assembly, through sear inspection hole.
2. Lubrication procedure
 - a. Components to be lubricated were completely degreased, using the solvent degreasing tanks located in our Heat Treat Department.
 - b. The interior of the trigger assembly was lubricated by holding the spray can to direct the spray into the sear inspection hole. Duration of spray approximately 1 second.

NOTE: The two position nozzle on Du Pont aerosol can was more difficult to control for pin point application, than the standard plastic tubes on the other samples. (Pictorial example included.)

2. Lubrication Procedure - continued

- c. All other lubrication points were lubricated by holding the aerosol can approximately six inches away from the area to be lubricated and covering the area until a thin layer of lubricant forms on the surface. Duration of spray; approximately 1 second.

C. Pictorial Presentation

- 1. Lubrication points and procedures.
- 2. Cocking cam, sear face, and striker radius and track areas were photographed at the start and completion of the test and are available on request.

A P P E N D I X A

(Data Sheets)

		1	2	3	4	5	6
		TRIGGER	SEAR	SEAR	SAFE	SAFE	BOLT - LIFT
		PULL	LIFT	ENGAGEMENT	ON	OFF	COCKED FIRED
REM - SPECS →		3½-6½lbs	.005"-.008"	.015"-.020"	(lbs)	(lbs)	(lbs) (lbs)
1	1- DUPONT	(AVG. OF 3)			(AVG. OF 3)	(AVG. OF 3)	(AVG. OF 3) (AVG. OF 3)
2	2- 711						
3	3- CRC						
4	4- HLP						
5	5- Ten 4						
6	1	6.25	.005	.020	7.5	6.50	3.00 7.00
7	2	6.50	.006	.015	6.75	4.25	2.00 6.50
8	3	5.50	.005	.016	5.25	4.25	3.00 6.00
9	4	6.00	.008	.017	7.00	5.75	3.00 6.50
10	5	6.50	.008	.016	6.75	4.50	4.50 7.50
11	1	6.00	.0055	.020	5.50	4.00	2.50 6.50
12	5000 2	6.00	.0065	.0175	6.00	5.50	2.50 6.50
13	3	6.00	.006	.020	6.00	4.50	2.00 6.00
14	4	5.75	.010	.017	7.50	5.00	3.00 7.25
15	* 5	6.50	.010	.020	7.25	5.50	5.00 9.00
16	1	5.75	.008	.020	5.75	4.0	2.25 7.00
17	10,000 * 2	5.75	.008	.018	5.25	3.75	2.50 10.50
18	3	5.25	.008	.022	4.50	3.75	2.0 7.00
19	4	6.25	.0095	.029	7.25	4.75	3.0 13.00
20	5	—	—	—	—	—	—
21	1	6.00	.009	.0205	6.00	4.00	2.00 8.50
22	15,000 2	—	—	—	—	—	—
23	3	5.50	.009	.024	5.00	5.50	2.00 8.50
24	* 4	6.00	.0105	.019	6.50	4.50	3.00 18.00
25	5	—	—	—	—	—	—
26	* 1	6.00	.0095	.021	6.00	4.00	2.00 8.00
27	20,000 2	—	—	—	—	—	—
28	3	5.50	.0105	.027	4.50	4.00	2.00 9.00
29	4	—	—	—	—	—	—
30	5	—	—	—	—	—	—
31	1	—	—	—	—	—	—
32	25,000 2	—	—	—	—	—	—
33	3	—	—	—	—	—	—
34	4	—	—	—	—	—	—
35	5	—	—	—	—	—	—
36	* 1	FAILED	15.594	CYCLES			
37	* 2	FAILED	6.226	CYCLES			
38	* 3	FAILED	16.359	CYCLES			
39	* 4	FAILED	10.400	CYCLES			
40	* 5	FAILED	1990	CYCLES			
							DATA SHEET 1

LUBRICANT EVALUATION

3-8-82

SECOND SAMPLE OF EACH LUBRICANT

		1	2	3	4	5	6
		TRIGGER	SEAR	SEAR	SAFE	SAFE	SAFETY-LIFT
		PULL	LIFT	ENGAGEMENT	ON	OFF	COCKED
							FIRED
REM SPEEDS →		3 1/2 - 6 1/2 lbs	.005"-.018"	.015"-.020"	(lbs)	(lbs)	(lbs)
		(AVG. OF 3)			(AVG. OF 3)	(AVG. OF 3)	(AVG. OF 3)
1	1	DUPONT					
2	2	711					
3	3	ARL					
4	4	HLP					
5	5	TEN 4					
6	1		6.00	.009	.0185	6.00	4.50
7	2		5.00	.006	.0118	7.50	4.75
8	3		6.00	.012	.012	7.00	4.50
9	4		6.75	.0095	.016	7.50	6.75
10	5		5.50	.008	.016	7.50	5.50
11	1	5000	5.25	.0095	.0215	6.00	4.50
12	2		5.00	.0065	.019	5.75	4.00
13	3		5.75	.013	.020	5.00	4.00
14	4		6.25	.0095	.020	6.75	6.25
15	* 5		5.00	.009	.020	5.75	4.00
16	1	10,000	5.50	.011	.025	5.75	4.25
17	2		4.75	.0065	.019	5.25	4.00
18	* 3		6.00	.013	.023	6.25	3.75
19	* 4		6.00	.0095	.021	6.50	5.75
20	5		—	—	—	—	—
21	1	15,000	5.50	.011	.026	5.50	4.25
22	2		4.75	.0075	.019	5.00	4.00
23	3		—	—	—	—	—
24	4		—	—	—	—	—
25	5		—	—	—	—	—
26	1	20,000	5.50	.011	.0265	5.50	4.00
27	2		4.75	.009	.019	5.25	4.50
28	3		—	—	—	—	—
29	4		—	—	—	—	—
30	5		—	—	—	—	—
31	* 1	25,000	5.25	.011	.0285	5.50	3.75
32	* 2		4.50	.0095	.021	5.25	4.00
33	3		—	—	—	—	—
34	4		—	—	—	—	—
35	5		—	—	—	—	—
36	* 1		COMPLETED	25,000	cycles		
37	* 2		COMPLETED	25,000	cycles		
38	* 3		FAILED	8317	cycles		
39	* 4		FAILED	6115	cycles		
40	* 5		FAILED	2788	cycles		

DATA SHEET 2

		1	2	3	4	5	6
		TRIGGER	SEAR	SEAR	SAFE	SAFE	BOLT - LIFT
		PULL	LIFT	ENGAGEMENT	ON	OFF	COCKED FIRED
		35-64 lbs	.005"-.018"	.015"-.020"	(lbs)	(lbs)	(lbs) (lbs)
1	1 DUPONT	(AVG OF 3)			(AVG OF 3)	(AVG OF 3)	(AVG OF 3) (AVG OF 3)
2	2 711						
3	3 CRC						
4	4 HLP						
5	5 TEN 4						
6	1	5.75	.007	.015	7.25	4.50	2.50 6.50
7	2	6.00	.008	.015	7.50	7.50	2.50 8.25
8	3	6.25	.008	.017	6.75	5.50	3.00 7.00
9	4	5.75	.0125	.0195	8.00	5.50	3.00 7.00
10	5	5.50	.008	.015	8.00	5.00	2.50 6.00
11	5000 1	6.25	.009	.019	6.50	4.25	2.00 6.00
12	cycles 2	5.25	.009	.021	5.25	7.50	3.50 6.50
13	3	6.25	.0105	.0175	7.25	4.00	3.00 9.00
14	4	5.75	.0125	.021	7.00	5.00	3.00 10.00
15	* 5	5.50	.013	.021	6.00	3.75	2.50 18.00
16	10000 1	6.00	.0110	.020	6.00	3.75	2.00 5.50
17	cycles 2	5.25	.009	.021	7.00	6.00	3.50 7.00
18	3	6.00	.015	.0195	6.75	4.75	3.00 10.00
19	* 4	5.75	.0125	.0225	6.50	4.50	3.50 57.00
20	5	—	—	—	—	—	—
21	15000 1	5.25	.0115	.020	5.75	4.00	2.00 6.50
22	cycles * 2	5.50	.0095	.022	6.50	5.50	4.00 14.00
23	* 3	6.50	.015	.0195	6.75	4.00	3.00 15.00
24	4	—	—	—	—	—	—
25	5	—	—	—	—	—	—
26	20000 1	5.75	.0115	.020	6.00	4.00	2.00 6.00
27	cycles 2	—	—	—	—	—	—
28	3	—	—	—	—	—	—
29	4	—	—	—	—	—	—
30	5	—	—	—	—	—	—
31	25000 * 1	6.00	.0115	.021	6.25	3.75	2.00 12.00
32	cycles 2	—	—	—	—	—	—
33	3	—	—	—	—	—	—
34	4	—	—	—	—	—	—
35	5	—	—	—	—	—	—
36	* 1	COMPLETED	25,000	cycles			
37	* 2	FAILED	15,140	cycles			
38	* 3	FAILED	10,410	cycles			
39	* 4	FAILED	6,788	cycles			
40	* 5	FAILED	2,484	cycles			DATA SHEET 3

		1	2	3	4	5	6
		TRIGGER	SEAR	SEAR	SAFE	SAFE	SOLT + LIFT
		PULL	LIFT	ENGAGEMENT	ON	OFF	LOCKED
		34 - 6 1/2 lbs	.005" - .018"	.015" - .020"	(lbs)	(lbs)	(lbs)
		(AVG. OF 3)			(AVG. OF 3)	(AVG. OF 3)	(AVG. OF 3)
1	1 DuPont						
2	2 711						
3	3 CRC						
4	4 HLP						
5	5 TEN 4						
6	1	6.50	.0095	.0119	6.75	4.25	4.00
7	2	6.50	.0088	.0119	8.50	5.25	3.50
8	3	5.50	.0088	.0116	7.25	4.75	3.00
9	4	5.75	.009	.0119	8.25	5.50	4.00
10	5	5.50	.0085	.0117	9.00	6.75	3.00
11	5000	6.25	.010	.023	6.25	3.25	3.00
12	cycles	6.00	.0111	.020	7.50	4.25	3.50
13	3	5.50	.0085	.021	7.00	4.50	3.00
14	4	6.00	.0110	.0119	7.25	5.00	4.00
15	* 5	5.75	.010	.0185	7.00	4.75	3.00
16	10000	5.75	.010	.023	5.75	3.50	4.00
17	cycles	6.00	.012	.022	7.00	4.00	3.00
18	3	5.50	.0085	.021	6.50	4.25	3.00
19	* 4	6.00	.010	.021	7.00	5.25	4.00
20	5	—	—	—	—	—	—
21	15000	6.25	.0105	.024	5.25	3.00	3.50
22	cycles	6.25	.013	.0225	7.50	4.00	3.50
23	* 3	5.50	.0105	.0215	6.75	4.50	3.25
24	4	—	—	—	—	—	—
25	5	—	—	—	—	—	—
26	20000	5.75	.0115	.026	5.75	3.00	3.00
27	cycles	5.75	.0125	.024	6.50	4.00	4.00
28	3	—	—	—	—	—	—
29	4	—	—	—	—	—	—
30	5	—	—	—	—	—	—
31	25000	—	—	—	—	—	—
32	cycles	—	—	—	—	—	—
33	3	—	—	—	—	—	—
34	4	—	—	—	—	—	—
35	5	—	—	—	—	—	—
36	* 1	FAILED	19520 cycles				
37	* 2	FAILED	16865 cycles				
38	* 3	FAILED	11830 cycles				
39	* 4	FAILED	8576 cycles				
40	* 5	FAILED	3667 cycles				

DATA SHEET 4

FIFTH SAMPLE OF EACH LUBRICANT

		1	2	3	4	5	6
		TRIGGER	SEAR	SEAR	SAFE	SAFE	BOLT - LIFT
		PULL	LIFT	ENGAGEMENT	ON	OFF	LOCKED FIRED
		31-62 lbs	.005"-.018"	.015"-.020"	(lbs)	(lbs)	(lbs) (lbs)
1	1 DuPont	(AVG OF 3)			(AVG OF 3)	(AVG OF 3)	(AVG OF 3)
2	2 711						
3	3 CRC						
4	4 HLP						
5	5 TEN 4						
6	1	6.00	.0095	.0117	7.00	4.75	2.00 7.00
7	2	5.75	.0085	.0155	6.75	5.00	3.50 7.00
8	3	5.75	.0105	.0215	6.50	5.00	3.00 9.00
9	4	6.25	.012	.016	7.00	4.50	3.00 8.00
10	5	6.25	.008	.016	7.25	5.50	3.00 6.50
11	5000 1	5.50	.0110	.0205	7.50	4.50	2.50 7.00
12	cycles 2	6.00	.0085	.016	5.75	4.00	4.00 8.00
13	3	5.75	.0105	.0215	5.50	4.25	3.00 8.00
14	4	6.25	.013	.019	6.50	4.25	4.00 7.50
15	*5	6.25	.010	.020	5.75	4.00	3.50 18.00
16	10000 1	5.25	.0110	.021	7.50	4.00	3.00 8.00
17	cycles 2	5.50	.010	.018	5.75	3.75	4.00 7.50
18	3	5.75	.0105	.0215	5.50	4.25	3.00 7.50
19	*4	6.25	.0135	.025	7.25	3.75	4.00 27.00
20	5	-	-	-	-	-	-
21	15000 1	5.50	.0105	.021	6.50	4.00	3.00 8.00
22	cycles 2	5.75	.010	.018	5.75	4.00	3.50 7.50
23	3	6.00	.0105	.0215	5.50	4.50	3.00 7.00
24	4	-	-	-	-	-	-
25	5	-	-	-	-	-	-
26	20000 1	5.50	.0105	.021	7.00	3.75	3.50 14.00
27	cycles 2	6.25	.010	.019	5.50	4.00	3.50 9.00
28	3	5.75	.0105	.022	5.50	4.25	3.00 11.00
29	4	-	-	-	-	-	-
30	5	-	-	-	-	-	-
31	25000 *1	5.00	.011	.022	7.00	4.00	3.00 28.00
32	cycles *2	5.75	.011	.020	5.75	3.75	4.00 12.00
33	*3	6.25	.017	.023	5.25	4.00	4.00 15.00
34	4	-	-	-	-	-	-
35	5	-	-	-	-	-	-
36	*1	FAILED	20790	cycles			
37	*2	COMPLETED	25000	cycles			
38	*3	COMPLETED	25000	cycles			
39	*4	FAILED	9787	cycles			
40	*5	FAILED	3220	cycles			DATA SHEET 5

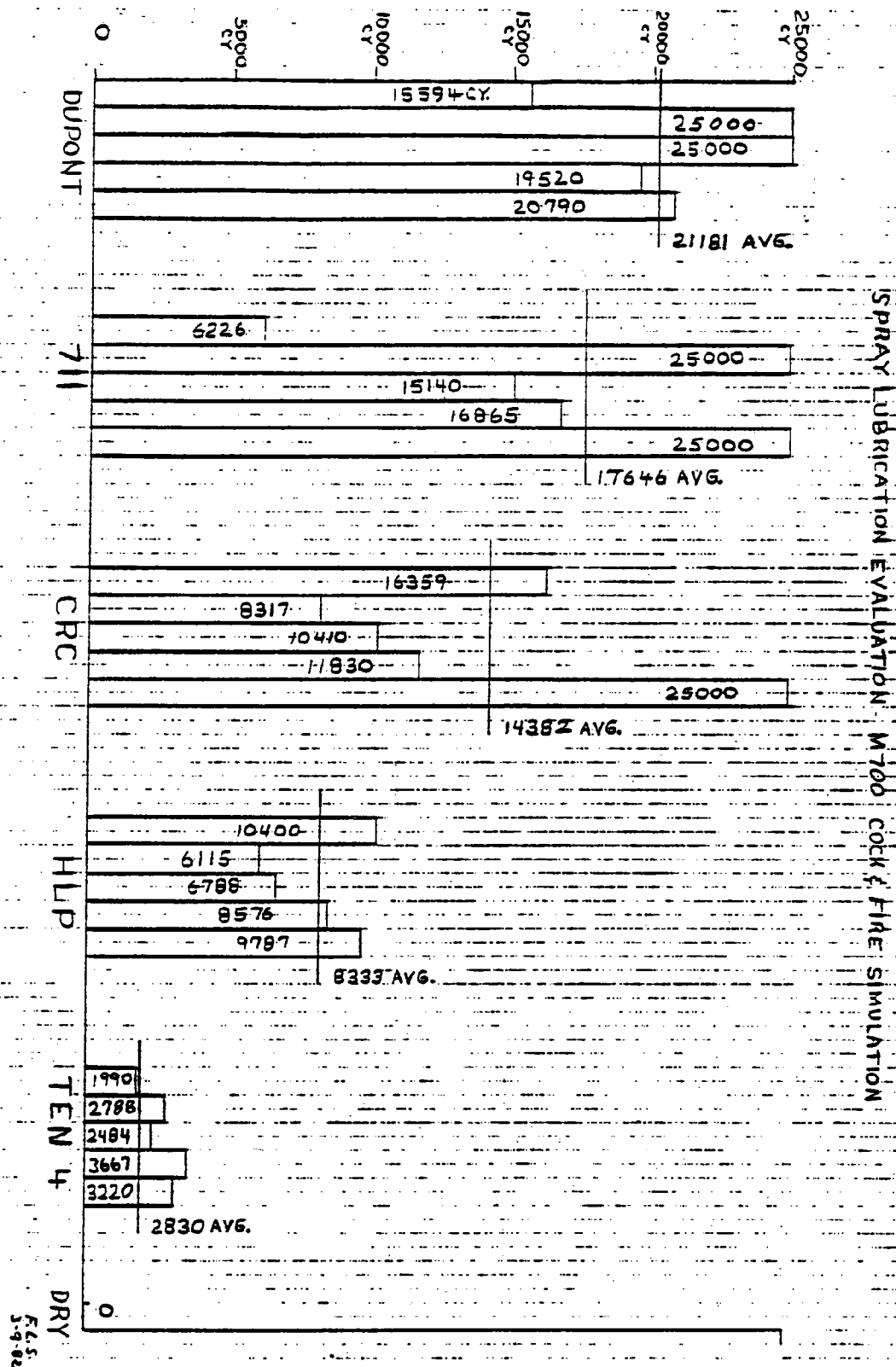
LUBRICANT EVALUATION

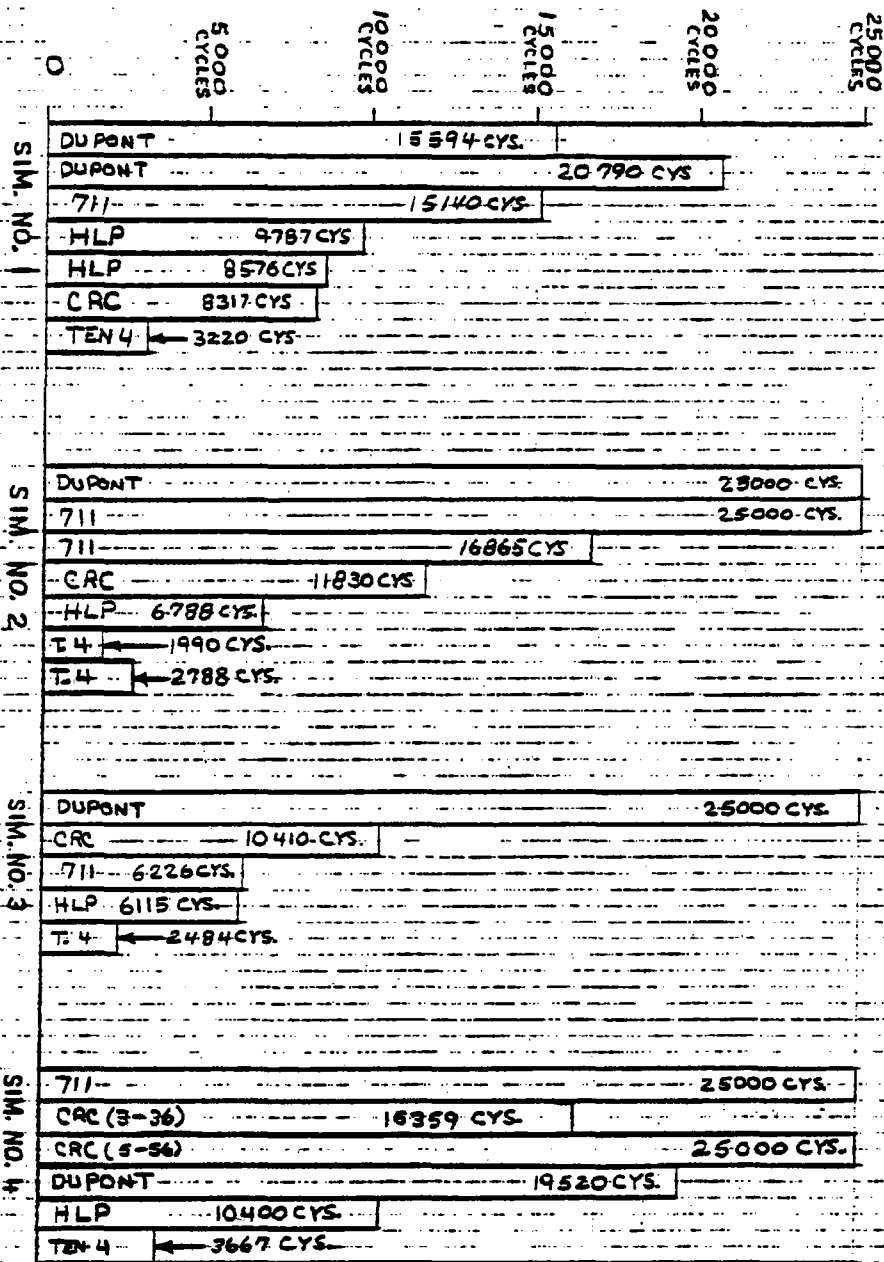
3-10-82

R_e HARDNESS: M700 BOLT COCKING CAM AREA

	1	2	3	4	5	6
	REM. SPECS.	R _e	LUBRICANT	SIMULATOR	CYCLES	
	R _e 37-46	HARDNESS	USED	USED	COMPLETED	
	↓ BOLT NO. ↓					
1						1
2						2
3	C1	39	DUPONT	1	15 594	3
4	C9	40	DUPONT	3	25 000	4
5	C12	40	DUPONT	2	25 000	5
6	C19	38	DUPONT	4	19 520	6
7	C20	37	DUPONT	1	20 790	7
8						8
9						9
10	C3	38	711	3	6 226	10
11	C7	39	711	2	25 000	11
12	C16	39	711	11	15 140	12
13	C27	38	711	2	16 865	13
14	C29	39	711	4	25 000	14
15						15
16						16
17	C4	39	CRC 3-36	4	16 359	17
18	C10	39	CRC 3-36	11	8 317	18
19	C17	40	CRC 3-36	3	10 410	19
20	C21	39	CRC 3-36	2	11 830	20
21	C25	39	CRC 5-56	4	25 000	21
22						22
23						23
24	C11	39	HLP	4	10 400	24
25	C18	39	HLP	3	6 115	25
26	C24	39	HLP	2	6 788	26
27	C26	39	HLP	1	8 576	27
28	C28	38	HLP	1	9 787	28
29						29
30						30
31	C2	38	TEN-4	2	1 990	31
32	C5	38	TEN-4	2	2 788	32
33	C6	39	TEN-4	3	2 484	33
34	C8	38	TEN-4	4	3 667	34
35	C13	39	TEN-4	1	3 220	35
36						36
37						37
38	C22	39	DRY		0	38
39						39
40					DATA SHEET 6	40

APPENDIX B
(Graphic Presentation)





SPRAY LUBRICATION EVALUATION - M700 COCK FIRE SIMULATION

APPENDIX C

(Previous Evaluation)

Test # 20

Product: Du Pont - Synthetic Diester - 20%

Function: Multipurpose, prevents rust
Displaces moisture, dirt and lubricates

Evaluation Notes

1. Odor: Synthetic chemical oily smell, not lasting
2. Feel: Light oily feel
3. Drying Rate: Slow drying
4. Penetration: Rapid penetration and spreading, clear color
5. Surface Wetting: Local wetting, removes oxidation, good cleanup
6. Grease Displacement: Rapid spreading, no dissolving, good cleanup
7. Type Container: 4 oz aerosol, nozzle with straw
8. Liquid Appearance: Watery, light tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Wet look, no rust within 24 hours
11. Rust Removal: Most rust removed
12. Displace Moisture: Excellent
13. Displace Solids: Excellent
14. Gun Barrel: Excellent
15. Wood Stock: Excellent
16. Rust Prevention:

Test 1 - 7

Test 2 - 7

Avg - 7.0

17. Reason for Elimination: Continue testing

Test # 14

Product: Sprayon #711 Penetrant/Lube/Demoisturize

Function: Multipurpose, prevents rust
Displaces moisture and lubricates

Evaluation Notes

1. Odor: Strong fly spray, lasting
2. Feel: Very oily feel
3. Drying Rate: Medium drying rate
4. Penetration: Slow spreading, but continuous, clear color
5. Surface Wetting: Minimum spreading, removes oxidation, bright
6. Grease Displacement: Rapid spread, no dissolving, good cleanup
7. Type Container: 12 oz aerosol, nozzle with straw
8. Liquid Appearance: Very watery, light tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Oily look, no rust within 24 hours
11. Rust Removal: Some rust removed
12. Displace Moisture: Excellent
13. Displace Solids: Good
14. Gun Barrel: Excellent
15. Wood Stock: Excellent
16. Rust Prevention:
 - Test 1 - 6
 - Test 2 - 5
 - Avg - 5.5
17. Reason for Elimination: Continue testing

Test # 15

Product: CRC - 3-36

Function: Multipurpose, prevents rust
Displaces moisture and lubricates

Evaluation Notes

1. Odor: Pleasant peppermint smell, lasting
2. Feel: Light oily feel
3. Drying Rate: Medium drying rate
4. Penetration: Medium penetrating and spreading, tan color
5. Surface Wetting: Slow spread, removes oxidation, good cleanup
6. Grease Displacement: Rapid spreading, some dissolving, easy cleanup
7. Type Container: 1 oz aerosol, nozzle
8. Liquid Appearance: Watery, light tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Oily look, no rust within 24 hours
11. Rust Removal: Some rust removed
12. Displace Moisture: Excellent
13. Displace Solids: Good
14. Gun Barrel: Excellent
15. Wood Stock: Excellent
16. Rust Prevention:
 - Test 1 - 4
 - Test 2 - 5
 - Avg - 4.5
17. Reason for Elimination: Continue testing

Test # 11

Product: E. F. Houghton - ELP All Purpose

Function: Multipurpose, prevents rust
Displaces moisture, dirt and lubricates

Evaluation Notes

1. Odor: Fly spray smell, not lasting
2. Feel: Oily feel
3. Drying Rate: Rapid drying
4. Penetration: Rapid spreading, med. spreading, tan stain
5. Surface Wetting: Slow spreading, rapid dry to oily film, hard to clean
6. Grease Displacement: Rapid spread, no dissolving, good cleanup
7. Type Container: 12 oz aerosol, nozzle with straw
8. Liquid Appearance: Waxy, dark tan
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Oil look, no rust within 24 hours
11. Rust Removal: No rust removal
12. Displace Moisture: Poor
13. Displace Solids: Fair
14. Gun Barrel: Good
15. Wood Stock: Good
16. Rust Prevention:

Test 1 - 8

Test 2 - 5

Avg - 6.5

17. Reason for Elimination: Continue testing

Test # 13

Product: Krylon - Ten 4

Function: Multipurpose, prevents rust
Displaces moisture, gums, dirt and lubricates

Evaluation Notes

1. Odor: Strong fly spray, lasting
2. Feel: Light oily feel
3. Drying Rate: Medium drying rate
4. Penetration: Rapid absorption and spreading, dark tan stain
5. Surface Wetting: Slow spreading, oily appearance, good cleanup
6. Grease Displacement: Rapid spread, no dissolving, good cleanup
7. Type Container: 11 oz aerosol, nozzle with stray
8. Liquid Appearance: Dark tan, watery
9. Wood-Open Pore: Damp look, no damage
10. Metal Surface: Damp look, no rust within 24 hours
11. Rust Removal: Most rust removed
12. Displace Moisture: Good
13. Displace Solids: Good
14. Gun Barrel: Good
15. Wood Stock: Good
16. Rust Prevention:

Test 1 - 8

Test 2 - 5

Avg - 6.5

17. Reason for Elimination: Continue testing

APPENDIX D

(Pictorial Presentation)

- 1. Lubrication procedures.**
- 2. Individual components at the start and completion of test.
(Available upon request.)**

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



Distribution: C.B. Workman
C.E. Ritchie
J.P. Linde
J.W. Brooks
R.J. Pohl
Petroleum Lab
Chambers Works
A.B. Hughes
ESD - Louviers

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY"

RESEARCH TEST and MEASUREMENT REPORT - Report No. 82 0331 - Supplement No. 2

Evaluation of Lubricants on Firearms
Environmental / Cold Tests (M/700 and M/1100)

Prepared by: (F.L. Supry)

Date Prepared: 5/2/82

Proofread and Cleared By:

J.H. Hemmings, / R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

R.E. Nightingale 5.26.82
Signature Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Meas. & Mech. Analysis Lab

C.E. Ritchie 5/26/82
Signature Date

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 82 0331 - Supplement No. 2
REPORT TITLE: Evaluation of Lubricants on Firearms
Environmental / Cold Tests (M700 and M1100)
MODEL(S): M/700 and M/1100
GAUGE OR CALIBER:
DATE: 5-2-82
WORK ORDER NO.:
PART NAME:
DESIGNER/ENGINEER:

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____

NO. OF ROUNDS PER GUN: _____

TOTAL ROUNDS FIRED IN TEST: _____

AMMO TYPE: MAGS. _____; TARGET: _____

RIM FIRE _____ CENTER FIRE _____

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

May 25, 1982

TO: J.H. Hennings

FROM: F.L. Supry

REPORT TITLE: Evaluation of Lubricants on Firearms
Environmental / Cold Tests (M/700 and M/1100)

ABSTRACT

C.E. Ritchie requested that the Test Lab conduct Environment/Cold Tests on three spray lubricants.

1. Du Pont - Synthetic Diester
2. Sprayon - 711
3. CRC - 3-36

NOTE: Krylon Ten-4 and Houghton HLP were eliminated from further testing due to their poor performance in the M700 cock and fire simulation test.

SCOPE OF TEST

To compare the three lubricants in an environmental/cold test.

TEST RESULTS

In their order of finish, from the best performing to the poorest performing lubricant, the following results were obtained: Du Pont - Synthetic Diester

CRC - 3-36

Sprayon - 711

The following is a brief synopsis of each phase of the environmental/cold test.

1. Firearm function as removed from freezer after 3 hours at -20° F.

Du Pont	No failures to function occurred.
CRC	1 failure to function occurred.
711	2 failures to function occurred.

2. Rust inspection at completion of test.

Du Pont and CRC	Very little rust.
711	Greater amount of rust

TEST RESULTS - continued

3. Firearms function during firing of 100 rounds per day.

There were no malfunctions or failures during this phase of the test. All lubricants were equal.

4. Belt Velocity Measurements

Measurements indicate that the lubricants all performed equal during this phase of the test.

5. Firearm function as removed from roof after 3 hours exposure to environment.

Lubricants all performed equal during this phase of the test.

6. Firearm function as removed from roof after 64 consecutive hours of exposure to environment.

Du Pont and CRC - No failures to function occurred.

711

Actions frozen.

REPORT TEXT

- A. Bolt velocity measurements were taken at the start of the test and each morning during the test. Refer to Data Sheet No. 1 in Appendix A for individual results.
- B. Trigger pull, firing pin indent, sear engagement, sear lift, safe on, safe off, and bolt lift measurements were taken at the start and completion of the test. Refer to Data Sheet 2 in Appendix A for individual results.
- C. Trigger pull and firing pin indents were taken each day after the guns had remained in the freezer at 20°F. for three hours. Refer to Data Sheet 3, Appendix A, for individual results.
- D. Weather conditions during test:

3/29	Sunny 45° F.	}	3 hours exposure each day.
3/30	Sunny 55° F.		
3/31	Rain 50° F.		
4/1	Flurries 30° F.		
4/2	Sunny, windy 35° F.		
4/3	Rain, freezing rain 38° F. to 20° F.	}	Week-end exposure
4/4	Snow 20° F. to 15° F.		

TEST PROCEDURE

- A. All rifles and shotguns selected to be used in the test were disassembled and degreased, using the solvent degreasing tanks located in our Heat Treat Department.

Each gun was lubricated with the assigned lubricant and reassembled.

1. At 8:00 A.M. each day bolt velocity measurements were taken by the Measurements Lab, utilizing the photo-diode transducer system.
2. 100 rounds were fired through each gun.
3. All guns were exposed to the environment by being placed on the roof for 3 hours each day.
4. They were then placed in a freezer at -20°F . for 3 hours. Trigger pull and firing pin indents were taken as guns were removed from the freezer.
5. The guns were placed in a stress coat oven at 120°F . overnight (16 hours).

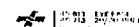
The procedure was repeated each day for 5 consecutive days.

The guns were then placed on the roof over the week-end. At 8:00 A.M. Monday they were removed and bolt velocity measurements were taken.

The guns were then placed in a dry cabinet for 24 hours.

The guns were removed from the dry cabinet and bolt velocity measurements were taken.

At the completion of the test all the guns were disassembled and examined for rust.



LUBRICANT EVALUATION - ENVIRONMENTAL/COLD TEST MEASUREMENTS

		MODEL 700 30-06 CALIBER					MODEL 1100 LT-20							
TEST	STARTED - 3-26-82 TEST COMPLETED - 4-12-82	6382317	6383491	6378743	6382935	6030805	6814399	6331003	609914	581762	597559	622763	636533	700210
LUBRICANT USED		DUPONT	CRC	CRC	711	MOLYKOTE	RUSSIA	WD-40	CRC	RUSSIA	DUPONT	WD-40	CRC	711
(LB) TRIGGER PULL (AVG. 3)			3-32	5-56		GA-PASTE	345 L		3-36	345 L			5-56	
START OF TEST	S	6.25	5.25	4.75	4.75	4.75	5.25	5.00	4.50	5.00	4.50	5.25	4.0	
COMPLETION OF TEST	C	6.25	5.75	4.75	5.75	5.75	5.00	5.00	4.25	4.75	4.25	4.75	3.75	
INDENT (IN)	S	.0235	.0245	.0445	.1215	.1015	.0225	.046	.0125	.013	.0125	.0135	.0125	
	C	.027	.027	.026	.128	.1020	.027	.065	.013	.013	.013	.0135	.0125	
SEAR LIFT (IN)	S	.012	.010	.015	.015	.018	.0085	.045						
	C	.013	.0095	.011	.015	.013	.011	.0135						
SEAR ENGAGEMENT (IN)	S	.020	.019	.020	.020	.019	.020	.018						
	C	.0235	.022	.023	.0215	.0215	.0215	.0225						
SAFE ON FORCE (lbs.)	S	6.75	5.50	6.46	6.50	5.75	6.50	6.25						
	C	6.50	5.70	6.25	6.00	6.75	7.00	6.50						
SAFE OFF FORCE (lbs.)	S	5.75	5.6	6.25	6.00	5.50	6.75	6.50						
	C	4.50	4.3	5.00	4.75	5.25	6.25	6.00						
BOLT LIFT (COCKED) (lbs.)	S	3.00	3.00	4.00	3.0	4.00	4.00	3.00						
	C	3.00	3.50	4.00	3.0	4.00	5.00	3.00						
BOLT LIFT (FIRED) (lbs.)	S	7.00	8.00	7.00	7.0	7.00	8.00	7.00						
	C	8.75	8.50	7.75	7.0	8.00	9.00	7.50						

DATA SHEET 2

DATA SHEET 2

TRIGGER PULLS AND FIRING PIN INDENT
AS GUNS ARE REMOVED FROM FREEZER
AFTER 3 Hours @ -20°F

S-2-82
F.L.S.

L	LUBRICANT USED	3/29/82		3/30/82		3/31/82		4/1/82		4/2/82					
		F.P. INDENT	TRIGGER PULL	F.P. INDENT	TRIGGER PULL	F.P. INDENT	TRIGGER PULL	F.P. INDENT	TRIGGER PULL	F.P. INDENT	TRIGGER PULL	F.P. INDENT	TRIGGER PULL	F.P. INDENT	TRIGGER PULL
1															
2	700ADL/B6382317	.027	6.25	.027	6.25	.028	5.75	.0265	6.25	.0275	5.75				
3	L- DUPONT	.0265	6.00	.0285	6.25	.028	6.00	.0270	6.00	.027	6.00				
4															
5	700ADL/B6383491	.027	5.75	.0275	5.50	.027	5.25	.025	5.75	.027	5.00				
6	L- CRC 3-36	.0265	5.50	.0275	5.25	.027	5.5	.0250	5.75	.0270	5.25				
7															
8	700ADL/B6378743	.025	4.75	.026	4.75	.0265	4.50	.0260	5.00	.0260	4.75				
9	L- CRC 5-56	.0235	5.00	.026	4.75	.026	4.75	.0255	5.00	.0265	5.00				
10															
11	700ADL/B6382935	.0215	5.00	.0275	5.75	.0275	5.75	.0275	5.00	.0275	5.00				
12	L- 711	.022	5.00	.027	5.25	.0275	5.25	.0275	5.25	.0275	5.00				
13															
14	700BDL/A6030805	.0235	4.75	.025	5.25	.0215	4.75	.0155	5.25	.025	4.75				
15	L- MOLY KOTE GN PASTE	.0235	4.75	.026	4.75	.0205	5.00	.0210	5.25	.026	4.75				
16															
17	700BDL/A6814399	.0280	5.25	.028	5.00	.028	4.75	.028	4.75	.0275	4.75				
18	L- RUSTEC 345L	.0280	5.00	.028	4.75	.0275	4.50	.0275	4.75	.0275	4.50				
19															
20	700BDL/A6331003	.021	4.50	.025	4.50	.0235	5.00	.0235	4.75	.0245	4.75				
21	L- WD-40	.0235	4.50	.0245	4.25	.0235	5.50	.0245	4.50	.024	5.25				
22															
23	1100 LT-20/N 604914 K	.013	4.25	.012	4.00	.013	4.00	.010	4.25	.0125	4.25				
24	L- CRC 3-36	.013	4.00	.012	4.25	.0125	4.00	.015	4.25	.013	4.25				
25															
26	1100 LT-20/N 581762 K	.014	4.50	.0135	4.75	.012	5.00	.012	4.50	.013	4.25				
27	L- RUSTEC 345L	.0135	4.75	.012	4.50	.0125	4.75	.014	4.50	.0135	4.50				
28															
29	1100 LT-20/N 597559 K	.014	4.25	.013	4.75	.0125	4.25	.011	4.25	.012	4.25				
30	L- DUPONT	.0125	4.00	.013	4.50	.0125	4.25	.010	4.25	.0125	4.25				
31															
32	1100 LT-20/N 622763 K	.0135	4.75	.014	5.00	.0135	4.75	.014	4.25	.013	4.75				
33	L- WD-40	.014	4.50	.013	4.50	.014	4.50	.0135	4.50	.014	4.50				
34															
35	1100 LT-20/N 636533 K	.0125	3.75	.0125	3.25	.0125	3.00	(0)	4.50	.012	3.50				
36	L- CRC 5-56	.0125	3.25	.0125	3.00	.013	3.75	(0)	(0)	.0135	3.25				
37															
38	1100 LT-20/N 700210 K	.0135	4.00	.013	4.00	.0125	3.75	(0)	(0)	.013	3.75				
39	L- 711	.0135	4.25	.013	4.25	.0125	4.25	(0)	(0)	.013	3.75				
40															

DATA SHEET 3

LUBRICANT EVALUATION -

ENVIRONMENTAL/COLD TEST (START 3-29-82)

F.L.S.

E-P-82

MODEL 1100 LT-20

BOLT VELOCITY MEASUREMENTS

L- Lubricant used	START OF TEST		2 ND DAY		3 RD DAY		4 TH DAY		5 TH DAY		AFTER WEEK-END	
	INITIAL	TERMINAL	INITIAL	TERMINAL	INITIAL	TERMINAL	INITIAL	TERMINAL	INITIAL	TERMINAL	INITIAL	TERMINAL
IN. PER SEC.												
1100 LT-20 / N 700 210 K												
L- 711												
M = 2 1/4" - 4" - 1 1/2"	293	324	314	353	316	323	321	375	315	341	304	352
T = 2 1/4" - 1 1/2"	240	240	277	261	282	264	290	272	279	244	274	240
M. →											*	319
T. →												297
1100 LT-20 / N 597559 K												
L- DuPont												
M. →	292	319	295	332	298	329	299	336	303	343	279	321
T. →	258	221	259	239	265	245	267	245	246	247	248	233
M. →											*	285
T. →												255
1100 LT-20 / N 604914 K												
L- CRC 3-36												
M. →	268	260	299	324	307	328	315	337	305	321	295	316
T. →	252	196	273	242	278	244	270	244	270	229	252	222
M. →											*	294
T. →												263
* SHOTGUNS WERE PLACED IN A DRY CABINET IMMEDIATELY AFTER PREVIOUS BOLT VELOCITY MEASUREMENTS - GUNS WERE NOT WIPE DOWN AFTER BEING WET FROM WEEK-END WEATHER. 24 HOURS LATER THE SHOTGUNS WERE REMOVED FROM CABINET AND ADDITIONAL BOLT VELOCITY MEASUREMENTS WERE TAKEN.												
FROM START OF TEST THRU THE 5 TH DAY BOLT VELOCITY MEASUREMENTS WERE TAKEN AT 8:00 AM EACH DAY. THE SHOTGUNS WERE PLACED IN A STRESS COAT OVEN AT 120°F FOR 16 HOURS EACH NIGHT.												
DATA SHEET 1												

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington*PETERS*

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

Distribution:

C. B. Workman

C. E. Ritchie

J. P. Linde

J. W. Brooks

R. J. Pohl

Petroleum Lab

Chambers Works

A. B. Hughes

ESD - LOUVIERS

RESEARCH TEST and MEASUREMENT REPORT - Report No. 82 0331

Supplement No. 4

LUBRICATION EVALUATION: ILION FISH AND GAME CLUB
 CLEANING AND FIELD TESTING
 EVALUATION

Prepared by: C. E. RitchieDate Prepared: 6 - 10 - 82

Proofread and Cleared By:

J.H. Hennings , / R.E. Nightingale,
 Foreman-Test Lab / Foreman-Measurement Lab

Signature

Date

C.E. Ritchie,
 Sr. Supervisor - Testing,
 Meas. & Mech. Analysis Lab

Signature

Date

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 82 0331 Supplement No. 4

REPORT TITLE: LUBRICATION EVALUATION: Ilion Fish and Game Club
Cleaning & Field Testing
MODEL(S): 1100 Evaluation

GAUGE OR CALIBER:

DATE: 6 - 10 - 82

WORK ORDER NO.:

PART NAME:

DESIGNER/ENGINEER:

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. X ENDURANCE - NO. OF GUNS TESTED: 16

NO. OF ROUNDS PER GUN: _____

TOTAL ROUNDS FIRED IN TEST: _____

AMMO TYPE: MAGS. _____; TARGET: _____

RIM FIRE _____ CENTER FIRE _____

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

June 10, 1982

TO: C. B. Workman

FROM: C. E. Ritchie

REPORT TITLE: Lubrication Evaluation: Ilion Fish & Game Club
Cleaning And Field Testing Evaluation

ABSTRACT

C. E. Ritchie requested the Test Lab to conduct a cleaning and field testing evaluation of existing Ilion Fish & Game Club M/1100 shotguns. Sixteen M/1100 shotguns were selected from the club as test vehicles for the following three lubricants still being evaluated:

1. Du Pont - Synthetic Diester
2. Krylon 711
3. CRC - 556

SCOPE OF TEST

To compare the effectiveness of the remaining three lubricants to clean, lubricate and prevent rust build-up in M/1100 shotguns which receive a lot of use.

TEST RESULTS

In their order of finish, from the best performing overall lubricant (clean, lubricate and prevent rust) to the poorest, the following results were obtained.

- Lubricant
1. Du Pont - Synthetic Diester
 2. CRC 556
 3. Krylon 711

REPORT TEXT

- A. "Cleaning" Results - The following conclusions were made during the cleaning of the Ilion Fish and Game Club M/1100 shotguns.:
- o Krylon 711 emits a heavy fog while spraying. It wiped off better than CRC 5-56 but not as well as Du Pont Synthetic Diester
 - o CRC 5-56 became gummy after setting for 1/2 hour. It also was harder to remove grime (ie. elbow grease).
 - o Du Pont Synthetic Diester - cleaned relatively easy and did not gum up after setting.
- B. "Inspection after Use" Results - The following conclusions were made while inspecting the 16 M/1100 shotguns at the Ilion Fish & Game Club after 3 months of use;
- o Krylon 711 - performed the worst. Samples showed signs of rust and film build-up.
 - o CRC 5-56 - performed better than 711. Samples showed signs of good lubrication but some signs of drying and light rust.
 - o Du Pont Synthetic Diester - performed the best of all. Samples all showed good signs of lubrication and rust prevention.

TEST PROCEDURE

- A. On March 12, 1982, sixteen M/1100 shotguns were selected from the Ilion Fish and Game Club to be used in this evaluation. These guns are:

<u>Labeled No.</u>	<u>Serial No.</u>	<u>Gauge</u>
1	N032715X	20
2	N098963H	410
3	N120547V	12
4	N122845V	12
5	N072571V	12
6	N098241H	410
7	N112195J	28
8	N120637V	12
9	N071849V	12
10	N067179V	12
11	N111015J	28
12	N032199X	20
13	N066916V	12
14	N120545V	12
15	N061062V	12
16	N067268V	12

The guns were delivered to the Ilion Research Test Lab where they were individually disassembled to be cleaned. The shotguns were cleaned using only the lubricant as the cleaning agent. Results were based on the Test Lab personnel's opinion on how well each lubricant performed.

- B. For the next portion of the test, the entire firearm was dipped in Stoddard Solvent and thoroughly cleaned, degreased and allowed to dip dry. Each lubricant was assigned a firearm and then lubricated. The following firearm components were sprayed:

- o piston, piston seal, magazine tube – Spray, let stand for 5 minutes, lightly wipe off all excess.
- o receiver – Saturate, let stand for 5 minutes, lightly wipe off excess.
- o fire control – light spray.

The firearms were reassembled and then each were wiped down with a clean cloth dampened with the corresponding lubricant. The sixteen shotguns were returned to the Ilion Fish and Game Club the week of 3/15/82 and placed in their metal storage cabinet. (Note: These storage cabinets are located in an unheated area on an earth floor. The room is also un-insulated. The room experiences temperature extremes and maintains a relatively high level of humidity).

TEST PROCEDURE -- continued.

The guns were used by the Remington Arms Employees at the Ilion Fish & Game Club for a period of approximately 3 months.

On June 10, 1982, R. E. Nightingale (Measurement Lab Foreman) and C. E. Ritchie (Test & Measurement Lab Supervisor) made a visual inspection of the operation and appearance of those same sixteen shotguns. Items noted were:

- o any visable rusting
- o condition of lubricant (still wet, dry, sticky, etc.)
- o appraisal of rounds on gun

Results of the inspection can be found in Appendix A.

APPENDIX "A"

(Data Sheets)

Ilion Fish & Game Club Results:

DATA SHEET

<u>Label No.</u>	<u>Gauge</u>	<u>Lubricant</u>	<u>Results</u>
1	20	Du Pont	Still well lubricated -- no rust evident.
2	410	"	Still well lubricated -- no rust evident.
3	12	"	New rust spots on receiver (it appears someone wiped the outside of the receiver dry). Still well lubricated -- light film on magazine tube by gas cylinder. High number of rounds on this gun.
4	12	"	Still well lubricated -- no rust evident. High number of rounds on this gun.
5	12	"	Still well lubricated -- no rust evident. High number of rounds on this gun.
6	410	711	Still well lubricated -- no rust evident.
7	28	"	Lubricant is starting to dry out on magazine tube -- gas cylinder and piston seal are lightly rusted (worst sample of rust -- interior).
8	12	"	Rust on front area of magazine tube ahead of gas cylinder and on outside of gas cylinder -- magazine tube has a very sticky film by gas cylinder area. High number of rounds on gun (worst sample of sticky film -- interior).
9	12	"	Still well lubricated -- no rust evident.
10	12	"	Still well lubricated -- no rust evident. (A spot of rust on barrel at vent rib.)
11	28	CRC	Still well lubricated -- no rust evident.
12	20	"	Still well lubricated but somewhat drier in appearance -- no rust evident -- gun is very dry but still functionable.
13	12	"	Still well lubricated -- no rust evident. Moderate number of rounds on gun.
14	12	"	Lubrication starting to dry out on magazine tube at gas cylinder area. -- some light rust inside gas cylinder. moderate number of rounds on gun.
15	12	"	Still well lubricated -- no rust evident. High number of rounds on gun.
16	12	Du Pont	Still well lubricated -- no rust evident. Starting to dry out a little -- high number of rounds on gun (it appeared this gun had been shot the most).

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

Distribution: C.B. Workman
C.E. Ritchie
J.P. Linde
J.W. Brooks
R.J. Pohl
Petroleum Lab
Chambers Works
A.B. Hughes
ESD - Louviers

RESEARCH TEST and MEASUREMENT REPORT - Report No. 82 0331 Supplement No. 3

Evaluation of Lubricants on Firearms
Rust Prevention Test

Prepared by: F.L. Supry

Date Prepared: 5-6-82

Proofread and Cleared By:

J.H. Hennings, / R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

R.E. Nightingale 5-26-82
Signature Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Meas. & Mech. Analysis Lab

C.E. Ritchie 5/26/82
Signature Date

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 82 0331 - Supplement No. 3
REPORT TITLE: Evaluation of Lubricants on Firearms
Rust Prevention Test
MODEL(S): M/1100
GAUGE OR CALIBER:
DATE: 5-6-82
WORK ORDER NO.:
PART NAME:
DESIGNER/ENGINEER:

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____

NO. OF ROUNDS PER GUN: _____

TOTAL ROUNDS FIRED IN TEST: _____

AMMO TYPE: MAGS. _____; TARGET: _____

RIM FIRE _____ CENTER FIRE _____

REMINGTON ARMS COMPANY, INC.
Firearms Research Division

May 6, 1982

TO: J.H. Hennings

FROM: F.L. Supry

REPORT TITLE: Evaluation of Lubricants on Firearms
Rust Prevention Test

ABSTRACT

C.E. Ritchie requested that the Test Lab conduct a rust prevention test on the three lubricants still under evaluation:

1. Du Pont - Synthetic Diester
2. Sprayon - 711
3. CRC - 3-36

SCOPE OF TEST

To observe the differences in rust prevention of the three lubricants.

TEST RESULTS

In their order of finish, from the best performing lubricant to the poorest performing lubricant evaluating rust prevention, the following results were obtained:

1. CRC 3-36
2. Du Pont and 711

REPORT TEXT

Eight M/1100 shotguns were selected for the test by J.H. Hennings (Test Lab).

For daily weather conditions during this test refer to Data Sheet No. 1.

TEST PROCEDURE

The stocks and fore-ends were removed from the shotguns. The shotguns were then degreased, using the solvent degreasing tanks located in our Heat Treat Department.

All metal parts of the shotguns were then saturated with the assigned lubricant.

The guns were then placed horizontally in a rack on the roof of Bldg. 52.

The guns were left untouched in the environment for one month. They were then removed and inspected for rust.

Photographs were taken after two weeks on the roof and individual photographs were taken at the completion of the test.

The shotguns were disassembled and stored in boxes in the machine room at the completion of the test.

A P P E N D I X " A "

(Data Sheets)

WEATHER CONDITIONS DURING TEST

<u>Date</u>	<u>Condition</u>	<u>Degree</u>	
3/29	Sunny	45° F.	} 3 Hours Exposure Each Day.
3/30	Sunny	55° F.	
3/31	Rain	50° F.	
4/1	Flurries	30° F.	
4/2	Sunny, windy	35° F.	
4/3	Rain, freezing rain	38° F. to 20° F.	} Week-end Exposure
4/4	Snow	20° F. to 15° F.	

Function & Accuracy April 1985
700 classic 350 Rem mag
850981

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

cc: W.H. Coleman, II
J.W. Bower
K.W. Soucy
G.J. Hill
D.J. Anderson
L.B. Bosquet
J.R. Snedeker
R.S. Murphy
R.E. Nightingale
F.L. Supry
File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 850981
APRIL 16, 1985

MODEL 700 CLASSIC 350 REM MAG TRIAL AND PILOT RIFLES
ACCURACY AND FIELD FUNCTION

REPORT# 850981

WORK ORDER# G-0460-000

DATE: APRIL 16, 1985

TO: R.E. NIGHTINGALE

FROM: F.L. SUPRY

TITLE: ACCURACY AND FIELD FUNCTION: MODEL 700 CLASSIC 350 REM MAG

ABSTRACT:

On April 08, 1985 a request was received to conduct an Accuracy and Field Function evaluation of the Model 700 Classic 350 REM MAG caliber, Trial and Pilot rifles currently in the warehouse. Ten (10) rifles were randomly selected from the warehouse.

SCOPE OF TEST:

To determine if the production run samples meet the Remington Specifications set by the Research Design Section.

TEST RESULTS:

The ten (10) rifle Accuracy and Field Function were found to be acceptable. The following results were obtained:

A. ACCURACY:

a. Average group size = 2.53 inches center to center

B. FIELD FUNCTION:

- a. Nine (9) of the ten (10) rifles experienced no malfunctions.
- b. Rifle #B6680955 experienced two Don't Eject malfunctions.
- c. The overall malfunction rate was 1.3%, based on 150 rounds fired.

COMMENTS:

A Visual Inspection of the Model 700 Classic 350 Rem Mag caliber rifle will be conducted, upon notification of a Trial and Pilot sample assembled with the fully pinned stock. Upon the successful completion of the Visual Inspection the Trial and Pilot Evaluation would be accepted.

TEST REPORT:

1. ACCURACY:

- A. Three (3) rifles were tested for 100 yard accuracy and the following results were established:

	GROUP NUMBER			AVERAGE
	1	2	3	
Rifle# B6677683 -	1.92 in.	3.00 in.	2.64 in.	2.52 in.
Rifle# B6680592 -	2.44 in.	3.20 in.	1.50 in.	2.54 in.
Rifle# B6680596 -	2.80 in.	2.50 in.	1.84 in.	2.54 in.

2. Field Function:

- A. The ten (10) rifles were subjected to a 15 round per rifle, Field Function Test and the following results were obtained:

- a. Nine (9) of the ten (10) rifles experienced no malfunctions.
- b. Rifle# B6680955 experience two uncoded ejection malfunctions. On the first and second ejecting round, of the fast cycle mode, the ejecting fired case spun around and landed back on top of the magazine.

TEST PROCEDURE:

1. ACCURACY

- A. The following three (3) rifles were used in the 100 yard accuracy test:

B6677683 B6680592 B6680596•

- B. The accuracy was shot by J. Selan, Research - Test Lab, at the R & D 200 yard range.
- C. Weaver mounts and rings were used in conjunction with a Lyman All American 20X 1/8 inch dot scope.
- D. Remington ammunition, index R350M1; code A08L5901, 200 grain pointed soft point, was used for the 100 yard accuracy test.
- E. Before shooting the 100 yard accuracy test, the bores on each rifle were brushed with Hoppe's No. 9 solvent and patched dry.

TEST PROCEDURE: (continued)

1. ACCURACY (continued)

- F. A total of three (3), five (5) shot groups were shot with each rifle. The rifles were cooled between each group, and one (1) "warmer" shot was fired before the next group was shot.
- G. The patterns were analyzed for group size, and averages were calculated for each rifle.
- H. Prior to the 100 yard accuracy test, ammunition code A08L5901 was qualified. An average group spread of 2.27 inches was established.

4. FIELD FUNCTION:

- A. All ten (10) of the rifles were subjected to the loading and firing of 15 rounds of Remington ammunition. The round robin method of firing the rifles was used. Fifteen (15) rounds were fired; five (5) at a slow feeding cycle speed, five (5) at a medium feeding cycle speed, and five (5) at a fast feeding cycle speed.
- B. The following ammunition was used in the field test:

R350M1 - CODE A08L5901 - 200 GRAIN PSP

350 REM MAG M-700 CLASSIC

AMMO: CONFIRMATION SCOPE: LYMAN SUPER TGT. SPOT 25X

40XB- SER: - 17793

AMMO: REMINGTON 200 GR. "CORE-LOKT" PSP CODE # A0825901

5-5 SHOT GROUPS:

1ST - 2.10

2ND - 2.18

3RD - 3.26

AVG - 2.27

4TH - 2.16

5TH - 1.68

B-6677683

B-6680592

B-6680596

1ST - 1.92

1ST - 2.44

1ST - 2.80

2ND - 3.0

2ND - 3.20

2ND - 2.50

3RD - 2.64

3RD - 1.50

3RD - 1.84

AVG - 2.52

AVG - 2.54

AVG - 2.54

M-700 CLASSIC REMINGTON

SCOPE: LYMAN ALL AMERICAN - 20X

SEQUENCE - COOL BETWEEN EACH GROUP FIRE ONE FOULING SHOT

4/10/85

"Jerry."

RD 6606

cc: S. Darling

TO: J. ROGERS

ILION RESEARCH DIVISION
FIREARMS WITHDRAWAL ~~CONFIDENTIAL~~

DATE 4/4/85

LETTER NO. 2163

QUANTITY 10

MODEL 700 Classic CAL/GA. 350 Rem WORK ORDER G-0460
Mag.

SERIAL NOS. RAMAC # 5756

B 6681169

B 6680955

B 6680592 X

B 6680611

B 6677650

B 6680596 X

B 6680166

B 6680945

B 6677683 X

B 6681154

REMARKS: For visual inspection and function tests
Will be returned at the completion of testing

X - used for accuracy

J. L. [Signature]
Approval

FSupry:js

FIELD CYCLE TEST - CENTERFIRE

REPROT NO.: 850981

PAGE NO. _____

PREVIOUS
ROUNDS

DATE: _____

MODEL: 700 CLASSIC

CALIBER: 350 Rem Mag

SERIAL NO. 6680955

TEST TITLE: FIELD FUNCTION

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

"MALFUNCTIONS"

200gr R350 mi	SHOOTER	NO. OF ROUNDS FIRED	FEEDING	TRAPPED SHELL	DON'T EJECT	DON'T BLOW BACK	DON'T LOCK OPEN	FEED FROM MAG.		SHELL STAYS MAG.	POWER OVERRIDE	DON'T LOCK UP	STEM CHAMBER				SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTRACT	EJECTOR AGES	ADJUSTMENTS	EJECTOR CEMENTS						
								1st	2nd				HIGH	LOW	RIGHT	LEFT															
SLOW	AH	5	✓																												
MED		5	✓																												
FAST		5			2																										
			1st and 2nd feeding round would spin around and not leave chamber area																												
TOTAL (PER MAL.)																															

SERIAL NO. 6677650

TEST TITLE, Field Function

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

"MALFUNCTIONS"

[illegible]

SERIAL NO. 6677683

TEST TITLE, FIELD FUNCTION

MAJUNCTION RATE:

"MALFUNCTIONS"

[illegible]

SERIAL NO. 6680611

[illegible]

TTL MALFUNCTIONS:

MALFUNCTION RATE:

"MALFUNCTIONS"

[illegible]

SERIAL NO. 6680945

TEST TITLE: FIELD FUNCTION

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

"MALFUNCTIONS"

[illegible]

SERIAL NO. 668 1169

TEST TITLE: Field Function

TTL. RDS. FIRED: _____
TTL. MALFUNCTIONS: _____
MALFUNCTION RATE: _____

"MALFUNCTIONS"

[illegible]

SERIAL NO. 6680596

TEST TITLE, FIELD FUNCTION

MAJORITY MALFUNCTION RATE:

200gr R350 m1	SHOOTER	NO. OF ROUNDS FIRED	FIRING	TRAINED SHOT	DON'T EXTRACT	DON'T BLOW BACK	DON'T LOCK OPEN	FEED FROM MAG.		SHELL STOPS MAG.	POWER OVERRIDE	DON'T LOCK UP	STEM CHAMBER				SHELL JUMPS MAG.	FOLLOWER BINDS	LOADING	BOLT OVERRIDE	ACTION HANG UP	DON'T EXTRACT	HEADLAGES	ADJUSTMENTS	REPLACEMENTS		
								1st	2nd				HIGH	LOW	RIGHT	LEFT											
								LATCH																			
SLOW	AK	5	✓																								
MED		5	✓																								
FAST		5	✓																								
TOTAL (PER MAL.)																											

RD 6606

CC:

S. Darling

TO: Bill Farrell

ILION RESEARCH DIVISION

FIREARMS ~~XXXXXXXXXXXX~~ OR RETURN

DATE April 22, 1968

LETTER NO. 2170

QUANTITY 10

MODEL 700 CAL/GA. 350 Rem Mag WORK ORDER G-0460

SERIAL NOS.

RANGE 0 5736

24677680

24681160

24680945

24680611

24680592

24680166

24680596

24681154

24677683

24680958

REMARKS: In reference to withdrawal letter No. 2163

Approved by

Thapry:ape

850744
VISUAL INSPECTION
700 DUCKS UNLIMITED 30.06

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

cc: W.H. Coleman, II
J.W. Bower
K.W. Soucy
J.J. Burns
D.J. Anderson
L.B. Bosquet
J.R. Snedeker
R.S. Murphy
R.E. Nightingale
F.L. Supry
File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 850744
APRIL 25, 1985

MODEL 700 DUCKS UNLIMITED VISUAL INSPECTION

REPORT# 850744

WORK ORDER# E-0204-000

DATE: APRIL 25, 1985

TO: R.E. NIGHTINGALE

FROM: F.L. SUPRY

TITLE: VISUAL INSPECTION: MODEL 700 DUCKS UNLIMITED

ABSTRACT:

On March 13, 1985 a request was received to conduct a Visual Inspection evaluation on the Model 700 Ducks Unlimited rifles, currently in the warehouse. Ten (10) rifles were randomly selected from the warehouse. The visual inspection committee consisted of J. Burns, B. Bosquet, Z. Kowalski, R. Jackson, (PE & C); J. Bower, R. Murphy, and F. Supry (Research).

SCOPE OF TEST:

To determine if the visual quality of the production run samples meet the Remington Specifications set by the Research Design Section.

TEST RESULTS:

The ten (10) rifle Visual Inspection, was found to be acceptable, by the visual inspection committee. However, there was a large variation in the amount of space between the floor plate and the stock, when the floor plate was in the open position.

COMMENTS:

All ten (10) rifles were returned to the warehouse.

850744

VISUAL INSPECTION

MODEL 700 DU 3006

E-0204

0620 DUBS

slight discoloration of grip plate

0492 DUBS

1282 DUBS - Bolt Plug color off (bright spot)

1450 DUBS - color off bolt handle
- some color of grip plate

0469 DUBS - grip plate finish peeling

Comments - large variation in space between floor plate
& stock floor plate when plate is open

Jerry Burns (1)

Dick Jackson (3)

Brad Bosquet (2)

Jim Bower (1)

Kathy Murphy (2)

Ziggy (4)

Fred Sany (3)

Report No. 850744

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

AREA OF TESTING	
☐ Developmental	☐ Safety Related
☐ Design Acceptance	☐ Competitive Evaluation
☐ Pre-Pilot	☐ New Design
☐ Pilot	☐ Design Change
☒ Production Acceptance	☐ Plant Assistance
	☐ Litigation
	☒ Warehouse Audit
	☐ Cost Reduction
	☐ Stake
	☐ Other

FIREARM STAT'S.	REPORT REQ'D.	
MODEL: <u>700 Ducks Unlimited</u>	FORMAL ☒	DATE REQUESTED: <u>3-13-85</u>
CAL or GAGE: <u>30-06</u>	TEST RESULTS ONLY ☐	DATE NEEDED BY: <u> </u>
BARREL TYPE: <u>22"</u>		REQUESTED BY: <u>R. S. MURPHY</u>
PROOFED: YES ☒ NO ☐		WORK ORDER NO: <u>E-0204</u>

TEST TYPE			
☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☒ Other <u>VISUAL</u>
☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Please do a visual inspection on 10 M/700 Ducks Unlimited rifles selected from the warehouse.

-GUNS REQUIRED:

RAMAC # 5750

Start Date 4/18/85
JB

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED:
TEST COMPLETED BY:
REPORT DATE:

RD 6606

CC:

S. Darling

TO: Bill Gandy

ILION RESEARCH DIVISION

FIREARMS ~~MANUFACTURE~~ OR RETURN

DATE April 22, 1985

LETTER NO. 2169

QUANTITY 10

MODEL 700 D U CAL/GA. 30-06 WORK ORDER B-0204

SERIAL NOS.	<u>22222 & 5750</u>	<u>0477 D085</u>	<u>1476 D085</u>
		<u>0553 D085</u>	<u>0253 D085</u>
		<u>0126 D085</u>	<u>0020 D085</u>
		<u>0243 D085</u>	<u>1042 D085</u>
		<u>0469 D085</u>	<u>0112 D085</u>

REMARKS: Visual only

Approved by

Flupry:eps

RD 6606

CC: **S. Darling**

TO: **J. ROBERTS**

ILION RESEARCH DIVISION

FIREARMS WITHDRAWAL OR RETURN
~~XXXXXXXXXXXX~~

DATE **4/18/85**

LETTER NO. **2148**

QUANTITY **10**

MODEL **700** CAL/GA. **20-06** WORK ORDER **E-0204**

SERIAL NOS. **RAMAD # 3730**

✓ <u>0439 DUFS</u>	✓ <u>1450 DUFS</u>	_____
✓ <u>0013 DUFS</u>	✓ <u>0253 DUFS</u>	_____
✓ <u>0126 DUFS</u>	✓ <u>0020 DUFS</u>	_____
✓ <u>0043 DUFS</u>	✓ <u>1282 DUFS</u>	_____
✓ <u>0469 DUFS</u>	✓ <u>0492 DUFS</u>	_____

REMARKS: **Visual Inspection - To be returned**

[Signature]
Approved

78apry:js

N 700 - 338 H49 841034
STRENGTH TEST

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



Distribution:

W.H. Coleman, II
J.R. Snedeker
R.S. Murphy
File

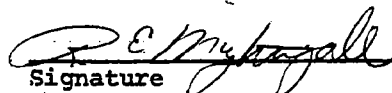
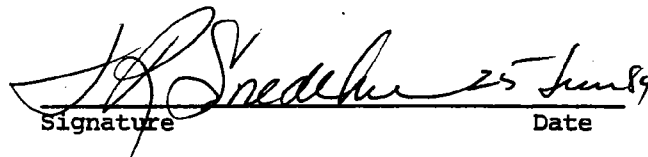
"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

RESEARCH TEST AND MEASUREMENT REPORT - Report No. 841034

M/700 .338 WIN. MAG. STRENGTH TEST

Prepared by: C. STEPHENS
Date Prepared: April 27, 1984

Proofread and Cleared by:

R.E. Nightingale,
Foreman - Test, Measurement Lab
Signature _____ Date _____J.R. Snedeker, Research Supervisor
Testing, Measurement & Mech. Analysis Lab
Signature _____ Date 25 June 84

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 841034
REPORT TITLE: M/700 .338 WIN. MAG. STRENGTH TEST
MODEL(S): 700
GAUGE OR CALIBER: .338
DATE: 4/27/84
WORK ORDER NO.: C-1804
PART NAME: BARREL
DESIGNER/ENGINEER: MURPHY

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST-NO. OF GUNS TESTED 1
3. FUNCTION TEST-NO. OF GUNS TESTED _____
4. ACCURACY TEST-NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION-TYPE _____
8. VISUAL EVALUATION _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE-NO. OF GUNS TESTED: _____
NO. OF ROUNDS PER GUN _____
TOTAL ROUNDS FIRED IN TEST _____
AMMO TYPE: MAGS. _____ TARGET: _____
RIM FIRE _____ CENTERFIRE _____

June 14, 1984

TO: R.E. NIGHTINGALE
FROM: C. STEPHENS
REPORT TITLE: M/700 .338 WIN. MAG. STRENGTH TEST

ABSTRACT

A request was received from R.S. Murphy to strength test the M/700 .338 Win. Mag. with a new barrel contour.

SCOPE OF TEST

To determine what effect, if any, changing the barrel contour would have on the strength of the barrel.

TEST RESULTS

The results indicate that the new barrel contour has no effect on the strength of the barrel. A pressure workup from 52 to 130 thousand psi caused a slight binding of the action with no other apparent effects.

REPORT TEXT

Five M/700 .338 Win. Mag. rifles were delivered to the Test Lab by R. Murphy for testing. One rifle was selected at random for the strength test. A strain gage was attached to the barrel at the chamber area. Standard factory and proof rounds were shot to verify that the gage was working properly. After checking the gage handloads were loaded using 4198 powder, a 200 gr. bullet and a Winchester case. Various loads were loaded with pressure ranging from 52 to 130 thousand psi. The only apparent effect was a slight binding of the bolt that required using a hammer to open. The barrel showed no signs of failure.

TEST PROCEDURE

A. Measurements

The inside and outside dimensions of the chamber were taken in the Measurement Lab by C. Stephens and S. Franz.

B. Test Conditions

Use the same materials throughout the test.

C. Test

The test was shot in the Measurement Lab using the Iron Lung.

D. Ammunition

Handloads.

.338 Win-Mag Chamber Pressure

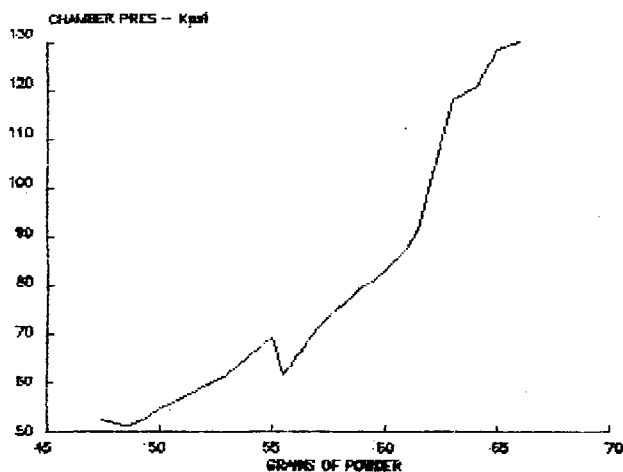
841034

1 May 84

C. Stephens

	1	2	3	4	5
	Powder	Chamber			
	Weight	Pressure			
	grains	Kpsi			
1	47.5	52.5			1
2	48.5	51.4			2
3	48.5	51.5			3
4	49.5	52.8			4
5	49.5	55			5
6	50.5	56.5			6
7	50.5	55.7			7
8	53	62.8			8
9	53	61.7			9
10	55	69.8			10
11	55	61.7			11
12	57	71.2			12
13	57	71.4			13
14	59	80.1			14
15	59	80.9			15
16	61	87.6			16
17	61	91.7			17
18	63	117.8			18
19	64	120.6			19
20	65	128.4			20
21	66	130			21
22					22
23					23
24					24
25					25
26					26
27					27
28					28
29					29
30					30
31					31
32					32
33					33
34					34
35					35
36					36
37					37
38					38
39					39
40					40

SLIDE NAME IS:
CHAMBER PRESSURE
308 WIN MAG CHAMBER PRESSURE
TEST- DET. STRENGTH OF BBL-CONTUR CHG



M 700
CONNECTORS

#840321

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
COPY*PETERS*
COPY

Distribution:

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

RESEARCH TEST and MEASUREMENT REPORT - Report No. 840321

TEST TITLE: "RESULTS ONLY"

M/700 VENDOR SUPPLIED CONNECTORS VS. CONNECTORS
TO MODEL DRAWING.Prepared by: R. W. HOWEDate Prepared: FEB. 28 1984

Proofread and Cleared By:

R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

Signature _____

Date _____

C.E. Ritchie,
Sr. Supervisor - Testing,
Meas. & Mech. Analysis Lab

Signature _____

Date _____

REMINGTON ARMS Co. INC.
FIREARMS RESEARCH DIVISION.
FEB 28, 1984

REPORT #840321

TO: R. NIGHTINGALE

TEST TITLE: "RESULTS ONLY"
M/700 VENDOR SUPPLIED CONNECTORS VS. CONNECTORS
TO MODEL DRAWING.

REASON FOR TEST:

TO DETERMINE IF THERE IS A FUNCTIONAL
DIFFERENCE IN THE VENDOR SUPPLIED CONNECTORS
AND CONNECTORS THAT ARE TO MODEL DRAWING.

TEST PROCEDURE:

SIXTY FOUR M/700 FIRE CONTROLS WERE ASSEMBLED
INTO M/700 ACTIONS, TEN AT A TIME, AND PENDULUM
DROP TESTED AT THE 2' AND 4' LEVELS IN BOTH
SAFE "ON" AND SAFE "OFF" MODES IN THE FOLLOWING SIX
POSITIONS. MUZZLE FIRST, BUTT FIRST, TOP SIDE, BOTTOM
SIDE, RIGHT SIDE, AND LEFT SIDE. ONE DROP FOR EACH
MODE AND POSITION AT EACH DROP LEVEL AS REQUESTED
BY J.A. LAWRENCE, [REDACTED] CURRENT PRODUCTS DESIGN.

TEST RESULTS:

TEST RESULTS ARE IN THE FOLLOWING PENDULUM DROP
TEST DATA SHEETS. TO BE EVALUATED BY CURRENT
PRODUCTS DESIGN.

2' PENDULUM DROP TEST
DATA SHEETS

HARD WOOD BACK STOP- 2' PENDULUM DROP TEST -

MODEL 700

DATE 2-24-84

REPORT NUMBER 840321

①

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION → S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	1													1
B6439427	2								X					2
B6439303	3								X					3
B6440068	4								X					4
B6440047	5								X					5
B6440044	6								X					6
B6439446	7													7
B6439467	8								X					8
B6439976	9								X					9
B6439302	10								X					10

HARD WOOD BACK STOP- 2' PENDULUM DROP TEST

MODEL 700

DATE 2-25-84

REPORT NUMBER 840321

②

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B 6439317	11								X					1
B 6439427	12								X					2
B 6439303	13													3
B 6440068	14													4
B 6440047	15								X					5
B 6440044	16								X					6
B 6439446	17								X					7
B 6439467	18													8
B 6439976	19								X					9
B 6439302	20													10

HARD WOOD BACK STOP- 2' PENDULUM DROP TEST

MODEL 700

DATE 2-25-84

REPORT NUMBER 840321

(3)

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	21													1
B6439427	22								X					2
B6439303	23								X					3
B6440068	24								X					4
B6440047	25								X					5
B6440044	26													6
B6439446	27								X					7
B6439467	28													8
B6439976	29								X					9
B6439302	30													10

HARD WOOD BACK STOP- 2' PENDULUM DROP TEST

MODEL 700

DATE 2-25-84

REPORT NUMBER 840321

(4)

X - JNR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	31													1
B6439427	32													2
B6439303	33						X		X					3
B6440068	34													4
B6440047	35								X					5
B6440044	36								X					6
B6439446	37								X					7
B6439467	38						X		X					8
B6439976	39								X					9
B6439302	40													10

HARD WOOD BACK STOP - 2' PENDULUM DROP TEST -

MODEL 700

DATE 2-27-84

REPORT NUMBER 840321

(5)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
	SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	41													1
B6439427	42								X					2
B6439303	43						X							3
B 6440068	44													4
B6440047	45								X					5
B6440044	46													6
B 6439446	47													7
B 6439467	48								X					8
B6439976	49								X					9
B6439302	50						X		X					10

HARD WOOD BACK STOP- 2' PENDULUM DROP TEST -

MODEL 700

DATE 2-23-84

REPORT NUMBER 840321

⑥

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION	S	F	S	F	S	F	S	F	S	F		
B6439317	51								X					1
B6439427	52								X					2
B6439303	53								X					3
B6440068	54													4
B6440047	55								X					5
B6440044	56													6
B6439446	57													7
B6439467	58													8
B6439976	59													9
B6439302	60													10

HARD WOOD BACK STOP- 2' PENDULUM DROP TEST

MODEL 700

DATE 2-23-84

REPORT NUMBER 840321

(7)

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION → S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	61								X					1
B6439427	62													2
B6439303	63													3
B6440068	64													4
														5
														6
														7
														8
														9
														10

4' PENDULUM DROP TEST
DATA SHEETS

4' HARD WOOD BACK STOP PENDULUM DROP TEST

MODEL 700

DATE 2-20-84

REPORT NUMBER 840321

①

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION → S	F	S	F	S	F	S	F	S	F	S	F	
B 6439317	1								X					1
B 6439427	2						X		X					2
B 6439303	3						X							3
B 6440068	4								X					4
B 6440047	5						X		X				X	5
B 6440044	6								X				X	6
B 6439446	7								X					7
B 6439467	8								X					8
B 6439976	9								X					9
B 6439302	10								X					10

4' HARD WOOD BACK STOP PENDULUM DROP TEST

MODEL 760

DATE 2-20-84

REPORT NUMBER 840321

(2)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION → S	F	S	F	S	F	S	F	S	F	S	F	
B 6439317	11								X					1
B 6439427	12								X					2
B 6439303	13												X	3
B 6440068	14								X					4
B 6440047	15								X					5
B 6440044	16								X					6
B 6439446	17						X		X					7
B 6439467	18						X		X					8
B 6439976	19								X					9
B 6439302	20								X					10

4' HARD WOOD BACK STOP PENDULUM DROP TEST

MODEL 700

DATE 2-21-84

REPORT NUMBER 840321

③

X = JNR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION →	S	F	S	F	S	F	S	F	S	F	S	
B 6439317	21									X				1
B 6439427	22									X				2
B 6439303	23									X				3
B 6440068	24									X				4
B 6440047	25									X				5
B 6440044	26									X		X		6
B 6439446	27									X				7
B 6439467	28							X		X				8
B 6439976	29									X				9
B 6439302	30									X				10

4' HARD WOOD BACK STOP PENDULUM DROP TEST

MODEL 700

DATE 2-21-84

REPORT NUMBER 840321

(4)

X - JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION → S	F	S	F	S	F	S	F	S	F	S	F	
36439317	31								X					1
B 6439427	32								X					2
B 6439303	33								X					3
B 6440068	34								X					4
B 6440047	35						X		X					5
B 6440044	36								X				X	6
B 6439446	37								X					7
B 6439467	38						X		X					8
B 6439976	39								X					9
86439302	40						X		X					10

4' HARD WOOD BACK STOP PENDULUM DROP TEST

MODEL 700

DATE 2-21-84

REPORT NUMBER 840321

X = JAR-OFF

(5)

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	41								X					1
B6439427	42						X		X					2
B6439303	43						X		X					3
B6440068	44								X					4
B6440047	45						X		X					5
B6440044	46						X		X					6
B6439446	47								X					7
B6439467	48						X		X					8
B6439976	49								X					9
B6439302	50								X					10

4' HARD WOOD BACK STOP PENDULUM DROP TEST

MODEL 700

DATE 2-22-84

REPORT NUMBER 840321

(6)

X = JAR OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION → S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	51								X		X			1
B6439427	52								X					2
B6439303	53								X					3
B6440068	54						X		X					4
B6440047	55								X					5
B6440044	56						X		X					6
B6439446	57								X					7
B6439467	58								X					8
B6439976	59								X					9
B6439302	(60)													10

4' HARD WOOD BACK STOP PENDULUM DROP TEST

MODEL 700

DATE 2-22-84

REPORT NUMBER 840321

(7)

X = JAR-OFF

GUN SER #	UNIT NO.	MUZZLE FIRST		BUTT FIRST		TOP SIDE		BOTTOM SIDE		RIGHT SIDE		LEFT SIDE		
		SAFE POSITION → S	F	S	F	S	F	S	F	S	F	S	F	
B6439317	61								X					1
B6439427	62								X					2
B6439303	63						X		X					3
B6440068	64								X					4
														5
														6
														7
														8
														9
														10

Report No. 840321

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☒ Production Acceptance		<u>AREA OF TESTING</u> ☒ Safety Related ☐ Competitive Evaluation ☐ New Design ☐ Design Change ☒ Plant Assistance ☐ Litigation ☐ Warehouse Audit ☐ Cost Reduction Stake _____ ☐ Other _____													
<u>FIREARM STAT'S.</u> MODEL: <u>M/700</u> CAL or GAGE: _____ BARREL TYPE: _____ PROOFED: YES _____ NO _____		<u>REPORT REQ'D.</u> FORMAL _____ TEST RESULTS ONLY <u>X</u>	DATE REQUESTED: <u>2/1/83</u> DATE NEEDED BY: <u>ASAP</u> REQUESTED BY: <u>JAL</u> WORK ORDER NO: <u>G-0460</u>												
<u>TEST TYPE</u> <table><tr><td>☐ Strength Test</td><td>☐ Ammunition Test</td><td>☐ Dry Cycle Test</td><td>☐ Photo/Video</td></tr><tr><td>☐ Function Test</td><td>☐ Environmental Test</td><td>☐ Measurements</td><td>☒ Other <u>Drop Test</u></td></tr><tr><td>☐ Accuracy Test</td><td>☐ Customer Complaint</td><td>☐ Endurance Test</td><td>_____</td></tr></table>				☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video	☐ Function Test	☐ Environmental Test	☐ Measurements	☒ Other <u>Drop Test</u>	☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	_____
☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video												
☐ Function Test	☐ Environmental Test	☐ Measurements	☒ Other <u>Drop Test</u>												
☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	_____												

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Determine if there is a functional difference in the vendor supplied connectors and connectors that are to model drawing.

Contact Jeff for test procedure

GUNS REQUIRED: 10 M/700 Guns/Actions
60 M/700 Fire controls
approx 60 Scrap Stocks

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

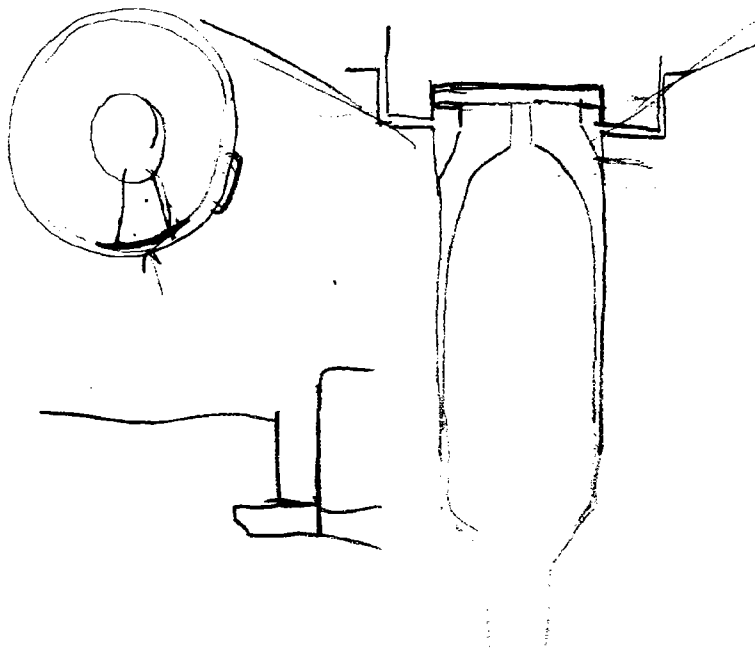
DATE COMPLETED: _____
TEST COMPLETED BY: _____
REPORT DATE: _____

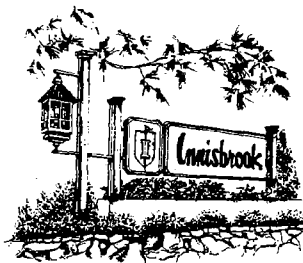
FR-0
788

To Adam Hugick
for filing

HUGICK

CAB 4 DWR.3
M/700 222 REM.
M/700 AR-15 EXTRAOR. EVAL. FEB '24
M/700 SERIES





cc: A.A. Hugick 

Ilion, New York
February 26, 1974

TO: W. E. LEEK
FROM: C.B. WORKMAN
SUBJECT: MODEL 700 - FIELD MODIFICATIONS TO BOLT HEAD

It is understood that modifications are being made to the Model 700 Bolt Head in the field to install an AR-15 type extractor. The attached test report shows the danger that can accrue from this practice.

Based on results of this test we feel it very unwise for Remington Arms Company to sell breech bolts only to anyone in the field for this type modification.

C. B. Workman
Manager - Technical Services
Ilion Research Division

740 CBW:T
Attach.

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



Xc: W. E. Leek
M. H. Walker - J. Stekl
File

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

Ilion, New York
January 9, 1974

TO: C. B. WORKMAN
FROM: A. A. HUGICK
DATE: DECEMBER 21, 1973
SUBJECT: EXTRACTOR EVALUATION
----- Model 700 - 222 Remington -----
WORK ORDER: G 0409

INTRODUCTION:

One Model 700 - 222 Rem. Bolt Assembly fitted with AR-15 Extractor, Ejector removal, and shroud sleeve modifications was received for evaluation per request of the Custom Shop. This bolt assembly originated with Arthur J. Freund, St. Louis, Mo. Modifications of this type are also being made by Hart Rifle Barrels Incorporated, Lafayette, New York and others. Product acceptability involved comparative high pressure testing of Remington design and altered bolt assembly.

TEST OBJECTIVE:

Evaluate the M/700 - 222 Rem. Altered bolt assembly.

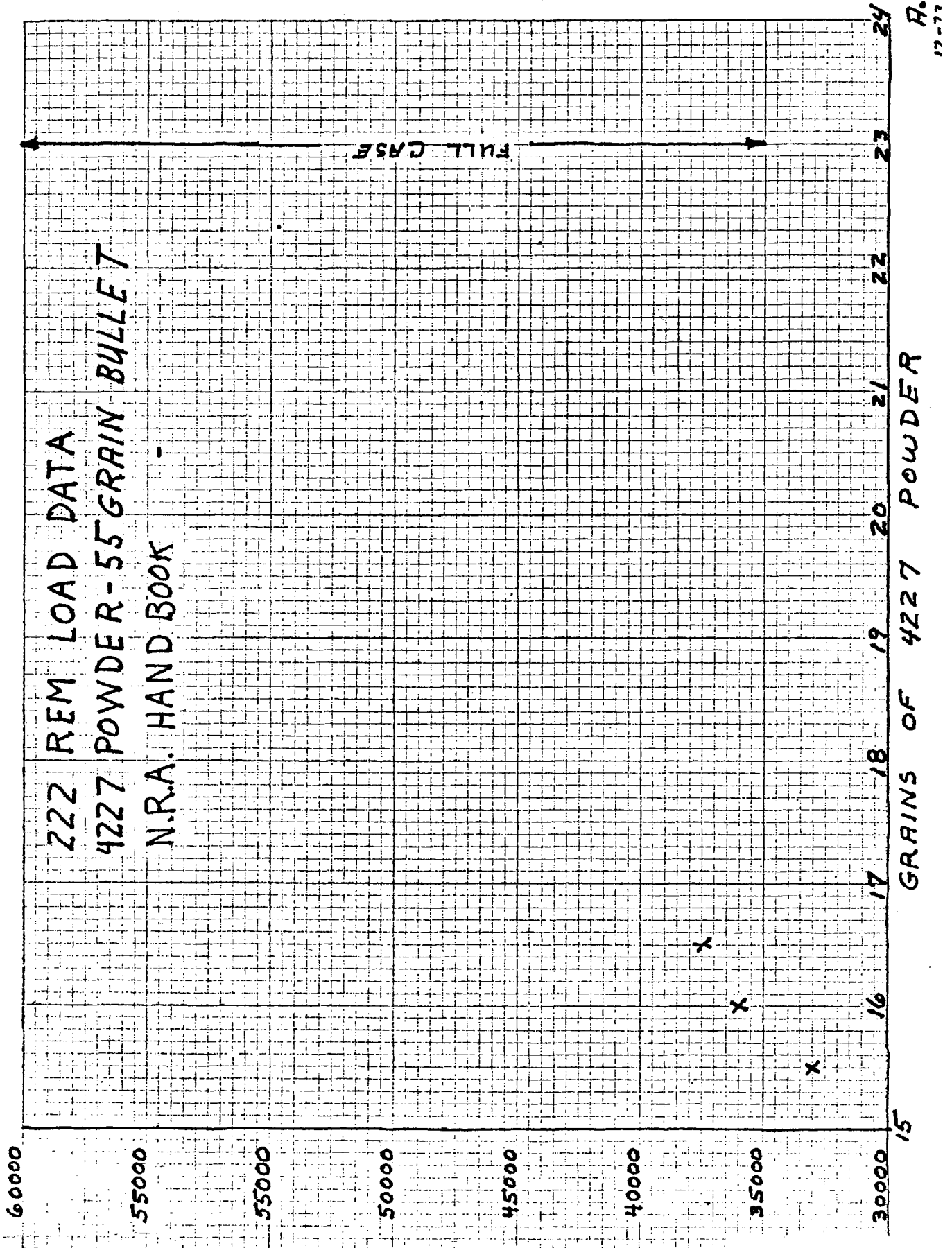
TEST OBSERVATIONS:

1. Major gun damage resulted from firing a full case (23 grains) of 4227 handload due to lack of case head support with the altered bolt assembly.
2. Major amounts of gas and other debris exited the port area due to lack of case head support with the altered bolt assembly.

RECOMMENDATIONS:

The public using Remington firearms be assured some protection from this type of product modification. Protection from evidence as noted in enclosed photos.

AAH:bd
Measurement/test Lab
Ilion Research Division



REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT **DUPCNT** COMPUTATION SHEET

SHEET NO 1

TITLE OF PROJ. **M700-222 REMINGTON**PROJ. NO **G0409**SUBJECT **EXTRACTOR EVALUATION**

WORKS

COMPUTER **R. R. H.**DATE **12-21-73** 19

TEST HANDLOAD	STD. M700	ALTERED M700
15.5 GRAINS 4227	OKAY	
16.5 GRAINS 4227	OKAY	OKAY
17.5 GRAINS 4227	OKAY	OKAY
18.5 GRAINS 4227	OKAY	OKAY
19.5 GRAINS 4227	OKAY	OKAY
20.5 GRAINS 4227	PRIMER CRATERED	PRIMER CRATERED
21.5 GRAINS 4227	① VISUAL GAS LEAKAGE ② HARD BOLT LIFT ③ CASE EXPANDED IN BOLT HEAD ④ REMOVAL OF CASE RIPPED HEAD PARTLY OFF CASE ⑤ EXTRACTOR NOT FUNCTIONAL.	1. CONSIDERABLE GAS LEAKAGE NOTED. 2. HARD BOLT LIFT. 3. BOLT WAS DRIVEN FULL LENGTH OF STROKE VIA HAMMER. 4. CASE REMOVED - 5. PRIMER POCKET EXPANDED. 6. EXTRACTOR FUNCTIONAL.
23.0 GRAINS 4227 (FULL CASE NO POWDER COMPACTING.)	① RESULTS RECORDED VIA PHOTOGRAPHS. ② RESULTS SIMILAR TO 21.5 GRAM LOAD. ③ NO MAJOR FAILURE.	1. RESULTS RECORDED VIA PHOTOGRAPHS. 2. GUN DAMAGED AND NOT OPERATIONAL. 3. STOCK CRACKED 4. BLEW BDL BOX OUT 5. EXTRACTOR TRIED TO BECOME A MISSILE 6. MAJOR GAS LEAKAGE 7. MAJOR GUN DAMAGE.

A.
12-21-73

REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT  COMPUTATION SHEET

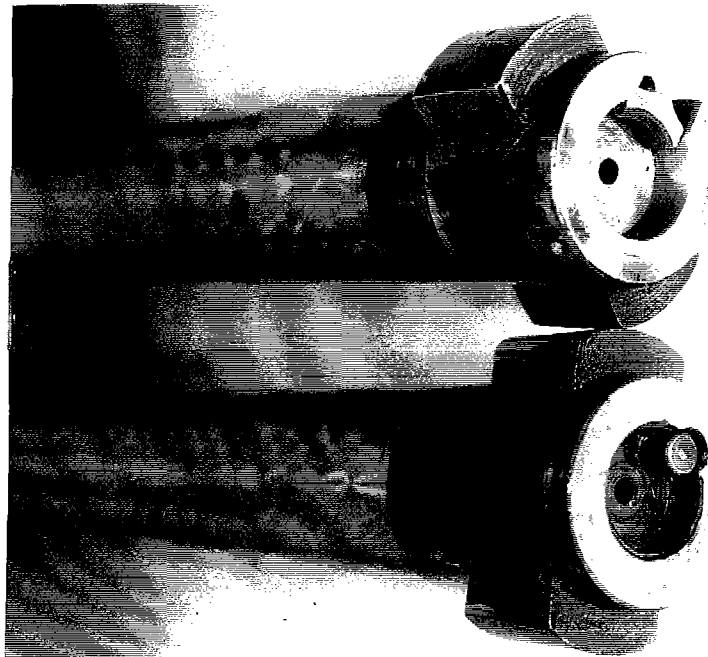
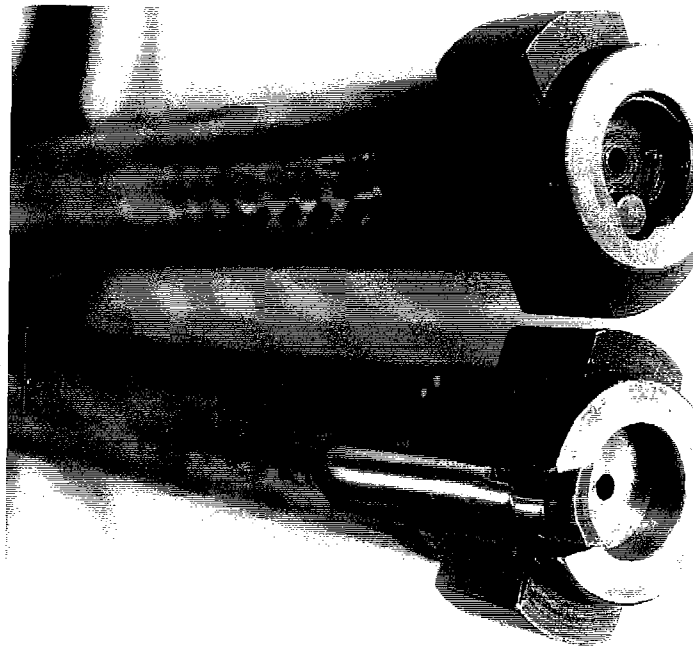
SHEET NO.

TITLE OF PROJ M700 - 222 REMINGTONPROJ. No. G0409SUBJECT EXTRACTOR EVALUATION

WORKS

COMPUTER AAHDATE 12-21-73

19



REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT



COMPUTATION SHEET

SHEET NO.

TITLE OF PROJ. M700-222 REMINGTONPROJ. NO. G0409SUBJECT EXTRACTOR EVALUATION

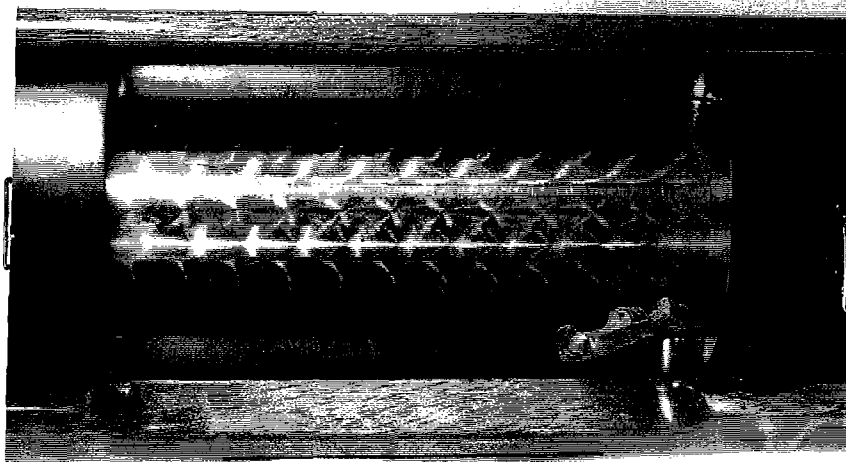
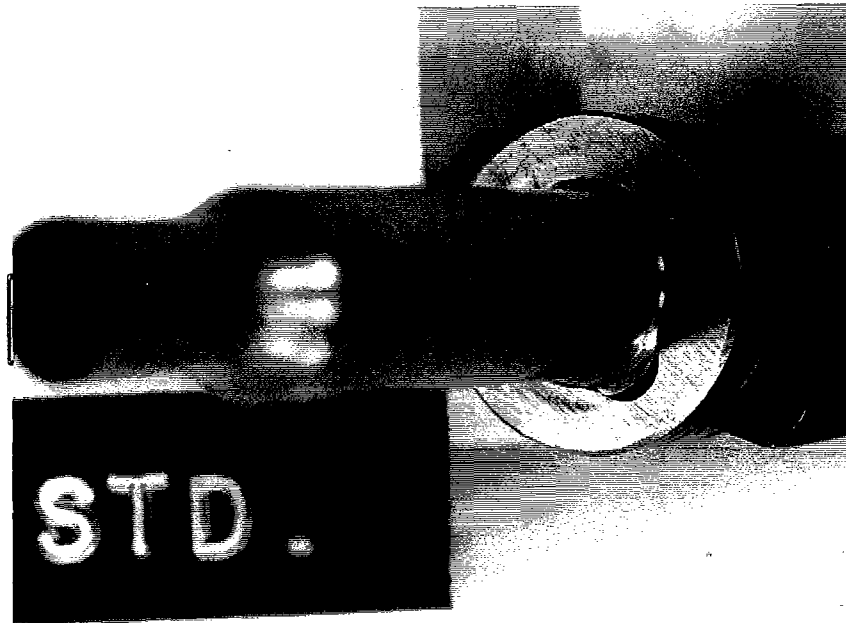
WORKS

COMPUTER A.A.H.DATE 12-21-73 19

REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT  COMPUTATION SHEET

SHEET NO.

TITLE OF PROJ. M700-222 REMINGTON PROJ. NO. G0409SUBJECT EXTRACTOR EVALUATION WORKS.COMPUTER A.A.H.DATE 12-21-73 19

REMINGTON ARMS COMPANY, INC.

ENGINEERING DEPARTMENT



COMPUTATION SHEET

SHEET NO.

TITLE OF PROJ. M700-222 REMINGTON

PROJ. NO. G0409

SUBJECT EXTRACTOR EVALUATION

WORKS

COMPUTER A.A.H.

DATE 12-21-73

19



Xc: W. E. Leek
M. H. Walker - J. Stekl
File

REMINGTON ARMS COMPANY, INC.

INTER-DEPARTMENTAL CORRESPONDENCE



"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

Ilion, New York
January 3, 1974

TO: C. B. WORKMAN
FROM: A. A. HUGICK
DATE: DECEMBER 21, 1973
SUBJECT: EXTRACTOR EVALUATION
Model 700 - 222 Remington

WORK ORDER: G0409

INTRODUCTION

re write

One Model 700 - 222 Rem. Bolt Assembly was received for evaluation per request of the custom shop. The assembly is a M/700 - 222 Rem. Bolt Assembly fitted with an AR-15 extractor, ejector removal, and shroud sleeve modifications. This bolt assembly originated with Arthur J. Freund, St. Louis, Mo. Modification of this type are also being made by Hart Rifle Barrels Incorporated, Lafayette, New York and others. Product acceptability involved comparative high pressure testing of Remington design and altered bolt assembly ~~design.~~

TEST OBJECTIVE:

Evaluate the M/700 - 222 Rem. Altered bolt assembly.

TEST OBSERVATIONS:

1. Major gun damage resulted from firing a full case (23 grains) of 4227 handload due to lack of case head support with the altered bolt assembly.
2. Major amounts of gas and other debris exited the port area due to lack of case head support with the altered bolt assembly.

Extractor Evaluation
Model 700 - 222 Remington

January 3, 1973
Page 2

RECOMMENDATIONS:

The public using Remington firearms be assured some protection from this type of product modification. Protection from evidence as noted in enclosed photos.

*Include Photos with all copies
of this report.*

AAH:bd
Measurement/test Lab
Ilion Research Division

ONE MODEL 700-222 REM BOLT ASSEMBLY FITTED WITH
AR-15 EXTRACTOR, EJECTOR REMOVAL, AND SHROUD
SLEEVE MODIFICATIONS WAS RECEIVED FOR EVALUATION
PER REQUEST OF THE CUSTOM SHOP.

PHOTOS (300) ^{being}
W402-401

CC: W.E. LEAK
M. H. WALKER - J. STEKL
FILE

TO: C. B. WORKMAN

FROM: A. A. HUEICK

DATE: DECEMBER 21, 1973

SUBJECT: EXTRACTOR EVALUATION - MODEL 700 - 222 REMINGTON

WORK ORDER: G0409

INTRODUCTION

ONE MODEL 700 - 222 REM BOLT ASSEMBLY WAS RECEIVED FOR EVALUATION PER REQUEST OF THE CUSTOM SHOP. THE ASSEMBLY IS A M700 - 222 REM BOLT ASSEMBLY FITTED WITH AN AR-15 EXTRACTOR, EJECTOR REMOVAL, AND SHROUD SLEEVE MODIFICATIONS. THIS BOLT ASSEMBLY ORIGINATED WITH ARTHUR J. FREUND, ST. LOUIS, MO. MODIFICATION OF THIS TYPE ARE ALSO BEING MADE BY HART RIFLE BARRELS INCORPORATED, LAFAYETTE, NEW YORK AND OTHERS. PRODUCT ACCEPTABILITY INVOLVED COMPARATIVE HIGH PRESSURE TESTING OF REMINGTON DESIGN AND ALTERED BOLT ASSEMBLY DESIGN.

TEST OBJECTIVE:

EVALUATE THE M700-222 REM ALTERED BOLT ASSEMBLY

TEST OBSERVATIONS:

1. MAJOR GUN DAMAGE RESULTED FROM FIRING A FULL CASE (23 GRAINS) OF 4227 HAND LOAD DUE TO LACK OF CASE HEAD SUPPORT WITH THE ALTERED BOLT ASSEMBLY.
2. MAJOR AMOUNTS OF GAS AND OTHER DEBRIS EXITED THE PORT AREA DUE TO LACK OF CASE HEAD SUPPORT WITH THE ALTERED BOLT ASSEMBLY.

RECOMMENDATIONS:

THE PUBLIC USING REMINGTON FIREARMS
BE ASSURED SOME PROTECTION FROM THIS
TYPE OF PRODUCT MODIFICATION. PROTECTION
FROM EVIDENCE AS NOTED IN ENCLOSED
PHOTOS.

609

WORK REQUEST

DATE REQUESTED 12-19-73 WORK ORDER G0409

DESIGNER OR ENGINEER F. MARTIN - J. STEIKL - M. WALICK

MODEL 700 CAL. OR GAUGE 222 BARREL TYPE STD

TYPE OF TEST

NEW DESIGN _____ DESIGN CHANGE _____

DRY CYCLE _____ ACCURACY _____ HAND LOADING _____ STRESS _____

PRESSURE _____ MUZZLE VELOCITY _____ FUNCTION _____ PHOTOS _____

EVALUATION X BOLT VELOCITIES _____ OTHER _____

ESTIMATED COMPLETION DATE 12-21-73

REPORT REQUIRED

FORMAL _____ INFORMAL _____ TEST RESULTS ONLY X

TEST OBJECTIVE

1. EVALUATE ALTA'D EXTRACTOR.
✓ A. PHOTO - AS REC'D
✓ B. HEADSPACE, PROOF, HEADSPACE
✓ C. TEN FACTORY ROUNDS, HEADSPACE
D. FACTORY LOAD IN ANNEALED CASE
E. PROOF LOAD IN ANNEALED CASE

GUNS REQUIRED

REG - 6627453

ALTA'D - 6548222

TEST COMPLETION DATE _____ SIGNED _____

B 1270

609

ACT'D

REG

60.005

60.001

1060.006

1060.002

NO CHANGES

NO CHANGES

55
43,400

REPORT # 821321
M 760 Follow-up - Spring (222ca1) & evaluation

821321

4-12-83

TOTAL MALFUNCTIONS = 268
TOTAL LIVE = 95
TOTAL FIRED = 173

TOTAL A = 141
TOTAL LIVE A = 48
TOTAL FIRE A = 93

TOTAL B = 127
" LIVE B = 47
" FIRE B = 80

TOTAL YELLOW = 115
" " A = 64
" " B = 51

TOTAL RED = 153
" " A = 76
" " B = 77

To: C. E. RICHIE
From: F. L. SUPRY

TEST TITLE: M/7 and M700 .222 CALIBER FOLLOWER - SPRING EVALUATION

ABSTRACT

A request was received on May 12, 1982 from C. J. Sweet (Lab Specialist - Research Test Lab) to conduct a follower - spring evaluation on the model 700 BDL, the model 700 ADL, and the model seven in the .222 caliber. Design #6 stamped no-bind followers and current production cast followers (part # 90951), in conjunction with six different spring designs (refer to Appendix A page 1 for individual spring designs), are to be evaluated per criteria set forth by Dr. James Lucas (consultant - Applied statistics group, E. I. DuPont de Nemours & Co., Inc).

SCOPE OF TEST

To test the different follower - spring combinations to determine the most compatible combination(s) in each model, and the most compatible combination(s) overall.

TEST RESULTS

821321

APPENDIX

C

1. The following is a legend for the attached data sheets:

A. CART. = Cartridge

- a. CART. A = Remington R2221, 50 gr. PSP.
- b. CART. B = Remington R2224, 55 gr. Metal Case.

B. Spring

- a. 1 - 1 = current production spring (2 lbs. 3 oz. @ 0.6")
color coded red (1 lbs. 8 oz. @ 1.0")
- b. 1 - 2 = current production spring (4 lbs. 4 oz. @ 0.6")
color coded yellow (3 lbs. 8 oz. @ 1.0")
- c. 2 - 1 = H & R .510/.500 width (2 lbs. 3 oz. @ 0.6")
color coded orange (1 lbs. 8 oz. @ 1.0")
- Spec* — d. 2 - 2 = H & R .510/.500 width (4 lbs. 4 oz. @ 0.6")
color coded green (3 lbs. 8 oz. @ 1.0")
- e. 3 - 1 = pre - 1974 (2 lbs. 3 oz. @ 0.6")
color coded blue (1 lbs. 8 oz. @ 1.0")
- f. 3 - 2 = pre - 1974 (4 lbs. 4 oz. @ 0.6")
color coded gold (3 lbs. 8 oz. @ 1.0")

C. Followers

- a. 1 = current production cast followers.
- b. 2 = stamped design #6 no-bind followers.

D. Malfunctions.

- a. FTD = follower tip down.
- b. BOR = bolt override
- c. SJM = shell jumps magazine
- d. SL = stem left
- e. SR = stem right
- f. SLo = stem low
- g. SH = stem high

Serial #	-	Model #	-	Cart.	-	Spring and Follower
B6256163		700 BDL		A		1 - 1 1
B6257254		700 BDL		A		1 - 1 2
B6256480		700 BDL		A		1 - 2 1
B6293115		700 BDL		A		1 - 2 2
B6257236		700 BDL		A		2 - 1 1
B6256201		700 BDL		A		2 - 1 2
B6256794		700 BDL		A		2 - 2 1
B6256269		700 BDL		A		2 - 2 2
B6256851		700 BDL		A		3 - 1 1
B6256832		700 BDL		A		3 - 1 2
B6256200		700 BDL		A		3 - 2 1
B6256202		700 BDL		A		3 - 2 2
B6257212		700 BDL		B		1 - 1 1
B6293233		700 BDL		B		1 - 1 2
B6257073		700 BDL		B		1 - 2 1
B6359955		700 BDL		B		1 - 2 2
B6361126		700 BDL		B		2 - 1 1
B6256186		700 BDL		B		2 - 1 2
B6256819		700 BDL		B		2 - 2 1
B6292952		700 BDL		B		2 - 2 2
B6257052		700 BDL		B		3 - 1 1
B6293061		700 BDL		B		3 - 1 2
B6256289		700 BDL		B		3 - 2 1
B6256444		700 BDL		B		3 - 2 2
B6359083		700 ADL		A		1 - 1 1
B6360332		700 ADL		A		1 - 1 2
B6327087		700 ADL		A		1 - 2 1
B6256158		700 ADL		A		1 - 2 2
B6257211		700 ADL		A		2 - 1 1
B6359113		700 ADL		A		2 - 1 2
B6256183		700 ADL		A		2 - 2 1
B6256205		700 ADL		A		2 - 2 2
B6257170		700 ADL		A		3 - 1 1
B6393324		700 ADL		A		3 - 1 2
B6293136		700 ADL		A		3 - 2 1
B6293185		700 ADL		A		3 - 2 2
7602493		7		B		1 - 1 1
7602568		7		B		1 - 1 2
7602597		7		B		1 - 2 1
7602651		7		B		1 - 2 2
7602524		7		B		2 - 1 1
7602663		7		B		2 - 1 2
7602482		7		B		2 - 2 1
7602551		7		B		2 - 2 2
7602541		7		B		3 - 1 1
7602605		7		B		3 - 1 2
7602590		7		B		3 - 2 1
7602536		7		B		3 - 2 2

SERIAL	MODEL#	CART.	SPRING and FOLLOWER
7603625	7	A	1 - 1 1
7602652	7	A	1 - 1 2
7602517	7	A	1 - 2 1
7602473	7	A	1 - 2 2
7602644	7	A	2 - 1 1
7602653	7	A	2 - 1 2
7602469	7	A	2 - 2 1
7602490	7	A	2 - 2 2
7602591	7	A	3 - 1 1
7602564	7	A	3 - 1 2
7602629	7	A	3 - 2 1
7602666	7	A	3 - 2 2
B6360175	700 ADL	B	1 - 1 1
B6257041	700 ADL	B	1 - 1 2
B6358221	700 ADL	B	1 - 2 1
B6256499	700 ADL	B	1 - 2 2
B6295043	700 ADL	B	2 - 1 1
B6256504	700 ADL	B	2 - 1 2
B6257215	700 ADL	B	2 - 2 1
B6327369	700 ADL	B	2 - 2 2
B6359004	700 ADL	B	3 - 1 1
B6359206	700 ADL	B	3 - 1 2
B6360116	700 ADL	B	3 - 2 1
B6293191	700 ADL	B	3 - 2 2
B6256507	700 BDL	A	1 - 1 1
B6327195	700 BDL	A	1 - 1 2
B6361221	700 BDL	A	1 - 2 1
B6359195	700 BDL	A	1 - 2 2
B6293063	700 BDL	A	2 - 1 1
B6256482	700 BDL	A	2 - 1 2
B6255671	700 BDL	A	2 - 2 1
B6257234	700 BDL	A	2 - 2 2
B6256462	700 BDL	A	3 - 1 1
B6295104	700 BDL	A	3 - 1 2
B6358300	700 BDL	A	3 - 2 1
B6256221	700 BDL	A	3 - 2 2
B6257054	700 BDL	B	1 - 1 1
B6257227	700 BDL	B	1 - 1 2
B6360026	700 BDL	B	1 - 2 1
B6257136	700 BDL	B	1 - 2 2
B6293022	700 BDL	B	2 - 1 1
B6257218	700 BDL	B	2 - 1 2
B6257149	700 BDL	B	2 - 2 1
B6294947	700 BDL	B	2 - 2 2
B6266165	700 BDL	B	3 - 1 1
B6256555	700 BDL	B	3 - 1 2
B6359134	700 BDL	B	3 - 2 1
B6256307	700 BDL	B	3 - 2 2

SERIAL	MODEL#	CART.	SPRING and FOLLOWER
B6293064	700 BDL	A	1 - 1 1
B6256892	700 BDL	A	1 - 1 2
B6257213	700 BDL	A	1 - 2 1
B6256521	700 BDL	A	1 - 2 2
B6256844	700 BDL	A	2 - 1 1
B6257066	700 BDL	A	2 - 1 2
B6256485	700 BDL	A	2 - 2 1
B6294940	700 BDL	A	2 - 2 2
B6256807	700 BDL	A	3 - 1 1
B6361428	700 BDL	A	3 - 1 2
B6359318	700 BDL	A	3 - 2 1
B6257081	700 BDL	A	3 - 2 2
B6257094	700 BDL	B	1 - 1 1
B6257220	700 BDL	B	1 - 1 2
B6257112	700 BDL	B	1 - 2 1
B6293339	700 BDL	B	1 - 2 2
B6257091	700 BDL	B	2 - 1 1
B6256257	700 BDL	B	2 - 1 2
B6359635	700 BDL	B	2 - 2 1
B6256553	700 BDL	B	2 - 2 2
B6256566	700 BDL	B	3 - 1 1
B6359778	700 BDL	B	3 - 1 2
B6257129	700 BDL	B	3 - 2 1
B6293121	700 BDL	B	3 - 2 2
B6327293	700 ADL	A	1 - 1 1
B6257132	700 ADL	A	1 - 1 2
B6359357	700 ADL	A	1 - 2 1
B6256208	700 ADL	A	1 - 2 2
B6293294	700 ADL	A	2 - 1 1
B6359050	700 ADL	A	2 - 1 2
B6360493	700 ADL	A	2 - 2 1
B6257058	700 ADL	A	2 - 2 2
B6327728	700 ADL	A	3 - 1 1
B6293017	700 ADL	A	3 - 1 2
B6327760	700 ADL	A	3 - 2 1
B6359232	700 ADL	A	3 - 2 2
7602600	7	B	1 - 1 1
7602525	7	B	1 - 1 2
7602566	7	B	1 - 2 1
7602506	7	B	1 - 2 2
7602646	7	B	2 - 1 1
7602556	7	B	2 - 1 2
7602529	7	B	2 - 2 1
7602621	7	B	2 - 2 2
7602635	7	B	3 - 1 1
7602481	7	B	3 - 1 2
7602620	7	B	3 - 2 1
7602504	7	B	3 - 2 2

SERIAL	MODEL#	CART.	SPRING and FOLLOWER
7602474	7	A	1 - 1 1
7602595	7	A	1 - 1 2
7602581	7	A	1 - 2 1
7602470	7	A	1 - 2 2
7602510	7	A	2 - 1 1
7602636	7	A	2 - 1 2
7602593	7	A	2 - 2 1
7602554	7	A	2 - 2 2
7602633	7	A	3 - 1 1
7602617	7	A	3 - 1 2
7602631	7	A	3 - 2 1
7602620	7	A	3 - 2 2
B6393743	700 ADL	B	1 - 1 1
B6294880	700 ADL	B	1 - 1 2
B6256506	700 ADL	B	1 - 2 1
B6295098	700 ADL	B	1 - 2 2
B6257168	700 ADL	B	2 - 1 1
B6359146	700 ADL	B	2 - 1 2
B6257178	700 ADL	B	2 - 2 1
B6257173	700 ADL	B	2 - 2 2
B6359741	700 ADL	B	3 - 1 1
B6293410	700 ADL	B	3 - 1 2
B6293075	700 ADL	B	3 - 2 1
B6359667	700 ADL	B	3 - 2 2
B6293053	700 BDL	A	1 - 1 1
B6293090	700 BDL	A	1 - 1 2
B6257228	700 BDL	A	1 - 2 1
B6361442	700 BDL	A	1 - 2 2
B6256244	700 BDL	A	2 - 1 1
B6257093	700 BDL	A	2 - 1 2
B6293049	700 BDL	A	2 - 2 1
B6257240	700 BDL	A	2 - 2 2
B6256178	700 BDL	A	3 - 1 1
B6266522	700 BDL	A	3 - 1 2
B6256211	700 BDL	A	3 - 2 1
B6295097	700 BDL	A	3 - 2 2
B6256820	700 BDL	B	1 - 1 1
B6359827	700 BDL	B	1 - 1 2
B6358996	700 BDL	B	1 - 2 1
B6359156	700 BDL	B	1 - 2 2
B6359787	700 BDL	B	2 - 1 1
B6256805	700 BDL	B	2 - 1 2
B6359664	700 BDL	B	2 - 2 1
B6359645	700 BDL	B	2 - 2 2
B6327689	700 BDL	B	3 - 1 1
B6327092	700 BDL	B	3 - 1 2
B6257195	700 BDL	B	3 - 2 1
B6256886	700 BDL	B	3 - 2 2

SERIAL	MODEL#	CART.	SPRING and FOLLOWER
B6256750	700 BDL	A	1 - 1 1
B6256288	700 BDL	A	1 - 1 2
B6257150	700 BDL	A	1 - 2 1
B6257078	700 BDL	A	1 - 2 2
B6293050	700 BDL	A	2 - 1 1
B6293048	700 BDL	A	2 - 1 2
B6256240	700 BDL	A	2 - 2 1
B6292989	700 BDL	A	2 - 2 2
B6256882	700 BDL	A	3 - 1 1
B6256817	700 BDL	A	3 - 1 2
B6326340	700 BDL	A	3 - 2 1
B6327795	700 BDL	A	3 - 2 2
B6256522	700 BDL	B	1 - 1 1
B6359318	700 BDL	B	1 - 1 2
B6359645	700 BDL	B	1 - 2 1
B6257234	700 BDL	B	1 - 2 2
B6292952	700 BDL	B	2 - 1 1
B6295104	700 BDL	B	2 - 1 2
B6256507	700 BDL	B	2 - 2 1
B6256201	700 BDL	B	2 - 2 2
B6256200	700 BDL	B	3 - 1 1
B6293064	700 BDL	B	3 - 1 2
B6256269	700 BDL	B	3 - 2 1
B6256832	700 BDL	B	3 - 2 2
7621784	7	A	1 - 1 1
7615497	7	A	1 - 1 2
7621472	7	A	1 - 2 1
7614213	7	A	1 - 2 2
7623083	7	A	2 - 1 1
7622892	7	A	2 - 1 2
7622905	7	A	2 - 2 1
7622222	7	A	2 - 2 2
7622152	7	A	3 - 1 1
7622415	7	A	3 - 1 2
7622213	7	A	3 - 2 1
7623111	7	A	3 - 2 2
7614145	7	B	1 - 1 1
7622397	7	B	1 - 1 2
7621851	7	B	1 - 2 1
7622244	7	B	1 - 2 2
7622930	7	B	2 - 1 1
7622193	7	B	2 - 1 2
7622394	7	B	2 - 2 1
7622438	7	B	2 - 2 2
7621830	7	B	3 - 1 1
7621145	7	B	3 - 1 2
7622981	7	B	3 - 2 1

SERIAL	MODEL#	CART.	SPRING	FOLLOWER
7623140	7	B	3 - 2	2
7622565	7	A	1 - 1	1
7622350	7	A	1 - 1	2
7613087	7	A	1 - 2	1
7622162	7	A	1 - 2	2
7622296	7	A	2 - 1	1
7621647	7	A	2 - 1	2
7622961	7	A	2 - 2	1
7622974	7	A	2 - 2	2
7622171	7	A	3 - 1	1
7621889	7	A	3 - 1	2
7622319	7	A	3 - 2	1
7622361	7	A	3 - 2	2
7622309	7	B	1 - 1	1
7622389	7	B	1 - 1	2
7622424	7	B	1 - 2	1
7622188	7	B	1 - 2	2
7622416	7	B	2 - 1	1
7622340	7	B	2 - 1	2
7622138	7	B	2 - 2	1
7622198	7	B	2 - 2	2
7622196	7	B	3 - 1	1
7622450	7	B	3 - 1	2
7615707	7	B	3 - 2	1
7622313	7	B	3 - 2	2
7622442	7	A	1 - 1	1
7622334	7	A	1 - 1	2
7622293	7	A	1 - 2	1
7621855	7	A	1 - 2	2
7621795	7	A	2 - 1	1
7622194	7	A	2 - 1	2
7622356	7	A	2 - 2	1
7622255	7	A	2 - 2	2
7622504	7	A	3 - 1	1
7622151	7	A	3 - 1	2
7622314	7	A	3 - 2	1
7622279	7	A	3 - 2	2
7621959	7	B	1 - 1	1
7621404	7	B	1 - 1	2
7622228	7	B	1 - 2	1
7622884	7	B	1 - 2	2
7622158	7	B	2 - 1	1
7622477	7	B	2 - 1	2
7621843	7	B	2 - 2	1
7622931	7	B	2 - 2	2
7622851	7	B	3 - 1	1
7623162	7	B	3 - 1	2
7622939	7	B	3 - 2	1
7623091	7	B	3 - 2	2

SERIAL	MODEL#	CART.	SPRING and FOLLOWER
7621916	7	A	1 - 1 1
7622248	7	A	1 - 1 2
7622287	7	A	1 - 2 1
7621861	7	A	1 - 2 2
7622534	7	A	2 - 1 1
7622842	7	A	2 - 1 2
7622265	7	A	2 - 2 1
7622307	7	A	2 - 2 2
7621820	7	A	3 - 1 1
7622305	7	A	3 - 1 2
7622498	7	A	3 - 2 1
7622337	7	A	3 - 2 2
7621777	7	B	1 - 1 1
7622868	7	B	1 - 1 2
7623080	7	B	1 - 2 1
7622832	7	B	1 - 2 2
7613097	7	B	2 - 1 1
7611976	7	B	2 - 1 2
7613143	7	B	2 - 2 1
7613549	7	B	2 - 2 2
7612201	7	B	3 - 1 1
7622552	7	B	3 - 1 2
7622976	7	B	3 - 2 1
7623144	7	B	3 - 2 2
7612524	7	A	1 - 1 1
7613935	7	A	1 - 1 2
7612238	7	A	1 - 2 1
7612172	7	A	1 - 2 2
7612292	7	A	2 - 1 1
7622986	7	A	2 - 1 2
7622153	7	A	2 - 2 1
7615625	7	A	2 - 2 2
7615434	7	A	3 - 1 1
7621468	7	A	3 - 1 2
7621632	7	A	3 - 2 1
7621652	7	A	3 - 2 2
7612871	7	B	1 - 1 1
7612619	7	B	1 - 1 2
7612129	7	B	1 - 2 1
7612347	7	B	1 - 2 2
7612670	7	B	2 - 1 1
7615478	7	B	2 - 1 2
7615543	7	B	2 - 2 1
7615568	7	B	2 - 2 2
7614260	7	B	3 - 1 1
7614485	7	B	3 - 1 2
7622465	7	B	3 - 2 1
7621897	7	B	3 - 2 2

SERIAL	MODEL#	CART.	SPRING and FOLLOWER
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7622894	7	A	1 - 1	1
7614083	7	A	1 - 1	2
7614222	7	A	1 - 2	1
7614464	7	A	1 - 2	2
7614484	7	A	2 - 1	1
7615550	7	A	2 - 1	2
7623148	7	A	2 - 2	1
7621856	7	A	2 - 2	2
7622444	7	A	3 - 1	1
7622458	7	A	3 - 1	2
7622173	7	A	3 - 2	1
7614467	7	A	3 - 2	2
7622374	7	B	1 - 1	1
7622372	7	B	1 - 1	2
7621937	7	B	1 - 2	1
7621782	7	B	1 - 2	2
7622454	7	B	2 - 1	1
7621539	7	B	2 - 1	2
7621534	7	B	2 - 2	1
7621589	7	B	2 - 2	2
7622281	7	B	3 - 1	1
7602849	7	B	3 - 1	2
7621571	7	B	3 - 2	1
7622187	7	B	3 - 2	2
B6360190	700 BDL	A	1 - 1	1
B6359681	700 BDL	A	1 - 1	2
B6359200	700 BDL	A	1 - 2	1
B6360620	700 BDL	A	1 - 2	2
B6359123	700 BDL	A	2 - 1	1
B6360589	700 BDL	A	2 - 1	2
B6360373	700 BDL	A	2 - 2	1
B6327005	700 BDL	A	2 - 2	2
B6327058	700 BDL	A	3 - 1	1
B6360129	700 BDL	A	3 - 1	2
B6359648	700 BDL	A	3 - 2	1
B6293701	700 BDL	A	3 - 2	2
B6359230	700 BDL	B	1 - 1	1
B6256583	700 BDL	B	1 - 1	2
B6327521	700 BDL	B	1 - 2	1
B6359652	700 BDL	B	1 - 2	2
B6327094	700 BDL	B	2 - 1	1
B6359015	700 BDL	B	2 - 1	2
B6361184	700 BDL	B	2 - 2	1
B6327685	700 BDL	B	2 - 2	2
B6327040	700 BDL	B	3 - 1	1
B6360176	700 BDL	B	3 - 1	2
B6327779	700 BDL	B	3 - 2	1
B6360169	700 BDL	B	3 - 2	2

SERIAL - MODEL# - CART. - SPRING and FOLLOWER

B6327127	700 BDL	A	1 - 1	1
B6358282	700 BDL	A	1 - 1	2
B6358194	700 BDL	A	1 - 2	1
B6327125	700 BDL	A	1 - 2	2
B6326989	700 BDL	A	2 - 1	1
B6327062	700 BDL	A	2 - 1	2
B6327610	700 BDL	A	2 - 2	1
B6358331	700 BDL	A	2 - 2	2
B6327262	700 BDL	A	3 - 1	1
B6327770	700 BDL	A	3 - 1	2
B6359311	700 BDL	A	3 - 2	1
B6359853	700 BDL	A	3 - 2	2
B6359524	700 BDL	B	1 - 1	1
B6327410	700 BDL	B	1 - 1	2
B6361253	700 BDL	B	1 - 2	1
B6361019	700 BDL	B	1 - 2	2
B6327328	700 BDL	B	2 - 1	1
B6360119	700 BDL	B	2 - 1	2
B6327893	700 BDL	B	2 - 2	1
B6360602	700 BDL	B	2 - 2	2
B6361277	700 BDL	B	3 - 1	1
B6327798	700 BDL	B	3 - 1	2
B6360210	700 BDL	B	3 - 2	1
B6256562	700 BDL	B	3 - 2	2
B6360457	700 BDL	A	1 - 1	1
B6359680	700 BDL	A	1 - 1	2
B6361347	700 BDL	A	1 - 2	1
B6358611	700 BDL	A	1 - 2	2
B6359805	700 BDL	A	2 - 1	1
B6358232	700 BDL	A	2 - 1	2
B6327754	700 BDL	A	2 - 2	1
B6327115	700 BDL	A	2 - 2	2
B6359069	700 BDL	A	3 - 1	1
B6327108	700 BDL	A	3 - 1	2
B6327252	700 BDL	A	3 - 2	1
B6327469	700 BDL	A	3 - 2	2
B6361264	700 BDL	B	1 - 1	1
B6360587	700 BDL	B	1 - 1	2
B6358909	700 BDL	B	1 - 2	1
B6294922	700 BDL	B	1 - 2	2
B6359824	700 BDL	B	2 - 1	1
B6327371	700 BDL	B	2 - 1	2
B6326318	700 BDL	B	2 - 2	1
B6327584	700 BDL	B	2 - 2	2
B6359529	700 BDL	B	3 - 1	1
B6359843	700 BDL	B	3 - 1	2
B6295076	700 BDL	B	3 - 2	1
B6359062	700 BDL	B	3 - 2	2

82 1321

APPENDIX B

THE UNIVERSITY OF CHICAGO

3-11-83

[illegible]

MODEL 700 ABL
 3-11-83

MODEL 700 ABL
 3-11-83

COAT	SPRING	FOLLOWER	FTD	BDR	BSM	SL	SR	SLO	SH	TOTAL	TOTAL	TOTAL
			LIVE	PRE	LIVE	PRE	LIVE	PRE	LIVE	PRE	CST	N.B.
1	RED	CST	2000	0000	0000	0000	0000	0000	0000	0000	1	10
2	RED	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
3	RED	CST	0000	0000	0000	0000	0000	0000	0000	0000		
4	RED	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
5	RED	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
6	YELLOW	CST	0000	0000	0000	0000	0000	0000	0000	0000	7	5
7	YELLOW	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
8	YELLOW	CST	0000	0000	0000	0000	0000	0000	0000	0000		
9	YELLOW	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
10	YELLOW	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
11	ORANGE	CST	0000	0000	0000	0000	0000	0000	0000	0000	0	4
12	ORANGE	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
13	ORANGE	CST	0000	0000	0000	0000	0000	0000	0000	0000		
14	ORANGE	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
15	ORANGE	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
16	GREEN	CST	0000	0000	0000	0000	0000	0000	0000	0000	5	10
17	GREEN	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
18	GREEN	CST	0000	0000	0000	0000	0000	0000	0000	0000		
19	GREEN	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
20	GREEN	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
21	BLUE	CST	0000	0000	0000	0000	0000	0000	0000	0000	8	5
22	BLUE	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
23	BLUE	CST	0000	0000	0000	0000	0000	0000	0000	0000		
24	BLUE	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
25	BLUE	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
26	GOLD	CST	0000	0000	0000	0000	0000	0000	0000	0000	5	10
27	GOLD	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
28	GOLD	CST	0000	0000	0000	0000	0000	0000	0000	0000		
29	GOLD	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
30	GOLD	N.B.	0000	0000	0000	0000	0000	0000	0000	0000		
31											29	44

1

921321

3-11-83

SPERM	INFLUENCE	F.T.D.	GOR	W.M.	SL	SR	SLB	SN	TOTAL	TOTAL	TOTAL
		W.F.	W.F.	W.F.	W.F.	W.F.	W.F.	W.F.	CAST	CAST	N.B.
RED	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
RED	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
RED	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
RED	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
YELLOW	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
YELLOW	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
YELLOW	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
YELLOW	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
ORANGE	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
ORANGE	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
ORANGE	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
ORANGE	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
ORANGE	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
ORANGE	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
GREEN	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
GREEN	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
GREEN	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
GREEN	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
GREEN	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
GREEN	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
BLUE	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
BLUE	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
BLUE	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
BLUE	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
BLUE	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
BLUE	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
GRD	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
GRD	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
GRD	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
GRD	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0
GRD	CAST	0000	0000	0000	0000	0000	0000	0000	0	0	0
GRD	N.B.	0000	0000	0000	0000	0000	0000	0000	0	0	0

TEST: TOTAL MALFUNCTIONS BY CARTRIDGE TYPE DATE: 10/13/83 TESTER: PGI WA#: 821321

MODEL	F. CART	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER				
					ROUND No.						ROUND No.						ROUND No.											
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6						
708 000 BDL	A	RED	1	1	CAST	LIVE									1					1					48 rifles using CAST. A (R2221 50 gr. PSP.) 18 rds live-unload 18 rds fired thru each rifle.			
					FIRE																							
	A	RED	1	1	2	LIVE																						
					STAMPED	FIRE			1			1			1		1				1							
	A	YELLOW	1	2	1	LIVE	1						1								1							
					CAST	FIRE	1	1						1							1							
	A	YELLOW	1	2	2	LIVE					1	1		1					1	1								
					STAMPED	FIRE					1																	
	A	ORANGE	2	1	1	LIVE													1	1								
					CAST	FIRE							1		1				1		1							
	A	ORANGE	2	1	2	LIVE			1	2	1		1	1			1		1	2	2							
					STAMPED	FIRE		1			1			1				1										
	A	GREEN	2	2	1	LIVE		1				1		1	1													
					CAST	FIRE		1				1									1							
	A	GREEN	2	2	2	LIVE																						
					STAMPED	FIRE	1																					
	A	BLUE	3	1	1	LIVE	1			1	1						1	1										
					CAST	FIRE	1		1	1				2						1								
	A	BLUE	3	1	2	LIVE		1	1				2	2					1		2	2						
					STAMPED	FIRE		1	1	1		1	2	1	1		1											
	A	GOLD	3	2	1	LIVE	1			3	2		1	1	1		1			1	2							
					CAST	FIRE	1			1		1		1					1		1							
	A	GOLD	3	2	2	LIVE	3			1	2		1	1	1		1				2							
					STAMPED	FIRE			1	1	1		1						1									

10 4 3 5 11 10 6 10 13 7 3 6 7 10 12

FLS.
2-23-83

TEST: TOTAL MALFUNCTIONS OF THE GUN AT RANGE DATE: 10/1/81 TESTER: PGI WA#: 821321

MODEL	CART	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND No.						ROUND No.						ROUND No.							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
MODEL 700 ADL	A	RED	1	1	1	LIVE																		24 rifles using Cart. A (R2221 50gr. PSP.) 10 rds live un-load 10 rds fired thru each rifle.
					CAST	FIRE																		
	A	RED	1	1	2	LIVE																		
					STAMPED	FIRE																		
	A	YELLOW	1	2	1	LIVE																		
					CAST	FIRE																		
	A	YELLOW	1	2	2	LIVE																		
					STAMPED	FIRE																		
	A	ORANGE	2	1	1	LIVE																		
					CAST	FIRE																		
	A	ORANGE	2	1	2	LIVE	1																	
					STAMPED	FIRE																		
A	GREEN	2	2	1	LIVE																			
				CAST	FIRE																			
A	GREEN	2	2	2	LIVE																			
				STAMPED	FIRE																			
A	BLUE	3	1	1	LIVE																			
				CAST	FIRE																			
A	BLUE	3	1	2	LIVE																			
				STAMPED	FIRE																			
A	GOLD	3	2	1	LIVE																			
				CAST	FIRE																			
A	GOLD	3	2	2	LIVE	1																		
				STAMPED	FIRE																			

FLS.
2-23-83

1 1 0 2 4 0 1 0 2 3 0 2 3 3 1

FLS.
2-23-83

II

TEST: TOTAL MALFUNCTIONS per round out of magazine

DATE: 3-11-83 TESTER:

PG: WA #: 821321

MODEL	CART	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
					ROUND No.						ROUND No.						ROUND No.									
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
MODEL 700 ADL	B	RED	1	1	CAST	LIVE																				24 rifles using cart. B (R222 4 55 gr. metal case) 18 rds. live un-load 18 rds. fired thru each rifle.
						FIRE																				
	B	RED	1	1	STAMPED	LIVE	1																	1		
						FIRE				1					1	1							2			
	B	YELLOW	1	2	CAST	LIVE																		2		
						FIRE	1																	1		
	B	YELLOW	1	2	STAMPED	LIVE				1	1															
						FIRE									1											
	B	ORANGE	2	1	CAST	LIVE																				
						FIRE																				
	B	ORANGE	2	1	STAMPED	LIVE																				
						FIRE																				
	B	GREEN	2	2	CAST	LIVE					1															
						FIRE																				
	B	GREEN	2	2	STAMPED	LIVE	1				1				1	1										
						FIRE		1	1								1							1		
B	BLUE	3	1	CAST	LIVE	1				1	2															
					FIRE																					
B	BLUE	3	1	STAMPED	LIVE																			2		
					FIRE																					
B	GOLD	3	2	CAST	LIVE																					
					FIRE																			2		
B	GOLD	3	2	STAMPED	LIVE																					
					FIRE	1	1																			

FLS.
2-23-99

FLS. 2-23-83

TEST: Total Malfunction SUB: 1 DATE: 11/1/81 TESTER: PAI WA#: 821321

MODEL	F CAT	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN NO.	SERIAL NUMBER																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
					ROUND NO.						ROUND NO.						ROUND NO.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
MODEL 7 LWT.	A	RED	1	1	1	CAST	LIVE				2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</

F.L.S.
2-23-81

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER

KINZER V. REMINGTON

R2536553

TEST: Total Malfunction

TESTER:

WA# 821321

MODEL	F. CAT.	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN NO.	SERIAL NUMBER	
					ROUND No.						ROUND No.						ROUND No.								
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
MODEL 7 LWT.	B	RED	1	1	CAST	LIVE		1																	24 rifles using cart. B (R2224 55 gr. metal case) 18 rds live - unload 18 rds fired thru each rifle.
						FIRE	1						1	1											
	B	RED	1	1	2	LIVE																			
					STAMPED	FIRE																			
	B	YELLOW	1	2	1	LIVE	1					1													
					CAST	FIRE	1																		
	B	YELLOW	1	2	2	LIVE				1			1												
					STAMPED	FIRE						1										1			
	B	ORANGE	2	1	1	LIVE	1											1							
					CAST	FIRE																			
	B	ORANGE	2	1	2	LIVE	2	1	1				1	1				1							
					STAMPED	FIRE																			
	B	GREEN	2	2	1	LIVE	2	1		1			1			1						1	2		
					CAST	FIRE	1	2	1					1	1							1	1		
	B	GREEN	2	2	2	LIVE	2	2		1			1	1				1	1						
					STAMPED	FIRE		1																	
B	BLUE	3	1	1	LIVE	1				1		1					1								
				CAST	FIRE								1												
B	BLUE	3	1	2	LIVE							1										1			
				STAMPED	FIRE																				
B	GOLD	3	2	1	LIVE		1					1					1	1							
				CAST	FIRE	2		2				1		1			2								
B	GOLD	3	2	2	LIVE	1			1																
				STAMPED	FIRE								1												

FLS.
2-23-03

F.L.S.
2-23-83

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER

KINZER V. REMINGTON

R2536554

FOLLOWER & SPRING TEST
.222 CALIBER

GUNS
BDL - 96
ADL - 48
M-7 - 48

FEEDING ROUND		1	2	3	4	5	TOTAL
BDL		42	26	26	44	69	207
ADL		21	13	13	22	34	103
M-7		5	12	7	23	26	73
		56	29	22	14	24	145
TOTALS		103	67	55	81	119	425
		82	54	42	59	84	321
FEEDING SPEED		1	2	3	4	5	TOTAL
BDL	SLOW	20	6	4	8	22	60
	MEDIUM	10	3	2	4	11	30
	FAST	15	12	12	18	18	75
		7	4	10	9	29	72
SUB TOTAL		42	26	26	44	69	207
		21	13	13	22	34	103
ADL	SLOW	4	4	3	8	8	27
	MEDIUM	1	5	1	8	8	23
	FAST	0	3	3	7	10	23
SUB TOTAL		5	12	7	23	26	73
M-7	SLOW	30	16	8	3	10	67
	MEDIUM	16	6	10	6	5	43
	FAST	10	7	4	5	9	35
SUB TOTAL		56	29	22	14	24	145
TOTAL		103	67	55	81	119	425
		82	54	42	59	84	321

FOLLOWER & SPRING TEST
.222 CALIBER

GUNS

BDL - 96
ADL - 48
M7 - 48

MALFUNCTIONS	F.T.D.	B.O.R.	S.J.M.	SL.	S.R.	S.Lo.	S.H.	TOTALS						
BDL	54 27	45 23	5 2	23 12	20 10	43 21	17 8	207 103						
ADL	13	18	2	9	17	13	1	73						
M7	14	62	20	0	3	44	2	145						
TOTALS	81 54	125 103	27 24	32 21	40 30	100 78	20 11	425 321						
RANKING	BDL	ADL	M7	POINTS FOR RANKING				TOTAL					OVERALL	
SPRING	↓	↓	↓	BDL	ADL	M7							RANK	
RED	1	4	1	6	3	6		15					1	
YELLOW	3	2	2	4	5	5		14					2	
ORANGE	4	1	5	3	6	2		11					3	
GREEN	2	5	6	5	2	1		8					5	
BLUE	5	3	4	2	4	3		9					4	
GOLD	6	5	3	1	2	4		7					6	
RANKING	BDL	ADL	M7	POINTS FOR RANKING				TOTAL					OVERALL	
MALFUNCTIONS	↓	↓	↓	BDL	ADL	M7							RANK	
FTD	1	3	4	7	5	4		16					2	
BOR	2	1	1	6	7	7		20					1	
SJM	7	5	3	1	3	5		9					4	
SL	4	4	7	4	4	1		9					4	
SR	5	2	5	3	6	3		12					3	
SLo	3	3	2	5	5	6		16					2	
SH	6	6	6	2	2	2		6					5	

TO: R. E. Nightingale

FROM: F. L. Supry

Test Title: MODEL 7 AND MODEL 700 .222 CALIBER
FOLLOWER SPRING EVALUATION

ABSTRACT

A request was received on May 12, 1982 from C. J. Sweet (Lab Specialist, Research Test Lab) to conduct a follower spring evaluation on the Model 700 ADL, the Model 700 BDL, and the Model 7 in the .222 caliber. Design #6 stamped no-bind followers and current production cast followers (part #90951), in conjunction with six different spring designs (refer to Appendix A, page #1 for individual spring designs), were to be evaluated per criteria set forth by Dr. James Lucas (consultant, Applied statistics group, E. I. Dupont deNemours & Co., Inc.).

SCOPE OF TEST

Test the different follower spring combinations to determine the most compatible combination(s) in each model, and the most compatible combination(s) overall.

TEST RESULTS

TEST & MEASUREMENT LAB REPORT

REPORT NUMBER: 821321

REPORT TITLE: M/7 and M/700 .222 caliber
A FOLLOWER - SPRING EVALUATION

MODEL(S): M/700 BDL, M/700 ADL, M-7

GAUGE OR CALIBER: .222 caliber

DATE: 3-4-83

WORK ORDER NO.: G-0196-000

PART NAME: MAGAZINE FOLLOWER (CAST #90951 AND #6 STAMPED NO-BIND)
MAGAZINE SPRING (current production, Pre-1974 design, H&R. Spring)
DESIGNER/ENGINEER: Requested by C.J. Surrent (Lab Specialist - Research Test Lab)

TEST TYPE:

1. PHOTO LAB
2. STRENGTH TEST - NO. OF GUNS TESTED _____
3. FUNCTION TEST - NO. OF GUNS TESTED _____
4. ACCURACY TEST - NO. OF GUNS TESTED _____
5. MEASUREMENTS - TYPE: _____
6. ENVIRONMENTAL TEST
7. AMMUNITION TESTING & EVALUATION - TYPE: _____
8. VISUAL EVALUATION - _____ OUT OF _____ GUN SAMPLE
9. ENDURANCE - NO. OF GUNS TESTED: _____

NO. OF ROUNDS PER GUN: _____

TOTAL ROUNDS FIRED IN TEST: _____

AMMO TYPE: MAGS: _____; TARGET: _____

RIM FIRE _____ CENTER FIRE _____

REMINGTON ARMS COMPANY, INC.

Distribution:

INTER-DEPARTMENTAL CORRESPONDENCE

Remington
COMPANY

PETERS
PETERS

"CONFINE YOUR LETTER TO ONE SUBJECT ONLY" _____

RESEARCH TEST and MEASUREMENT REPORT - Report No. 821321

M/7 and M/700 .222 CALIBER FOLLOWER - SPRING EVALUATION

Prepared by: FRED SUPRY

Date Prepared: _____

Proofread and Cleared By:

J.H. Hennings, / R.E. Nightingale,
Foreman-Test Lab / Foreman-Measurement Lab

Signature Date

C.E. Ritchie,
Sr. Supervisor - Testing,
Meas. & Mech. Analysis Lab

Signature Date

Steve Larson

Lauviers
S1062

Test Procedure

A. Preparation

- The test springs were color coded for ease of identification (refer to Appendix A page 1).
- The Design #6 stamped no-bind followers were identified by electro-engraving a #6 on the underside of each follower.
- Test worksheets were developed by Research personnel and approved by Dr. James Lucas.
- Model 700 BDL rifles and Model 700 ADL .222 caliber rifles, were withdrawn from the warehouse. Model 7 .222 caliber rifles were withdrawn from production.

B. Sequence

- $\frac{1}{3}$ of the overall test was completed and copies of the worksheets were sent to Dr. James Lucas.

REPORT TEXT

Test PROCEDURE

B. Sequence (continued)

- The rifles used in the test were used in groups of twelve. For a sequential listing of rifle type, ammo type and number of rifles used, refer to Appendix A page 2.

- 1) - A rifle was unpacked, and the proper test spring and follower combination was assembled into the rifle by Robert Howe (Lab Assistant - Research Test Lab). The serial number was recorded on the worksheet.

- 2) - The rifle was then placed in a shooting jack and eighteen rounds of ammo were cycled through the rifle, without firing (6 at slow cycle speed, 6 at medium cycle speed, and 6 at fast cycle speed). All malfunctions were recorded.

- 3) - The eighteen rounds were recycled through the rifle at the same cycle speeds with each round being fired. All malfunctions were recorded.

- 4.) - Steps 1 through 3 were repeated until the test was completed.

TEST PROCEDURE

B. SEQUENCE (continued)

- 5.) The function portion of the test was done by J. Baggetta (Technician - Research Test Lab).
- 6.) All test springs and followers were removed from the rifles and placed in separate containers.
- 7.) The rifles were reassembled with their proper springs and followers and returned to production.

REPORT = 821321

A PPENDIX A

SPRING DESIGNS USED IN MODEL 700, MODEL 7 .222
Caliber Follower - Spring Evaluation,

Color Code -	Ref. Dwg. No.	Load
RED	91133 Rev. 2	at .600" = 2 lbs 3 oz 1.000" = 1 lbs 8 oz
YELLOW	91133 current production	at .600" = 4 lbs 4 oz 1.000" = 3 lbs 8 oz
ORANGE	3710 EXP. SPRING	at .600" = 2 lbs 3 oz 1.000" = 1 lbs 8 oz
GREEN	3710 EXP. SPRING	at .600" = 4 lbs 4 oz 1.000" = 3 lbs 8 oz
BLUE	17983 Pre-1974 SPRING	at .600" = 2 lbs 3 oz 1.000" = 1 lbs 8 oz
GOLD	17983 Pre-1974 spring	at .600" = 4 lbs 4 oz 1.000" = 3 lbs 8 oz

All springs except the current production springs were purchased on special order from Connecticut Spring Co..

Sequence of testing - Model 7 & Model 700 follower -
Spring Evaluation

RIFLE TYPE	AMMO TYPE	NUMBER OF RIFLES USED
BDL	A	12
BDL	B	12
ADL	A	12
7/Lwt	B	12
7/Lwt	A	12
ADL	B	12
BDL	A	12
BDL	B	12
BDL	A	12
BDL	B	12
BDL	A	12
BDL	B	12
ADL	A	12
7/Lwt	B	12
7/Lwt	A	12
ADL	B	12
BDL	A	12
BDL	B	12

GUNS

BDL - 96
ADL - 48
M-7 - 48

FOLLOWER & SPRING TEST

. 222 CALIBER

FOLLOWERS	CAT	M.B.	TOTALS	% MAL/GUN
BDL	102 51	105 52	207 103	2.15
ADL	29	44	73	1.52
M-7	89	56	145	3.02
TOTAL →	220 169	205 152	425 321	2.21

SPRINGS	RED	YELLOW	ORANGE	GREEN	BLUE	GOLD	TOTAL	% MAL/GUN
BDL	16 8	21 10	33 17	17 8	54 27	66 33	207 103	2.15
ADL	14	12	4	15	13	15	73	1.52
M-7	8	13	34	53	19	18	145	3.02
TOTAL →	38 30	46 35	71 55	85 76	86 59	99 66	425 321	2.21

AMMUNITION	A	B	TOTALS
BDL	117 58	90 45	207 103
ADL	23	50	73
M-7	74	71	145
TOTAL →	214 155	211 166	425 321
% MAL →	1.12	1.09	2.21

FEEDING ROUND	1	2	3	4	5	TOTALS
TOTAL TEST { SLOW	54	26	15	19	40	154
MEDIUM	32	23	23	32	31	141
FAST	17	18	17	30	48	130
TOTALS →	103	67	55	81	119	425

* / * TOTAL NO.
* * * * * WEIGHTED NO.

AMMUNITION

A = 50 gr. PSP

B = 55 gr metal case

GUNS

BDL - 96

ADL - 48

M-7 - 48

FOLLOWER & SPRING TEST
.222 CALIBER

FEEDING ROUND	1	2	3	4	5	TOTAL
BDL	42/21	26/13	26/13	44/22	69/34	207/103
ADL	5	12	7	23	26	73
M-7	56	29	22	14	24	145
TOTALS →	103/82	67/54	55/42	81/59	119/84	425/321

FEEDING SPEED	1	2	3	4	5	TOTAL
BDL {	20/10	6/3	4/2	8/4	22/11	60/30
	15/7	12/6	12/6	18/9	18/9	75/37
	7/4	8/4	10/5	18/9	29/14	72/36
	42/21	26/13	26/13	44/22	69/34	207/103
SUB TOTAL →	42/21	26/13	26/13	44/22	69/34	207/103
ADL {	4	4	3	8	8	27
	1	5	1	8	8	23
	0	3	3	7	10	23
	5	12	7	23	26	73
SUB TOTAL →	5	12	7	23	26	73
M-7 {	30	16	8	3	10	67
	16	6	10	6	5	43
	10	7	4	5	9	35
	56	29	22	14	24	145
SUB TOTAL →	56	29	22	14	24	145
TOTAL →	103/82	67/54	55/42	81/59	119/84	425/321

CONFIDENTIAL-SUBJECT TO PROTECTIVE ORDER

KINZER V. REMINGTON

R2536571

GUNS

BDL - 96
ADL - 48
M7 - 48

FOLLOWER & SPRING TEST .222 CALIBER

MALFUNCTIONS	F.T.O.	B.O.R.	S.J.M.	SL.	S.R.	S.Lo.	S.H.	TOTALS
BDL	54 27	45 23	5 2	23 12	20 10	43 21	17 8	207 103
ADL	13	18	2	9	17	13	1	73
M7	14	62	20	0	3	44	2	145
TOTALS	81 54	125 103	27 24	32 21	40 30	100 78	20 11	425 321

RANKING	BDL	ADL	M7	POINTS FOR RANKING TOTAL				OVERALL
SPRING	↓	↓	↓	BDL	ADL	M7	↓	RANK
RED	1	4	1	6	3	6	15	1
YELLOW	3	2	2	4	5	5	14	2
ORANGE	4	1	5	3	6	1	11	3
GREEN	2	5	6	5	2	1	8	5
BLUE	5	3	4	2	4	3	9	4
GOLD	6	5	3	1	2	4	7	6

RANKING	BDL	ADL	M7	POINTS FOR RANKING TOTAL				OVERALL
MALFUNCTIONS	↓	↓	↓	BDL	ADL	M7	↓	RANK
FTD	1	3	4	7	5	4	16	2
BOR	2	1	1	6	7	7	20	1
SJM	7	5	3	1	3	5	9	4
SL	4	4	7	4	4	1	9	4
SR	5	2	5	3	6	3	12	3
SLo	3	3	2	5	5	6	16	2
SH	6	6	6	2	2	2	6	5

The Following rifles were used in the
Follower - Spring test returned to production then
withdrawn to be measured, (.222 CALIBER)

MODEL 7

7602652	7602568
7602595	7602525
7602473	7602636
7602470	7602482
7602469	7602529
7602593	

MODEL 700

BDL

BDL

B6257041	B6256163	B6256201
B6293294	B6256507	B6256482
B6257211	B6293064	B6257066
B6327369	B6293053	B6257093
B6257173	B6256269	B6292952
B6327087	B6257234	B6294947
B6295043	B6294940	B6359645
B6293191	B6257240	B6256200
B6359667	B6256832	B6358300
	B6295104	B6359318
	B6361428	B6256211
	B6256522	

3-3-83

M700 SPRING EVALUATION

COLOR CODE:

COLOR IDENT

RED = 1-1 = CURRENT SPRING @ 2 lbs 3 oz @ .600"
1 lb 8 oz @ 1.00"

YELLOW = 1-2 = Current Spring
(From assembly 3-3-83) 4 lbs 4 oz @ .600"
3 lbs 8 oz @ 1.00"

ORANGE = 2-1 = H & R $\left. \begin{smallmatrix} .510 \\ .500 \end{smallmatrix} \right\} \text{WIDTH}$ 2 lbs 3 oz @ .600"
1 lb 8 oz @ 1.00"

(GREEN)
WHITE = 2-2 = H & R $\left. \begin{smallmatrix} .510 \\ .500 \end{smallmatrix} \right\} \text{WIDTH}$ 7 4 lbs 4 oz @ .600"
3 lbs 8 oz @ 1.00"

BLUE = 3-1 = Pre-'74 2 lbs 3 oz @ .600"
1 lb 8 oz @ 1.00"

GOLD = 3-2 = Pre-'74 4 lbs 4 oz @ .600"
3 lbs 8 oz @ 1.00"

Ro-Bind height - OK

CART A

Slow

med

Fast

1 2 3 4 5 C

1 2 3 4 5 6

1 2 3 4 5 6

1-1 cast

1-1 no BIND

3-4-83

M/700 FOLLOWER- SPRING EVALUATION
222 Cal. ONLY

AMMO

A = R 2221 50 gr. PSP

B = R 2224 55gr. Metal case

Rifles were all 222 caliber

- A rifle was unpacked from its shipping carton.
- The proper spring-follower combination was assembled into the rifle.
- The rifle was placed in a shooting jack and live unload and firing sequences were completed.
 - a) Ammo was loaded 5 in mag box 1 in chamber and cycled (live-unload) at slow, repeated at medium & fast speeds.
 - b) The same ammo was loaded and fired at the same cycle speeds.
 - c) All malfunctions were recorded in each phase of the test.
- The rifle was then disassembled and the original components were reassembled into the rifle and the rifle was repacked in its shipping carton.
- This sequence was repeated in the following order: 24 model 700 BDL rifles, 12 model 700 ADL rifles, and 12 model Seven rifles, until test was completed.

I. The following is a legend for the attached data sheets:

- CART. = Cartridge

CART. A = REMINGTON R 222 1, 50 gr. PSP.

CART B = REMINGTON R 222 4, 55 gr. Metal Case.

- SPRING COLORS

RED = ^{REV # 2} CURRENT PRODUCT SPRING - 2 lbs 3 oz @ .600"

1 lbs 8 oz @ 1.00"

YELLOW = CURRENT PRODUCTION SPRING - 4 lbs 4 oz @ .600"

3 lbs 8 oz @ 1.00"

ORANGE = HER ^{.510} } WIDTH - 2 lbs 3 oz @ .600"

1 lbs 8 oz @ 1.00"

GREEN = HER ^{.510} } WIDTH - 4 lbs 4 oz @ .600"

3 lbs 8 oz @ 1.00"

BLUE = Pre - 1974 - 2 lbs 3 oz @ .600"

1 lbs 8 oz @ 1.00"

GOLD = Pre - 1974 - 4 lbs 4 oz @ .600"

3 lbs 8 oz @ 1.00"

- FOLLOWERS

CAST = CURRENT PRODUCTION CAST FOLLOWERS # 90951

N.B. = STAMPED DESIGN # 6 NO-BIND FOLLOWERS

- MALFUNCTIONS

FTD = FOLLOWER TIP DOWN

SL = STEM LEFT

SH = STEM HIGH

BOR = BOLT OVER-RIDE

SR = STEM RIGHT

SJM = SHELL JUMPS MAGAZINE

SLO = STEM LOW

MODEL 700 ADL

C

MODEL 7

○

II

TEST: TOTAL MALFUNCTIONS per round out of magazine DATE: 3-11-83 TESTER: PG: WA#: 821321

MODEL	H CAST C	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
					ROUND No.						ROUND No.						ROUND No.									
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
MODEL 700 BDL	A	RED	1	1	CAST	LIVE																				48 rifles using COAT. A (R2221 50 gr. PSP.) 18 rds live-unload. 18 rds fired thru each rifle.
						FIRE																				
	A	RED	2	1	STAMPED	LIVE																				
						FIRE																				
	A	YELLOW	1	2	CAST	LIVE	1																			
						FIRE	1	1																		
	A	YELLOW	2	2	STAMPED	LIVE																				
						FIRE																				
	A	ORANGE	2	1	CAST	LIVE																				
						FIRE																				
	A	ORANGE	2	1	STAMPED	LIVE			1	2																
						FIRE		1																		
	A	GREEN	2	2	CAST	LIVE																				
						FIRE	1																			
	A	GREEN	2	2	STAMPED	LIVE																				
						FIRE	1																			
	A	BLUE	3	1	CAST	LIVE	1				1															
						FIRE	1			1	1															
	A	BLUE	3	1	STAMPED	LIVE		1		1																
						FIRE			1	1	1															
	A	GOLD	3	2	CAST	LIVE	1			3			2		1	1										
						FIRE	1			1			1		1											
	A	GOLD	3	2	STAMPED	LIVE	3			1			2		1	1										
						FIRE			1				1		1											

10 4 3 5 11 10 6 10 13 7 3 6 7 10 12

FLS.
2-23-63

10 4 3 5 11 10 6 10 13 7 3 6 7 10 12

FLS.
2-23-83

11

TEST: Total Malfunction: 1 out of 48 rounds DATE: 3-11-81 TESTER: PG: WA#: 821321

MODEL	CARTRIDGE	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER											
				ROUND No.						ROUND No.						ROUND No.																		
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6													
MODEL 700 BDL	B	RED 1 1	1 CAST	LIVE	1	1	1	0	1				1				1				1			48 rifles using cart. B (R222 4 55 gr. Metal Case) 18 rds. live-unload 18 rds fired thru each rifle.										
				FIRE	1	1																												
	B	RED 1 1	2 STAMPED	LIVE												1						1												
				FIRE	1																													
	B	YELLOW 1 2	1 CAST	LIVE															2	1														
				FIRE																1		1												
	B	YELLOW 1 2	2 STAMPED	LIVE						1				1								1												
				FIRE																														
	B	ORANGE 2 1	1 CAST	LIVE					1				1				1		1	1														
				FIRE					2				1																					
	B	ORANGE 2 1	2 STAMPED	LIVE		1						1										1												
				FIRE																														
	B	GREEN 2 2	1 CAST	LIVE				1	1			1								1	1													
				FIRE										1								2												
	B	GREEN 2 2	2 STAMPED	LIVE									1																					
				FIRE																														
	B	BLUE 3 1	1 CAST	LIVE	2																	1												
				FIRE									1					1																
	B	BLUE 3 1	2 STAMPED	LIVE				1	1		1			2		1		1	1	1														
				FIRE					1		1	1		2						1	2													
	B	GOLD 3 2	1 CAST	LIVE	1				1					2					1	2														
				FIRE	1			1	3					2		1		1																
	B	GOLD 3 2	2 STAMPED	LIVE	2		1				2	1	1	1		1																		
				FIRE	1						1																							
				10	2	1	3	11			5	6	2	5	11			4	2	3	8	17												

FLS.
2-23-03

10 2 1 3 11 5 6 2 5 11 4 2 3 8 11

F.L.S.
2-23-83

TEST: TOTAL MALFUNCTIONS: 10 OUT OF 100 DATES: 3-1-83 TESTER: PH WA#: 821321

MODEL	CARD	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
					ROUND No.						ROUND No.						ROUND No.								
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
MODEL 700 AXL	A	RED	1	1	1	LIVE																			24 rifles using Cart. A (R2221 50gr. PSP.) 18 rds live un-load 18 rds fired thru each rifle.
					CAST	FIRE																			
	A	RED	1	1	2	LIVE																			
					STAMPED	FIRE																			
	A	YELLOW	1	2	1	LIVE																			
					CAST	FIRE																			
	A	YELLOW	1	2	2	LIVE																			
					STAMPED	FIRE																			
	A	ORANGE	2	1	1	LIVE																			
					CAST	FIRE																			
	A	ORANGE	2	1	2	LIVE	1																		
					STAMPED	FIRE																			
A	GREEN	2	2	1	LIVE																				
				CAST	FIRE																				
A	GREEN	2	2	2	LIVE																				
				STAMPED	FIRE																				
A	BLUE	3	1	1	LIVE																				
				CAST	FIRE																				
A	BLUE	3	1	2	LIVE																				
				STAMPED	FIRE																				
A	GOLD	3	2	1	LIVE																				
				CAST	FIRE																				
A	GOLD	3	2	2	LIVE	1																			
				STAMPED	FIRE																				

1 1 0 2 4 0 1 0 2 3 0 2 3 3 1

U.S. 2-23-83

II

TEST: TOTAL MALFUNCTIONS per round out of magazine

DATE: 3-11-83

TESTER:

PG:

WA #: 821321

MODEL	CART.	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
					ROUND No.						ROUND No.						ROUND No.								
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
MODEL 700 ADL	B	RED	1	LIVE																					24 rifles using cart. B (R222 4 55 gr. metal case) 18 rds. live un-load 18 rds. fired thru each rifle.
		1	1	CAST FIRE																					
	B	RED	2	LIVE																					
		1	1	STAMPED FIRE																					
	B	RED	1	LIVE																					
		1	1	CAST FIRE																					
	B	YELLOW	1	LIVE																					
		1	2	CAST FIRE																					
	B	YELLOW	2	LIVE																					
		1	2	STAMPED FIRE																					
	B	ORANGE	1	LIVE																					
		2	1	CAST FIRE																					
	B	ORANGE	2	LIVE																					
		2	1	STAMPED FIRE																					
	B	GREEN	1	LIVE																					
		2	2	CAST FIRE																					
B	GREEN	2	LIVE																						
	2	2	STAMPED FIRE																						
B	BLUE	1	LIVE																						
	3	1	CAST FIRE																						
B	BLUE	2	LIVE																						
	3	1	STAMPED FIRE																						
B	GOLD	1	LIVE																						
	3	2	CAST FIRE																						
B	GOLD	2	LIVE																						
	3	2	STAMPED FIRE																						

FILED
2-23-04

F.L.S.
2-23-83

II

TEST: Total malfunctions per round out of magazine

DATE: 8-11-82

TESTER: PG

WA #: 821321

MODEL	F. CARTRIDGE	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
					ROUND No.						ROUND No.						ROUND No.								
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
MODEL 7 LWT.	A	RED	1	1	CAST	LIVE				2															24 rifles using CART. A (R222 1 50gr. PSP.) 18 rds live-unload 18 rds fired thru each rifle.
					FIRE				1																
	A	RED	2	1	STAMPED	LIVE																			
					FIRE																				
	A	YELLOW	1	2	CAST	LIVE	1							1								1			
					FIRE			1				1													
	A	YELLOW	2	2	STAMPED	LIVE		1																	
					FIRE																				
	A	ORANGE	1	1	CAST	LIVE	2	1			2						1								
					FIRE		1					1							1	1	1				
	A	ORANGE	2	1	STAMPED	LIVE	2	1			2	1					2	2							
					FIRE		1																		
A	GREEN	1	2	CAST	LIVE	1	1	1	1	1			1	1	2		1	1	1						
				FIRE			1				1	1	1	1	1		1	1							
A	GREEN	2	2	STAMPED	LIVE	2	1			1															
				FIRE		1																			
A	BLUE	1	1	CAST	LIVE	1																			
				FIRE		1	1			1												1			
A	BLUE	2	1	STAMPED	LIVE																	1			
				FIRE			1		1			1				1									
A	GOLD	1	2	CAST	LIVE																	1			
				FIRE								1													
A	GOLD	2	2	STAMPED	LIVE	1				1															
				FIRE																					

18 7 4 1 6 8 3 5 2 4 3 5 3 2 5

FLS.
2-23-83

RHS.
2-23-83

TEST: Total Malfunctions per round out of magazine DATE: 3-11-83 TESTER: _____ pg: _____ WR#: 821321

MODEL	CASE	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
					ROUND No.						ROUND No.						ROUND No.									
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
MODEL 7 LWT.	B	RED	1	1	CAST	LIVE																				24 rifles using cart. B (R2224 55 gr. Metal Case) 18 rds live - unload 18 rds fired thru each rifle.
						FIRE	1							1		1										
	B	RED	1	1	STAMPED	LIVE																				
						FIRE																				
	B	YELLOW	1	2	CAST	LIVE	1							1												
						FIRE	1																			
	B	YELLOW	1	2	STAMPED	LIVE																				
						FIRE								1									1			
	B	ORANGE	2	1	CAST	LIVE	1															1				
						FIRE																				
	B	ORANGE	2	1	STAMPED	LIVE	2	1	1					1	1						1					
						FIRE																				
B	GREEN	2	2	CAST	LIVE	2	1						1									1	2			
					FIRE	1	2	1							1	1						1	1			
B	GREEN	2	2	STAMPED	LIVE	2	2						1							1	1					
					FIRE			1						1	1											
B	BLUE	3	1	CAST	LIVE	1								1						1						
					FIRE											1										
B	BLUE	3	1	STAMPED	LIVE										1								1			
					FIRE												1	1								
B	GOLD	3	2	CAST	LIVE			1						1						1	1					
					FIRE	2		2						1		1				2						
B	GOLD	3	2	STAMPED	LIVE	1																				
					FIRE										1											

15 9 4 2 4 8 3 5 4 1 7 2 1 3 4

FLS
2-23-83

F.L.S.
2-23-6

APPENDIX

B

DATA SHEETS

[illegible]

SEE 652454 FOR BUNK.

THIS DRAWING OR INFORMATION IS
PROPRIETARY INFORMATION TO THE
REMINGTON ARMS COMPANY, D.C.

RECOMMENDED MATERIAL AND HEAT TREAT
MATERIAL SEE C52484
HEAT TREAT CYANIDE
HARDNESS _____
COLOR NICREL PLATE (COOL)
HEAT TREAT AND COLOR TO BE DONE BY
REMINGTON 9624 1/2/48

A-92455

ALTERATION

ALF.

100

m/7 may follow

308

92454

m/7
M700 Mag Follower & Spring Comb. Eval.

Test set up by J. Lucas was for

192 rifles of each	
M/700 - ADL	222
M/700 - BDL	222
M/7 -	222

However because M/700 ADL is
not available - some ^{new} BDL'S could be
used.

Model 700 ADL'S will be produced
in November (1st part of month)

Warehouse has model 7 in
stock.

I. The following is a legend for the attached data sheets:

• CART. = Cartridge

CART. A = REMINGTON R 222 1, 50 gr. PSP.

CART B = REMINGTON R 222 4, 55 gr. Metal Case.

• SPRING COLORS

RED = CURRENT PRODUCT SPRING - 2 lbs 3 oz @ .600"

1 lbs 8 oz @ 1.00"

YELLOW = CURRENT PRODUCTION SPRING - 4 lbs 4 oz @ .600"

3 lbs 8 oz @ 1.00"

ORANGE = H&R $\left. \begin{smallmatrix} .510 \\ .500 \end{smallmatrix} \right\}$ WIDTH - 2 lbs 3 oz @ .600"

1 lbs 8 oz @ 1.00"

GREEN = H&R $\left. \begin{smallmatrix} .510 \\ .500 \end{smallmatrix} \right\}$ WIDTH - 4 lbs 4 oz @ .600"

3 lbs 8 oz @ 1.00"

BLUE = Pre - 1974 - 2 lbs 3 oz @ .600"

1 lbs 8 oz @ 1.00"

GOLD = Pre - 1974 - 4 lbs 4 oz @ .600"

3 lbs 8 oz @ 1.00"

• FOLLOWERS

CAST = CURRENT PRODUCTION CAST FOLLOWERS

N.B. = STAMPED DESIGN # 6 NO-BIND FOLLOWERS

• MALFUNCTIONS

FTD = FOLLOWER TIP DOWN

SL = STEM LEFT

SH = STEM HIGH

BOR = BOLT OVER-RIDE

SR = STEM RIGHT

SJM = SHELL JUMPS MAGAZINE

SLO = STEM LOW

<u>CAST</u>	<u>AB</u>
101	105
30	44
<u>86</u>	<u>59</u>
217	208

Bullet ~~weight~~ Type

Red — 40

A - 117 -

~~yellow~~ 46

B - 89 -

CRAN - 71

GREENS - 85

Blue - 86

Gold - 97

	Rounds					
		1	2	3	4	5
SLow	154	55	26	15	19	39
medium	141	32	23	23	32	31
FAST	130	17	78	17	30	48
	425	104	67	55	81	118

RD 6606

CC: S. DARLING

TO: W. STEVENS

ILION RESEARCH DIVISION

FIREARMS WITHDRAWAL ~~CONFIDENTIAL~~

DATE 9/19/83

LETTER NO. 2063

QUANTITY 150

MODEL SEVEN

CAL/GA. .222

WORK ORDER G-0196-000

RAMAC 04780

SERIAL NOS.

SEE ATTACHED LISTING

REMARKS:

Spring Follower Test

CPB Shkman
Approved

FSupry:js

762 2158	762 1916	762 2287	762 2305
762 2884	762 3091	762 2248	762 2265
762 2477	762 2939	762 1861	762 2307
762 1843	762 3162	762 2534	762 1820
762 2931	762 2851	762 2842	762 2498

762 2314	762 2438	762 2213	762 2151
762 2279	762 2193	762 3111	762 2504
762 1959	762 1788	761 4145	762 2255
762 1404	762 2930	762 2397	762 2356
762 2228	762 2244	762 1851	762 2194

762 1795	762 2313	762 2424	762 2296
762 1855	762 2450	762 2188	762 2162
762 2442	762 2196	762 2416	761 3087
762 2334	762 2198	762 2340	762 2350
762 2293	761 5707	762 2138	762 2565

762 3140	762 3083
762 2981	761 4213
762 1830	762 1472
762 2191	761 5497
762 2394	762 1784

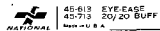
MODEL 7 222 CAL RAMAC 4780

762 2337	761 2292	761 5625	762 2374
762 1777	761 3935	761 5434	762 1937
762 2868	761 2524	762 1468	762 1782
762 3080	761 2238	762 1632	762 1897
762 2832	761 2172	762 1652	762 2465

762 2173	761 4249	762 2281	762 2552
762 2458	761 3350	762 2849	762 2976
762 2444	761 4132	762 1571	762 3144
762 1856	761 4433	762 2187	762 2986
762 3148	761 4467	762 2894	762 2153

761 2201	761 2670	761 5568	762 2454
761 3549	761 2347	761 5543	762 2372
761 3143	761 2129	761 5478	761 1539
761 1976	761 2619	761 4260	761 1534
761 3097	761 2871	761 4485	761 1589

761 5550	762 2415	762 2171	762 2389
761 4484	762 2152	762 2974	762 2309
761 4464	762 2222	762 2961	762 2361
761 4222	762 2892	762 1945	762 2319
761 4083	762 2905	762 1647	762 1889



MODEL 7 LWT.

RESULTS OF 48 RIFLES TESTED
MODEL 700 FOLLOWER-SPRING

821321

3-11-83

EVALUATION

	CART.	SPRING	FOLLOWER	1		2		3		4		5	
				F.T.D.		BOR		SJM		SL		SR	
				LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE
1													
2	A	RED	CAST	0	0	1	1	0	0	0	0	0	0
3	A	RED	N.B.	0	0	0	0	0	0	0	0	0	0
4	B	RED	CAST	1	0	1	0	0	0	0	0	0	0
5	B	RED	N.B.	0	0	0	0	0	0	0	0	0	0
6													
7	A	YELLOW	CAST	1	0	2	0	0	0	0	0	0	1
8	A	YELLOW	N.B.	0	0	0	0	0	0	0	0	0	0
9	B	YELLOW	CAST	0	0	0	0	2	0	0	0	0	0
10	B	YELLOW	N.B.	0	0	1	0	0	1	0	0	0	0
11													
12	A	ORANGE	CAST	0	4	4	1	2	0	0	0	0	0
13	A	ORANGE	N.B.	1	0	8	2	0	0	0	0	0	0
14	B	ORANGE	CAST	0	1	0	0	0	0	0	0	0	0
15	B	ORANGE	N.B.	0	0	6	0	0	0	0	0	0	0
16													
17	A	GREEN	CAST	0	1	4	3	0	0	0	0	0	0
18	A	GREEN	N.B.	0	0	4	1	0	0	0	0	0	0
19	B	GREEN	CAST	0	0	7	5	0	0	0	0	0	0
20	B	GREEN	N.B.	0	0	8	1	0	0	0	0	0	0
21													
22	A	BLUE	CAST	0	0	0	0	1	3	0	0	0	0
23	A	BLUE	N.B.	1	0	0	0	0	0	0	0	0	1
24	B	BLUE	CAST	0	0	0	0	1	0	0	0	0	0
25	B	BLUE	N.B.	1	1	0	0	0	0	0	0	0	0
26													
27	A	GOLD	CAST	0	0	0	0	0	1	0	0	0	0
28	A	GOLD	N.B.	0	0	2	0	0	0	0	0	0	0
29	B	GOLD	CAST	0	0	0	0	2	6	0	0	0	1
30	B	GOLD	N.B.	0	0	0	0	0	0	0	0	0	0
31													
32													
33													
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36													
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	6		7		8		9		10		11		12		13	
	S Lo		SH		TOTAL		TOTAL		TOTAL							
	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	CAST	N.B.	LIVE	FIRE	MALEFUNCTIONS	MALEFUNCTIONS				
1	1	0	0	0	2	1	8	0								
2	0	0	0	0	0	0										
3	0	3	0	0	2	3										
4	0	0	0	0	0	0										
5																
6																
7	0	1	0	0	3	2	8	5								
8	1	0	0	0	1	0										
9	0	1	0	0	2	1										
10	1	1	0	0	2	2										
11																
12	0	0	0	0	6	5	13	21								
13	2	1	0	0	11	3										
14	1	0	0	0	2	0										
15	1	0	0	0	7	0										
16																
17	8	4	0	0	12	9	38	15								
18	0	0	0	0	4	1										
19	2	2	0	0	8	8										
20	1	0	0	0	9	1										
21																
22	0	1	0	0	1	4	9	10								
23	0	3	0	0	1	4										
24	1	1	0	0	3	1										
25	1	2	0	1	2	3										
26																
27	1	0	0	0	1	1	13	5								
28	0	0	0	0	2	0										
29	1	1	0	0	3	8										
30	2	0	0	1	2	1										
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45-613 EYE-SE
45-713 20/20 BUFF
MAY-70 3 1

MODEL 700 BDL

RESULTS OF 96 RIFLES TESTED

821321

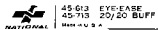
MODEL 700 FOLLOWER - SPRING

EVALUATION

3-11-83

CART.	SPRING	FOLLOWER	1		2		3		4		5	
			LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE
A	RED	CAST	0	0	1	0	0	0	0	0	1	0
A	RED	N.B.	0	3	0	2	0	0	0	0	0	0
B	RED	CAST	0	0	0	1	0	0	1	0	1	1
B	RED	N.B.	0	0	0	3	0	0	0	0	0	0
A	YELLOW	CAST	1	1	1	0	0	1	0	0	0	2
A	YELLOW	N.B.	2	0	0	0	0	0	1	1	1	0
B	YELLOW	CAST	1	0	0	0	0	0	1	1	1	0
B	YELLOW	N.B.	0	0	0	0	0	0	0	0	0	1
A	ORANGE	CAST	0	0	0	0	0	0	1	3	1	0
A	ORANGE	N.B.	1	0	0	0	0	1	3	1	1	0
B	ORANGE	CAST	0	2	0	0	0	0	0	0	1	0
B	ORANGE	N.B.	1	0	0	0	0	0	0	0	2	0
A	GREEN	CAST	0	0	4	1	0	0	0	0	0	0
A	GREEN	N.B.	0	0	0	1	0	0	0	0	0	0
B	GREEN	CAST	0	1	2	0	0	0	0	2	0	0
B	GREEN	N.B.	0	0	0	0	0	0	0	0	0	0
A	BLUE	CAST	1	4	2	0	1	0	0	0	1	1
A	BLUE	N.B.	5	6	0	0	0	0	1	0	1	0
B	BLUE	CAST	0	0	0	0	0	0	0	0	0	0
B	BLUE	N.B.	0	6	8	3	0	0	0	0	0	0
A	GOLD	CAST	5	2	4	1	0	0	1	1	0	2
A	GOLD	N.B.	4	1	4	1	1	0	1	1	0	0
B	GOLD	CAST	4	3	0	0	0	1	0	2	0	0
B	GOLD	N.B.	0	0	5	1	0	0	2	0	1	1

6		7		8		9		10		11		12		13	
SLO		SH		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE
0	0	0	0	2	0	8	8								
0	0	0	0	0	5										
2	0	0	0	4	2										
0	0	0	0	0	3										
1	0	0	0	3	4	12	9								
0	0	1	0	5	1										
1	1	0	0	3	2										
0	2	0	0	0	3										
0	0	0	1	2	4	14	19								
3	2	4	0	12	4										
0	0	4	1	5	3										
0	0	0	0	3	0										
0	2	0	0	4	3	15	2								
0	0	0	0	0	1										
3	0	0	0	5	3										
0	0	0	1	0	1										
0	0	0	1	5	6	16	38								
2	3	2	0	11	9										
2	2	1	0	3	2										
1	0	0	0	9	9										
3	0	0	0	13	6	30	29								
1	2	1	0	12	5										
3	5	0	0	7	11										
1	1	0	0	9	3										
						102	105								



MODEL 700 ADL

RESULTS OF 48 RIFLES TESTED
MODEL 700 FOLLOWER - SPRING EVALUATION

821321

3-11-83

CART	SPRING	FOLLOWER	1		2		3		4		5		6		7		8		9		10		11		12		13	
			LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	LIVE	FIRE	TOTAL	CAST	TOTAL	N.B.						
A	RED	CAST	2	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	4		10							
A	RED	N.B.	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2									
B	RED	CAST	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0									
B	RED	N.B.	0	0	0	2	0	0	2	0	0	1	2	0	0	0	3	5										
A	YELLOW	CAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		7		5					
A	YELLOW	N.B.	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2									
B	YELLOW	CAST	0	0	2	0	0	0	0	0	1	2	1	0	0	0	4	3										
B	YELLOW	N.B.	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0										
A	ORANGE	CAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0		4					
A	ORANGE	N.B.	1	0	1	0	0	0	0	0	0	0	1	1	0	0	3	1										
B	ORANGE	CAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
B	ORANGE	N.B.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
A	GREEN	CAST	0	1	1	0	0	0	1	0	0	0	0	0	0	0	2	1		5		10						
A	GREEN	N.B.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0										
B	GREEN	CAST	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0										
B	GREEN	N.B.	0	0	5	2	0	0	0	0	0	1	0	1	0	0	5	4										
A	BLUE	CAST	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	3		8		5						
A	BLUE	N.B.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1										
B	BLUE	CAST	1	0	0	0	2	0	0	0	0	0	1	0	0	0	5	0										
B	BLUE	N.B.	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0										
A	GOLD	CAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		5		10						
A	GOLD	N.B.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0										
B	GOLD	CAST	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	3										
B	GOLD	N.B.	0	0	0	0	0	0	0	0	0	0	2	1	0	0	4	4										
																				28		44						

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$$\begin{array}{r} \text{B} \\ 96 \\ \underline{24} \\ 120 \\ \underline{12} \end{array}$$

A/48

$$\begin{array}{r} 120 \\ 24 \overline{) 96} \\ \underline{48} \\ 48 \\ \underline{48} \\ 0 \end{array}$$
$$\begin{array}{r} 7 \\ \hline 48 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ \hline 120 \\ 12 \\ \hline 132 \\ 36 \\ \hline 168 \end{array}$$

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$$\begin{array}{r} 44 \\ 268 \overline{) 11872} \\ \underline{1040} \\ 1472 \\ \underline{1352} \\ 1200 \\ \underline{1180} \\ 20 \end{array}$$

27/09/2017

$$\begin{array}{r} 7 \\ 2 \overline{) 14} \\ \underline{14} \\ 0 \end{array}$$

$$\begin{array}{r} 360 \\ 72 \overline{) 2592} \\ \underline{216} \\ 432 \\ \underline{432} \\ 0 \end{array}$$

$$\begin{array}{r} 144 \\ 12 \overline{) 1728} \\ \underline{120} \\ 528 \\ \underline{528} \\ 0 \end{array}$$

Handwritten scribbles and symbols.

1966



Jan. 11, 1984

To: Steve Larson
From: Fred Supry

I am forwarding to you a complete copy of the worksheets from the follower-spring evaluation. As you may recall the original test designed by Dr. James Lucas called for a total of 576 rifles to be used in the evaluation. However, since Remington is no longer going to produce the Model 700 ADL .222 caliber rifle, the evaluation was completed using only 432 rifles.

The complete copy contains 36 data sheets and a legend for the worksheets. We will be anxiously awaiting your completed analysis.

Copy

11

TEST: M700 FOLLOWER SPRING EVALUATION

DATE: 3-1-83

TESTER: J.B. BH

PG: 1

WA#: 821321

LOAD	CART	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
					ROUND No.						ROUND No.						ROUND No.								
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
700 BDL	A	RED	1	COST LIVE																		1	B6256163	To get 5 rounds in mag great care had to be taken.	
			1	FIRE																					
	A	RED	2	COST LIVE																		2	B6257254		
			1	STAMPED FIRE																					
	A	YELLOW	1	COST LIVE																		3	B6256180		
			1	FIRE																					
	A	YELLOW	2	COST LIVE																		4	B6293115		
			1	STAMPED FIRE																					
	A	ORANGE	1	COST LIVE																		5	B6257236		
			2	FIRE																					
	A	ORANGE	2	COST LIVE																		6	B6256201		
			1	STAMPED FIRE																					
A	GREEN	1	COST LIVE																		7	B6256794			
		2	FIRE																						
A	GREEN	2	COST LIVE																		8	B6256269			
		2	STAMPED FIRE																						
A	BLUE	1	COST LIVE																		9	B6256851			
		3	FIRE																						
A	BLUE	2	COST LIVE																		10	B6256832			
		3	STAMPED FIRE																						
A	GOLD	1	COST LIVE																		11	B6256200			
		3	FIRE																						
A	GOLD	2	COST LIVE																		12	B6256202			
		3	STAMPED FIRE																						

11

TEST: M/700 FOLLOWER SPRING EVALUATION				DATE: 3-4-83																		TESTER: JS FS BH		PG: 2 WR#: 821321	
700	CART	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
				ROUND No.						ROUND No.						ROUND No.									
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
B	RED	1	1	LIVE																13	8625111				
			2	FIRE																					
B	RED	1	1	LIVE																14	86293233				
			2	FIRE																					
B	YELLOW	1	1	LIVE																15	86257073				
			2	FIRE																					
B	YELLOW	1	1	LIVE																16	86359955				
			2	FIRE																					
B	ORANGE	2	1	LIVE																17	86361126				
			2	FIRE																					
B	ORANGE	2	1	LIVE																18	86256186				
			2	FIRE																					
B	GREEN	2	1	LIVE																19	86256819				
			2	FIRE																					
B	GREEN	2	1	LIVE																20	86292952				
			2	FIRE																					
B	BLUE	3	1	LIVE																21	86257052				
			2	FIRE																					
B	BLUE	3	1	LIVE																22	86293061	HAD SEVERAL FAIL TO EXTRACT DURING SHOOTING			
			2	FIRE																					
B	GOLD	3	1	LIVE																23	86256289				
			2	FIRE																					
B	GOLD	3	1	LIVE																24	86256444				
			2	FIRE																					

TEST: MODEL 700 FOLLOWER SPRING EVALUATION

DATE: 3-4-83

TESTER: AS B.H PG: 3 WA #: 821321

[illegible]

F.L.S.
2-23-01

m/2 LWT

II

TEST: Model Seven Followed Spring Combination

DATE: 1-28-80 TESTER: J.B. P.S. BH PG. 1 WA# 1821321

GUN No.	SERIAL NUMBER	SLOW						MEDIUM						FAST							
		ROUND No.						ROUND No.						ROUND No.							
		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
B	RED	1	LIVE	CAST	BOR	FTD														37	7602493
B	RED	1	LIVE	STAMPED																38	7602508
B	YELLOW	1	LIVE	CAST																39	7602597
B	YELLOW	1	LIVE	STAMPED																40	7602651
B	ORANGE	1	LIVE	CAST	BOR															41	7602524
B	ORANGE	2	LIVE	STAMPED																42	7602663
B	GREEN	2	LIVE	CAST	SLO BOR															43	7602482
B	GREEN	2	LIVE	STAMPED	SLO BOR															44	7602551
B	BLUE	3	LIVE	CAST	SLO	FTD														45	7602541
B	BLUE	3	LIVE	STAMPED																46	7602605
B	GOLD	3	LIVE	CAST	SLO															47	7602590
B	GOLD	3	LIVE	STAMPED																48	7602536

FLS. 2-23-83

11 M/2 LWT

TEST: M700 Follower Spring Evaluation DATE: 3-7-83 TESTER: FS BH PG: 5 WH# 821327

F (T)	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
			ROUND No.						ROUND No.						ROUND No.							
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
A	RED 1 1	1 CAST LIVE FIRE					SLO														49	7602625
A	RED 1 1	2 STAMPED LIVE FIRE																			50	7602652
A	YELLOW 1 2	1 CAST LIVE FIRE				SR				SLO											51	7602517
A	YELLOW 1 2	2 STAMPED LIVE FIRE			SLO																52	7602473
A	ORANGE 2 1	1 CAST LIVE FIRE	BOR						BOR												53	7602644
A	ORANGE 2 1	2 STAMPED LIVE FIRE	BOR SLO						SLO					SLO BOR							54	7602653
A	GREEN 2 2	1 CAST LIVE FIRE				ST							SLO BOR								55	7602469
A	GREEN 2 2	2 STAMPED LIVE FIRE	BOR BOR																		56	7602492
A	BLUE 3 1	1 CAST LIVE FIRE	SSM							SSM											57	7602591
A	BLUE 3 1	2 STAMPED LIVE FIRE		SL		SL			SL					SK							58	7602564
A	GOLD 3 2	1 CAST LIVE FIRE														SLO					59	7602629
A	GOLD 3 2	2 STAMPED LIVE FIRE																			60	7602666

MODEL "1" LWT

FLS.
2-23-83

II

TEST: M/700

Follower- Spring evaluation

DATE 3-7-83

TESTER ^{JD}FS BH

PG 7

WR# 821321

MODEL	CASE	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND No.						ROUND No.						ROUND No.							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
M 700 BOL	A	RED	1	LIVE																			73	B6256507
		1	1	FIRE																				
	A	RED	2	LIVE																			74	B6327195
		1	1	STAMPED FIRE										BOR						BOR				
	A	YELLOW	1	LIVE																			75	B6361271
		1	2	CAST FIRE SSM																				
	A	YELLOW	2	LIVE									SR		FTD			SH		FTD			76	B6359195
		1	2	STAMPED FIRE																				
	A	ORANGE	1	LIVE																			77	B6293063
		2	1	CAST FIRE																				
	A	ORANGE	2	LIVE										SL				SL					78	B6256482
		2	1	STAMPED FIRE			SL					SSM												
	A	GREEN	1	LIVE																			79	B6256571
		2	2	CAST FIRE																				
	A	GREEN	2	LIVE																			80	B6257234
		2	2	STAMPED FIRE																				
	A	BLUE	1	LIVE						FTD								SSM					81	B6256462
		3	1	CAST FIRE											SK									
	A	BLUE	2	LIVE																SH			82	B6295104
		3	1	STAMPED FIRE																				
	A	GOLD	1	LIVE								BOR						BOR					83	B6358300
		3	2	CAST FIRE									SR		SR									
	A	GOLD	2	LIVE								BOR											84	B6256221
		3	2	STAMPED FIRE																				

FLS.
2-23-83

II

TEST: M/700 FOLLOWER-SPRING EVALUATION

DATE: 3-7-83

TESTER: FS BH

PG. 8

WA# 821321

MODEL	CASE	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
				ROUND No.						ROUND No.						ROUND No.									
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
MODEL 700 BDL	B	RED	1 LIVE																						
	B	1 1	FIRE	SR																			85	B6257054	
	B	RED	2 LIVE																						
	B	1 1	FIRE																				86	B6257227	
	B	YELLOW	1 LIVE																						
	B	1 2	FIRE														SL		SL				87	B6360026	
	B	YELLOW	2 LIVE																						
	B	1 2	FIRE										SR										88	B6257136	
	B	ORANGE	1 LIVE																						
	B	2 1	FIRE																				89	B6293022	
	B	ORANGE	2 LIVE	SR							SR										FID			90	B6257218
	B	2 1	FIRE																						
	B	GREEN	1 LIVE																						
	B	2 2	FIRE																				91	B6257149	
	B	GREEN	2 LIVE																						
	B	2 2	FIRE																				92	B6294947	
	B	BLUE	1 LIVE	SL																					
	B	3 1	FIRE																				93	B6256165	
	B	BLUE	2 LIVE								SL														
	B	3 1	FIRE																				94	B6256555	
	B	GOLD	1 LIVE	SL																	SL				
	B	3 2	FIRE	SL			SL								SL						SL			95	B6359134
	B	GOLD	2 LIVE	SL	SL						SL	SL													
	B	3 2	FIRE																				96	B6256307	

FLS.
2-23-83

FLS.
2-23-83

II

TEST: M/700 FOLLOWER-SPRING EVALUATION

DATE: 3-8-83 TESTER: AS BH PG: 11 WR# 82132

MODEL	FACTOR	SPRING		FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		SPRING	WEIGHT		ROUND No.						ROUND No.						ROUND No.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
700 ADV	A	RED	1	LIVE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

II

TEST: FOLLOWER-SPRING					m/700		DATE: 3-8-83 TESTER: FS BN PG 10 WR# 821321																	
MODEL	F.C.C.	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND		No.				ROUND		No.				ROUND		No.					
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
		RED		1 LIVE									SCO											
B		1	1	CAST FIRE																			109	B6257094
		RED		2 LIVE																				
B		1	1	STAMPED FIRE																			110	B6257220
		YELLOW		1 LIVE																SCO	FTD			
B		1	2	CAST FIRE																			111	B6257112
		YELLOW		2 LIVE																				
B		1	2	STAMPED FIRE																			112	B6293339
		ORANGE		1 LIVE																				
B		2	1	CAST FIRE						FTD						FTD							113	B6257071
		ORANGE		2 LIVE																				
B		2	1	STAMPED FIRE																			114	B6256257
		GREEN		1 LIVE						BOR				BOR							SCO			
B		2	2	CAST FIRE																		FTD	115	B6359665
		GREEN		2 LIVE																				
B		2	2	STAMPED FIRE																			116	B6256553
		BLUE		1 LIVE																				
B		3	1	CAST FIRE																			117	B6256566
		BLUE		2 LIVE																				
B		3	1	STAMPED FIRE																			118	B6357778
		GOLD		1 LIVE																	SCO	FTD		
B		3	2	CAST FIRE						FTD FTD						FTD					SCO		119	B6257129
		GOLD		2 LIVE																				
B		3	2	STAMPED FIRE						BOR				BOR									120	B6293121

II

TEST: M/700 Follower Spring

DATE: 3-8-83 TESTER: FS BH PG: 9 WA#: 821321

700 BDL

CAST	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
			ROUND No.						ROUND No.						ROUND No.							
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
A	RED 1	1 LIVE																			97	B6293064
A	RED 1	2 LIVE																			98	B6256892
A	YELLOW 1	1 LIVE																			99	B6257213
A	YELLOW 1	2 LIVE							SL												100	B6256521
A	ORANGE 2	1 LIVE							SL												101	B6256844
A	ORANGE 2	2 LIVE			SLO	SLO			SH		SH			SH		SH	SLO			102	B6257066	
A	GREEN 2	1 LIVE																		103	B6256485	
A	GREEN 2	2 LIVE																		104	B6294940	
A	BLUE 3	1 LIVE	BOR						BOR											105	B6256807	
A	BLUE 3	2 LIVE			FTD						FTD					FTD				106	B6361428	
A	GOLD 3	1 LIVE			FTD						FTD							FTD		107	B6359318	
A	GOLD 3	2 LIVE	BOR		FTD						FTD	FTD						FTD		108	B6257087	

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II m/7 LWT

TEST: m/700 Follower Spring Evaluation

DATE: 3-8-83

TESTER: FS BH PG 12 WA#: 821321

1 2 3 4 5 6	F C C A S T	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
				ROUND No.						ROUND No.						ROUND No.							
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
	B	RED	1 CAST	LIVE																		133	7602600
	B	RED	2 STAMPED	LIVE						SLO												134	7602625
	B	YELLOW	1 CAST	LIVE	SIM					SIM												135	7602666
	B	YELLOW	2 STAMPED	LIVE				BoP											SLO			136	7602666
	B	ORANGE	1 CAST	LIVE																		137	7602646
	B	ORANGE	2 STAMPED	LIVE	BoP	BoP	BoP			BoP	BoP				BoP							138	7602656
	B	GREEN	1 CAST	LIVE	BoP		BoP					BoP					BoP	BoP				139	7602529
	B	GREEN	2 STAMPED	LIVE	BoP	BoP	BoP			BoP	BoP				BoP	BoP						140	7602621
	B	BLUE	1 CAST	LIVE											SIM							141	7602635
	B	BLUE	2 STAMPED	LIVE								SLO										142	7602481
	B	GOLD	1 CAST	LIVE																		143	7602620
	B	GOLD	2 STAMPED	LIVE	SLO							SLO			SIM							144	7602504

10/7 LWT.

FLS.
2-23-83

m/7 LWT

m/2 LWT

TEST: M/700

FOLLOWER - SPRING EVALUATION

DATE 3-9-83

TESTER: FS BH

PG: 13

WA#: 821321

MODEL SEVEN / LWT

Y
C
S
E
L

F O L L O W E R	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST					
				ROUND No.						ROUND No.						ROUND No.					
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
A	RED	1	1	LIVE				BoR													
		1	1	FIRE				BoR													
A	RED	1	1	LIVE																	
		1	1	FIRE																	
A	YELLOW	1	2	LIVE	BoR								BoR						FTD		
		1	2	FIRE																	
A	YELLOW	1	2	LIVE																	
		1	2	FIRE																	
A	ORANGE	2	1	LIVE	BoR	BoR				SSM						SSM					
		2	1	FIRE								FTD						FTD	FTD	FTD	
A	ORANGE	2	1	LIVE	BoR	BoR			FTD	BoR	BoR					BoR	BoR				
		2	1	FIRE	BoR	BoR															
A	GREEN	2	2	LIVE	BoR	SCD	SCD	SCD				SCD	SCD	BoR				SCD	SCD		
		2	2	FIRE		SCD	SCD			SSM	SCD	SCD		FTD		BoR	BoR				
A	GREEN	2	2	LIVE	BoR	BoR				BoR											
		2	2	FIRE																	
A	BLUE	3	1	LIVE																	
		3	1	FIRE	SSM	SSM													SCD		
A	BLUE	3	1	LIVE																FTD	
		3	1	FIRE																	
A	GOLD	3	2	LIVE																	
		3	2	FIRE								SSM									
A	GOLD	3	2	LIVE	BoR					BoR											
		3	2	FIRE																	

GUN No.	SERIAL NUMBER
145	7602474
146	7602575
147	7602581
148	7602470
149	7602510
150	7602636
151	7602593
152	7602557
153	7602635
154	7602617
155	7602631
156	7602620

FLS.
2-23-83

II

TEST: MODEL 700 FOLLOWER-SPRING EVALUATION										DATE: 3-9-83										TESTER: JB FS BH		PG 14 WA# 821321		
MODEL	F. CASE	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND No.						ROUND No.						ROUND No.							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
MODEL 700 ADL	B	RED	1	1	1	LIVE																	157	B6293743
						FIRE						BOR												
	B	RED	2	1	2	LIVE																	158	B6294880
						STAMPED																		
						FIRE																		
	B	RED	1	2	1	LIVE																	159	B6256506
						CAST																		
						FIRE																		
	B	RED	2	2	2	LIVE																	160	B6295098
						STAMPED																		
						FIRE																		
	B	RED	1	1	1	LIVE																		161
					CAST																			
					FIRE																			
B	RED	2	1	2	LIVE																		162	B6359146
					STAMPED																			
					FIRE																			
B	RED	1	2	2	LIVE																		163	B6257178
					CAST																			
					FIRE																			
B	RED	2	2	2	LIVE																		164	B6257173
					STAMPED																			
					FIRE																			
B	RED	3	1	3	LIVE																		165	B6359141
					CAST																			
					FIRE																			
B	RED	2	1	3	LIVE																		166	B6293410
					STAMPED																			
					FIRE																			
B	RED	1	2	3	LIVE																		167	B6293075
					CAST																			
					FIRE																			
B	RED	2	2	3	LIVE																		168	B6359667
					STAMPED																			
					FIRE																			

FLS. 2-23-83

II

TEST: M/700		FOLLOWER - SPRING		EVALUATION																		DATE: 3-9-83		TESTER: JB FS BH PG: 15		WR #: 821321				
MODEL	PART	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER							
				ROUND No.						ROUND No.						ROUND No.														
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6									
M 700 BDL	A	RED	1	LIVE																			169	B6293053						
		1	1	FIRE																										
	A	RED	2	LIVE																			170	B6293090						
		1	1	STAMPED FIRE																										
	A	YELLOW	1	LIVE	BoR																									
		1	2	CAST																										
	A	YELLOW	2	LIVE																										
		1	2	STAMPED																										
	A	ORANGE	1	LIVE																										
		2	1	CAST																										
	A	ORANGE	2	LIVE																										
		2	1	STAMPED																										
	A	GREEN	1	LIVE																										
		2	2	CAST																										
	A	GREEN	2	LIVE																										
		2	2	STAMPED																										
	A	BLUE	1	LIVE																										
		3	1	CAST																										
	A	BLUE	2	LIVE																										
		3	1	STAMPED																										
	A	GOLD	1	LIVE																										
		3	2	CAST																										
	A	GOLD	2	LIVE																										
		3	2	STAMPED																										

FLS. 2-23-83

II

TEST: M/700 FOLLOWER-SPRING EVALUATION				DATE: 3-9-83		TESTER: JB ES BH		PG: 16		WA#: 821321														
75000	F CART	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND No.						ROUND No.						ROUND No.							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
75000	B	RED	1	LIVE	SLO																	181	B6256820	
	B	RED	1	CAST	FIRE	BoR																		
	B	RED	2	LIVE																		182	B6359827	
	B	RED	1	STAMPED	FIRE	BoR						BoR					BoR							
	B	YELLOW	1	LIVE																		183	B6358996	
	B	YELLOW	1	CAST	FIRE																			
	B	YELLOW	2	LIVE																		184	B6359156	
	B	YELLOW	1	STAMPED	FIRE				SLO									SLO						
	B	ORANGE	2	LIVE														SR					185	B6359787
	B	ORANGE	2	CAST	FIRE																			
	B	ORANGE	2	LIVE																			186	B6256805
	B	ORANGE	2	STAMPED	FIRE																			
700	B	GREEN	1	LIVE				SLO															187	B6359664
	B	GREEN	2	CAST	FIRE																			
	B	GREEN	2	LIVE																			188	B6359645
	B	GREEN	2	STAMPED	FIRE																			
	B	BLUE	3	LIVE																			189	B6327689
	B	BLUE	3	CAST	FIRE																			
	B	BLUE	2	LIVE				BoR	BoR				BoR		BoR	BoR	BoR						190	B6327092
	B	BLUE	3	STAMPED	FIRE				BoR				PTD	BoR			PTD	BoR						
	B	GOLD	1	LIVE				PTD					PTD										191	B6257195
	B	GOLD	3	CAST	FIRE				SL				SLO		SM									
	B	GOLD	2	LIVE								SLO		SR									192	B6256886
	B	GOLD	3	STAMPED	FIRE																			

II

TEST:		FOLLOWER		SPRING		EVALUATION										DATE: 9/20/13		TESTER: DJ		PG: 17 WA #: P21321					
MODEL	CARD	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
					ROUND No.						ROUND No.						ROUND No.								
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
MODEL 700	A	RED	1	LIVE					SL					SR					PD					193	B6256750
	A	RED	1	FIRE			SL							SL									194	B6256288	
	A	RED	2	LIVE																			195	B6257150	
	A	RED	1	FIRE																			196	B6257078	
	A	YELLOW	1	LIVE																			197	B6293050	
	A	YELLOW	1	FIRE																			198	B6293048	
	A	YELLOW	2	LIVE					SA														199	B6256240	
	A	YELLOW	1	FIRE																			200	B6292989	
	A	ORANGE	2	LIVE			SR		SL														201	B6256882	
	A	ORANGE	2	FIRE																			202	B6256817	
MODEL 700	A	ORANGE	2	LIVE										SR									203	B6326346	
	A	ORANGE	2	FIRE										SL								204	B6327795		
	A	GREEN	1	LIVE																					
	A	GREEN	2	FIRE																					
MODEL 700	A	GREEN	2	LIVE										SR									200	B6292989	
	A	GREEN	2	FIRE																			201	B6256882	
	A	BLUE	3	LIVE					SL														202	B6256817	
	A	BLUE	3	FIRE										SL									203	B6326346	
MODEL 700	A	BLUE	2	LIVE										SL									202	B6256817	
	A	BLUE	3	FIRE																			203	B6326346	
	A	GOLD	1	LIVE					SL														204	B6327795	
	A	GOLD	3	FIRE																					
MODEL 700	A	GOLD	2	LIVE																			203	B6326346	
	A	GOLD	3	FIRE																			204	B6327795	
	A	GOLD	2	LIVE					SH														204	B6327795	
	A	GOLD	3	FIRE																					

FLS.
2-25-83

H

TEST: *SPRING EVALUATIONS*

DATE: *9/20/03*

TESTER: *DT*

PG *18* WA# *871371*

TEST ROOM	I: CART	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
					ROUND			No.			ROUND			No.			ROUND			No.					
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
MODEL 700 BDL	B	RED	1	CAST	LIVE																		205	B6256522	
		1	1		FIRE																				
	B	RED	2	STAMPED	LIVE																		206	B6259318	
		1	1		FIRE																				
	B	YELLOW	1	CAST	LIVE																		207	B6359645	
		1	2		FIRE																				
	B	YELLOW	2	STAMPED	LIVE																		208	B6257234	
		1	2		FIRE																				
	B	ORANGE	1	CAST	LIVE	SR																		209	B6292952
		2	1		FIRE																				
	B	ORANGE	2	STAMPED	LIVE																			210	B6295104
		2	1		FIRE													SH							
B	GREEN	1	CAST	LIVE	SLO																		211	B6256507	
	2	2		FIRE													SR								
B	GREEN	2	STAMPED	LIVE																			212	B6256201	
	2	2		FIRE													BL								
B	BLUE	1	CAST	LIVE	STM	SL				STM	SL						SH	SH					213	B6252200	
	3	1		FIRE	STM	SH				STM	SL	SL					SL	SH							
B	BLUE	2	STAMPED	LIVE																			214	B6293064	
	3	1		FIRE																					
B	GOLD	1	CAST	LIVE	BOC						BOC						BOC						215	B6252249	
	3	2		FIRE	STM						STM						STM								
B	GOLD	2	STAMPED	LIVE																			216	B6256832	
	3	2		FIRE																					

F.L.S.
2-23-83

FLS.
2-23-83

II

TEST: SPRING FOLLOWER

DATE: 9/21/83

TESTER: FLS

PG: 19 WA#: 821321

MODEL SEVEN

MODEL

CARD	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
				ROUND No.						ROUND No.						ROUND No.								
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
A	RED	1	LIVE					SL															217	7621784
A	RED	1	FIRE	SD										FD									218	7615497
A	RED	2	LIVE		BOR	BOR							BOR	BOR					BOR				219	7621472
A	RED	2	FIRE																				220	7614213
A	YELLOW	1	LIVE	SSM		SSM																	221	7623083
A	YELLOW	1	FIRE										SSM										222	7622892
A	YELLOW	2	LIVE																				223	7622905
A	YELLOW	2	FIRE																				224	7622222
A	ORANGE	1	LIVE					FTD	FTD					FTD	FTD				FTD	FTD	FTD		225	7622152
A	ORANGE	1	FIRE					FTD	FTD					FTD	FTD				FTD	FTD	FTD		226	7622415
A	ORANGE	2	LIVE	BOR	BOR	BOR	BOR	BOR					BOR	BOR	BOR	BOR	BOR		BOR	BOR	BOR	BOR	227	7622213
A	ORANGE	2	FIRE	BOR	BOR	BOR	BOR	BOR					BOR	BOR	BOR	BOR	BOR		BOR	BOR	BOR	BOR	228	7623111
A	ORANGE	2	LIVE	BOR									BOR			BOR	BOR							
A	ORANGE	2	FIRE	BOR									BOR			BOR	BOR							
A	GREEN	1	LIVE	BOR									BOR			BOR	BOR							
A	GREEN	1	FIRE	BOR		BOR	BOR						BOR			BOR	BOR							
A	GREEN	2	LIVE	BOR	BOR	BOR	BOR	BOR					BOR	BOR	BOR				BOR		BOR	BOR		
A	GREEN	2	FIRE	BOR	BOR		BOR						BOR			BOR			BOR		BOR			
A	GREEN	2	LIVE	BOR	BOR	BOR	BOR	BOR					BOR	BOR	BOR				BOR		BOR	BOR		
A	GREEN	2	FIRE	BOR	BOR		BOR						BOR			BOR			BOR		BOR			
A	BLUE	1	LIVE	SSM																				
A	BLUE	1	FIRE	SSM				SH					SSM						SSM					
A	BLUE	2	LIVE										SR						SH	SH				
A	BLUE	2	FIRE	SSM															SH	SH				
A	BLUE	2	LIVE																					
A	BLUE	2	FIRE	SSM																				
A	GOLD	1	LIVE																					
A	GOLD	1	FIRE					SH																
A	GOLD	2	LIVE																					
A	GOLD	2	FIRE																					

F.L.S.
2-23-83

II

TEST: FOLLOWER - SPRING CUAL

DATE: 9/24/13 TESTER: FS/03

PG 20 WA # 821321

MODEL SEVEN

TEST	FOLLOWER	SPRING	WEIGHT	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
				ROUND No.						ROUND No.						ROUND No.							
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
B	RED	1	LIVE																			229	7614145
B	RED	1	CAST	FIRE	STM	SLO																230	7622397
B	RED	1	2	LIVE																		231	7621851
B	RED	1	STAMPED	FIRE																		232	7622244
B	YELLOW	1	1	LIVE	STM	STM				STM												233	7622930
B	YELLOW	1	2	CAST	FIRE																	234	7622193
B	YELLOW	1	2	2	LIVE			STM		SH												235	7622394
B	YELLOW	1	2	STAMPED	FIRE																	236	7622438
B	ORANGE	2	1	1	LIVE	BOF																237	7621830
B	ORANGE	2	1	CAST	FIRE																	238	7621745
B	ORANGE	2	2	2	LIVE	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF							239	7622981
B	ORANGE	2	2	STAMPED	FIRE	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF							240	7623140
B	GREEN	2	2	1	LIVE	SR	SR	BOF	BOF														
B	GREEN	2	2	CAST	FIRE	BOF	SLO	BOF	BOF														
B	GREEN	2	2	2	LIVE	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF								
B	GREEN	2	2	STAMPED	FIRE	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF	BOF								
B	BLUE	3	1	1	LIVE																		
B	BLUE	3	1	CAST	FIRE																		
B	BLUE	3	1	2	LIVE																		
B	BLUE	3	1	STAMPED	FIRE	STM	STM																
B	GOLD	3	2	1	LIVE	SL		BOF		SL	STM												
B	GOLD	3	2	CAST	FIRE			STM			STM												
B	GOLD	3	2	2	LIVE			SLO															
B	GOLD	3	2	STAMPED	FIRE			SH															

F.L.S.
2-23-83

II

TEST: FOLLOWER - SPRING EVAL

DATE: 9/22/83 TESTER: DS

PG: 21 WR #: 821321

VIC-1

MID SEVEN

CART	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
				ROUND No.						ROUND No.						ROUND No.								
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
A	RED	1	1	1	LIVE																		241	7622565
				2	FIRE																			
A	RED	1	1	2	LIVE																		242	7622350
				1	FIRE																			
A	YELLOW	1	2	1	LIVE																		243	7613087
				2	FIRE																			
A	YELLOW	1	2	2	LIVE																		244	7622162
				1	FIRE																			
A	ORANGE	2	1	1	LIVE																		245	7622296
				2	FIRE																			
A	ORANGE	2	1	2	LIVE	BOL	BOL																246	7621647
				1	FIRE																			
A	GREEN	2	2	1	LIVE	BOL	BOL	BOL	BOL	BOL													247	7622961
				2	FIRE	BOL	BOL	BOL	BOL	BOL														
A	GREEN	2	2	2	LIVE	BOL	BOL																248	7622974
				1	FIRE																			
A	BLUE	3	1	1	LIVE																		249	7622171
				2	FIRE																			
A	BLUE	3	1	2	LIVE																		250	7621889
				1	FIRE																			
A	GOLD	3	2	1	LIVE																		251	7622319
				2	FIRE																			
A	GOLD	3	2	2	LIVE	SH																	252	7622361
				1	FIRE																			

F.L.S.
2-23-83

II

TEST: Follower - Spring Eval.

DATE: 9/22/83

TESTER: DJ

PG 22 WA #: 821321

Model 1 Seven

MODEL	F. CAST	SPRING		FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER			
		SPRING	WEIGHT		ROUND No.						ROUND No.						ROUND No.										
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6					
B		RED	1	1	1	LIVE	SLO	BoL			BoL	BoL	SLO	BoL	BoL		BoL	BoL	SL	BoL	BoL		253	7622309			
					2	LIVE																					
B		RED	1	1	1	FIRE	SLO	BoL			BoL						BoL	BoL		BoL	BoL		254	7622389			
					2	FIRE																					
B		YELLOW	1	2	1	LIVE	SLO		BoL		SLO		BoL	BoL							BoL		255	7622424			
					2	FIRE																					
B		YELLOW	1	2	1	LIVE																	256	7622188			
					2	FIRE																					
B		ORANGE	2	1	1	LIVE																	257	7622416			
					2	FIRE																					
B		ORANGE	2	1	1	LIVE				SLO											FTD		258	7622340			
					2	FIRE				SH										SR	FTD						
B		GREEN	2	2	1	LIVE																	259	7622138			
					2	FIRE																					
B		GREEN	2	2	1	LIVE																	260	7622198			
					2	FIRE																					
B		BLUE	3	1	1	LIVE	SLO																261	7622194			
					2	FIRE																					
B		BLUE	3	1	1	LIVE				FTD							FTD						262	7622450			
					2	FIRE				FTD							FTD										
B		GOLD	3	2	1	LIVE				SL							SR			SR	SL		263	7615707			
					2	FIRE				SL							SL	FTD									
B		GOLD	3	2	1	LIVE	STM	STM			STM	STM					STM						264	7622313			
					2	FIRE	STM				STM																

F.L.S.
2-23-83

II

TEST: Follow-up Spring Eval										DATE: 9/22/83										TESTER: DJ		PG: 23 WAH: 021321				
TRACK	H T O	SPRING		FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
		SPRING	WEIGHT		ROUND	No.	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4			5	6
Model Seven	A	RED	1	1	CAST	LIVE																			265	7622442
	A	RED	1	1	CAST	FIRE																			266	7622334
	A	YELLOW	1	2	CAST	LIVE	SLO												SLO						267	7622293
	A	YELLOW	1	2	STAMPED	LIVE																			268	7621855
	A	ORANGE	2	1	CAST	LIVE																			269	7621995
	A	ORANGE	2	1	STAMPED	LIVE																			270	7622194
	A	GREEN	2	2	CAST	LIVE																			271	7622356
	A	GREEN	2	2	STAMPED	LIVE																			272	7622255
	A	BLUE	3	1	CAST	LIVE																			273	7622504
	A	BLUE	3	1	STAMPED	LIVE																			274	7622151
	A	GOLD	3	2	CAST	LIVE																			275	7622314
	A	GOLD	3	2	STAMPED	LIVE																			276	7622279

FLS.
2-23-83

II

TEST: Follower Spring Eval.				DATE: 9/23/83												TESTER: DJ		PG: 24		WR #: 821321				
MODEL	CASE	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND No.						ROUND No.						ROUND No.							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
Model Seven	B	RED	1	LIVE																			277	7621959
	B	RED	1	FIRE			SLO																278	7621404
	B	RED	2	LIVE																			279	7622228
	B	RED	2	FIRE																			280	7622884
	B	YELLOW	1	LIVE						BOF				BOF									281	7622158
	B	YELLOW	1	FIRE						BOF				BOF									282	7622477
	B	YELLOW	2	LIVE						BOF	BOF	BOF		BOF			BOF	BOF	BOF				283	7621843
	B	YELLOW	2	FIRE						BOF	BOF	BOF		BOF			BOF	BOF	BOF				284	7622931
	B	ORANGE	1	LIVE						BOF	STH	BOF					BOF	BOF					285	7622851
	B	ORANGE	1	FIRE																			286	7623162
	B	ORANGE	2	LIVE						BOF													287	7622939
	B	ORANGE	2	FIRE																			288	7623091
	B	GREEN	1	LIVE						BOF	BOF	BOF	BOF	BOF			BOF	BOF	BOF					
	B	GREEN	1	FIRE						BOF							BOF							
	B	GREEN	2	LIVE						BOF	BOF	BOF												
	B	GREEN	2	FIRE						BOF														
	B	BLUE	3	1	LIVE												SLO			SLO			285	7622851
	B	BLUE	3	1	FIRE																		286	7623162
	B	BLUE	3	2	LIVE																		287	7622939
	B	BLUE	3	2	FIRE																		288	7623091
	B	GOLD	3	2	LIVE																			
	B	GOLD	3	2	FIRE																			
	B	GOLD	3	2	LIVE																			
	B	GOLD	3	2	FIRE																			

Model Seven

FLS.
2-23-83

II

TEST: Follow - Spring Eval

DATE: 9/26/83 TESTER: [Signature]

PG 25 WR H: 82/321

MODEL	CASE	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
					ROUND No.						ROUND No.						ROUND No.									
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
A	A	RED	1 1	1 LIVE	SL	BAR	SL	BAR			SL	BAR	SL	BAR			SL		SLM	BAR	BAR		289	7621916		
				CAST FIRE	SL	BAR	SL	BAR	BAR		SL		SL	BAR	SL				SL	BAR						
A	A	RED	1 1	2 LIVE																			290	7622248		
				STAMPED FIRE																						
A	A	YELLOW	1 2	1 LIVE																			291	7622287		
				CAST FIRE				BAR																		
A	A	YELLOW	1 2	2 LIVE																			292	7621861		
				STAMPED FIRE																						
A	A	ORANGE	2 1	1 LIVE	BAR	BAR					BAR	SL	SL										293	7622534		
				CAST FIRE		SL						SL	SL													
A	A	ORANGE	2 1	2 LIVE	BAR	BAR	BAR	BAR			BAR	BAR	SL	BAR					BAR				294	7622842		
				STAMPED FIRE			BAR					BAR			BAR											
A	A	GREEN	2 2	1 LIVE	SL	BAR					SL	BAR					SL	BAR		BAR			295	7622265		
				CAST FIRE				SL	BAR					SL	BAR											
A	A	GREEN	2 2	2 LIVE	BAR	BAR	BAR	BAR	BAR		BAR	BAR	BAR	BAR	BAR				BAR	BAR	BAR		296	7622307		
				STAMPED FIRE		BAR					BAR							BAR								
A	A	BLUE	3 1	1 LIVE					FTD				SLM									FTD	297	7621820		
				CAST FIRE		SL			FTD																	
A	A	BLUE	3 1	2 LIVE															FTD				298	7622305		
				STAMPED FIRE		FTD							FTD						FTD	FTD						
A	A	GOLD	3 2	1 LIVE																			299	7622498		
				CAST FIRE		SL						SL							SL							
A	A	GOLD	3 2	2 LIVE				FTD							FTD								300	7622337		
				STAMPED FIRE				FTD																		

II

TEST: Followor - Spring Eval.

DATE: 9/26/83

TESTER: DJ

PG: 26 WA #: 821321

Model Seven

MODEL

TYPE

B

B

B

B

B

B

B

B

B

B

B

B

B

SPRING	SPRING WEIGHT	FOLLOWER	ROUND No.	ROUND No.	ROUND No.
1	2	1	2	3	4
RED	1	LIVE	20		
1	1	FIRE			
RED	1	LIVE			
1	1	FIRE			
YELLOW	1	LIVE			
1	2	FIRE			
YELLOW	1	LIVE	BO	BO	
1	2	FIRE	BO	BO	
ORANGE	2	LIVE	BO	BO	
2	1	FIRE	BO	BO	
ORANGE	2	LIVE	BO	BO	
2	1	FIRE	BO	BO	
GREEN	2	LIVE	BO	BO	
2	2	FIRE	BO	BO	
GREEN	2	LIVE	BO	BO	
2	2	FIRE	BO	BO	
BLUE	3	LIVE			
3	1	FIRE			
BLUE	3	LIVE			
3	1	FIRE			
GOLD	3	LIVE	SM		
3	2	FIRE			
GOLD	3	LIVE			
3	2	FIRE			

ROUND No.	ROUND No.	ROUND No.
1	2	3
20		

F.L.S.
2-23-83

II

TEST: Follow-on Spring Evaluation				DATE: 9/27				TESTER: DJ				PG: 27 WA# 221321												
MODEL	FOLLOWER	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
				ROUND No.						ROUND No.						ROUND No.								
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
A	RED	1	LIVE																				313	7612524
	1	1	FIRE																					
A	RED	2	LIVE																				314	7613935
	1	1	STAMPED FIRE																					
A	YELLOW	1	LIVE																				315	7612238
	1	2	CAS 1 FIRE																					
A	YELLOW	2	LIVE																				316	7612172
	1	2	STAMPED FIRE																					
A	ORANGE	1	LIVE																				317	7612292
	2	1	CAS 1 FIRE																					
A	ORANGE	2	LIVE																				318	7622986
	2	1	STAMPED FIRE																					
A	GREEN	1	LIVE																				319	7622153
	2	2	CAS 1 FIRE																					
A	GREEN	2	LIVE																				320	7615625
	2	2	STAMPED FIRE																					
A	BLUE	1	LIVE																				321	7615434
	3	1	CAS 1 FIRE																					
A	BLUE	2	LIVE																				322	7621468
	3	1	STAMPED FIRE																					
A	GOLD	1	LIVE																				323	7621632
	3	2	CAS 1 FIRE																					
A	GOLD	2	LIVE																				324	7621652
	3	2	STAMPED FIRE																					

FLS. 2-23-03

II

TEST: Followup Spring Eval				DATE 9/27												TESTER DJ		PG 28		WA # 821321						
MODEL	F. CAS	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER		
					ROUND No.						ROUND No.						ROUND No.									
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
B	1	RED	1	1	LIVE	20	BOF	SD	BOF	BOF															325	7612871
					FIRE			SD	SD																	
B	1	RED	1	2	LIVE																				326	7612619
				STAMPED	FIRE																					
B	1	YELLOW	2	1	LIVE	BOF		SD					SD		BOF							BOF			327	7612129
				CAS	FIRE				BOF		BOF		SD	BOF	BOF											
B	1	YELLOW	2	2	LIVE																				328	7612347
				STAMPED	FIRE																					
B	2	ORANGE	1	1	LIVE	BOF	BOF					BOF	BOF					BOF	BOF						329	7612670
				CAS	FIRE																					
B	2	ORANGE	1	2	LIVE	BOF																			330	7615478
				STAMPED	FIRE																					
B	2	GREEN	2	1	LIVE	BOF	BOF	BOF	BOF	BOF		BOF	BOF	BOF	BOF	BOF		BOF	BOF		BOF				331	7615543
				CAS	FIRE	BOF	SSM	BOF	BOF	BOF			BOF	SSM	BOF		BOF		BOF	BOF	BOF					
B	2	GREEN	2	2	LIVE	BOF	BOF	BOF				BOF	BOF	BOF											332	7615568
				STAMPED	FIRE	BOF	BOF																			
B	3	BLUE	1	1	LIVE							SSM													333	7614260
				CAS	FIRE																					
B	3	BLUE	1	2	LIVE																				334	7614485
				STAMPED	FIRE	SSM																				
B	3	GOLD	2	1	LIVE	SSM																			335	7622465
				CAS	FIRE	SSM			SH		SSM	SSM														
B	3	GOLD	2	2	LIVE																				336	7621897
				STAMPED	FIRE																					

FLS.
2-23-83

ii

TEST: Follower Spring Eval

DATE 9/27

TESTER DJ

PG 29 WA# 821321

MODEL

MODEL 7300EN

MODEL	F. CART	SPRING		FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER			
		SPRING	WEIGHT		ROUND No.						ROUND No.						ROUND No.										
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6					
A	A	RED	1	LIVE																			337	7622894			
		1	1	FIRE																							
A	A	RED	2	LIVE																			338	7614083			
		1	1	STAMPED																							
				FIRE																							
A	A	YELLOW	1	LIVE																			339	7614222			
		1	2	CAST																							
				FIRE																							
A	A	YELLOW	2	LIVE																			340	7614464			
		1	2	STAMPED																							
				FIRE																							
A	A	ORANGE	1	LIVE																			341	7614484			
		2	1	CAST																							
				FIRE																							
A	A	ORANGE	2	LIVE																			342	7615550			
		2	1	STAMPED																							
				FIRE																							
A	A	GREEN	1	LIVE																			343	7623148			
		2	2	CAST																							
				FIRE																							
A	A	GREEN	2	LIVE																			344	7621856			
		2	2	STAMPED																							
				FIRE																							
A	A	BLUE	1	LIVE																			345	7622444			
		3	1	CAST																							
				FIRE																							
A	A	BLUE	2	LIVE																			346	7622458			
		3	1	STAMPED																							
				FIRE																							
A	A	GOLD	1	LIVE																			347	7622173			
		3	2	CAST																							
				FIRE																							
A	A	GOLD	2	LIVE																			348	7614467			
		3	2	STAMPED																							
				FIRE																							

F.L.S.
2-23-83

II

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LAST OF THE MODEL 700'S

TEST:		Follower - Spring		EVAL		DATE: 9/27		TESTER: DJ		PG: 30 WR # 821321														
MODEL	F. CART	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND No.						ROUND No.						ROUND No.							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
MODEL SEVEN	B	RED	1	1	1	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	344	7622374	
	B	RED	1	1	2	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	350	7622372	
	B	YELLOW	1	2	1	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	351	7621937	
	B	YELLOW	1	2	2	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	352	7621782	
	B	ORANGE	2	1	1	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	353	7622454	
	B	ORANGE	2	1	2	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	354	7621539	
	B	GREEN	2	2	1	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	355	7621534	
	B	GREEN	2	2	2	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	356	7621589	
	B	BLUE	3	1	1	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	357	7622281	
	B	BLUE	3	1	2	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	358	7602849	
	B	GOLD	3	2	1	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	359	7621571	
	B	GOLD	3	2	2	LIVE	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	BO	360	7622187	

FLS.
2-23-83

II

DATE 10/5

TESTER DB

PG 31 WA #: 821321

M/700 BDL

FIRE	SPRING	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	SLO SL SR SH	FTD STM BOR
				ROUND No.						ROUND No.						ROUND No.									
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
A		RED	1 LIVE	SLO		STM						STN		SM					SP			361	B-6360190		
		1 1	FIRE	STM		FTD						STM		SM					SM			362	B-6359681		
A		RED	2 LIVE									SR							SL SR			363	B-6359200		
		1 1	FIRE																SP			364	B-6360620		
A		YELLOW	1 LIVE																			365	B-6359123		
		1 2	FIRE				STM					SR									STM	366	B-6360589		
A		YELLOW	2 LIVE																			367	B-6360373		
		1 2	FIRE																	SLO		368	B-6327005		
A		ORANGE	1 LIVE																			369	B-6327058		
		2 1	FIRE																			370	B-6360129		
A		ORANGE	2 LIVE				SR					SL		SR SR								371	B-6359648		
		2 1	FIRE				STM					SL		SR								372	B-6293701		
A		GREEN	1 LIVE																						
		2 2	FIRE																						
A		GREEN	2 LIVE																						
		2 2	FIRE																						
A		BLUE	1 LIVE																						
		3 1	FIRE				FTD																		
A		BLUE	2 LIVE																						
		3 1	FIRE																						
A		GOLD	1 LIVE																						
		3 2	FIRE																						
A		GOLD	2 LIVE																						
		3 2	FIRE																						

F.L.S.
2-25-88

F.L.S.
2-23-85

II

TEST: FOLLOWER - SPRING EVAL

DATE: 10/5

TESTER: DBA

PG 32 WR #: 021321

MODEL	CART	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	SLG SR SL SH	FTD BOR SJM
					ROUND No.						ROUND No.						ROUND No.									
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6				
M/700 BOL	B	RED	1	LIVE				SH															373	B-6359230		
			1	FIRE																						
	B	RED	2	LIVE																			374	B-6256583		Difficult loading
			1	FIRE																						
	B	YELLOW	1	LIVE				FD					FD				SH			SL			375	B-6327521		Difficult loading
			1	FIRE														SL								
	B	YELLOW	2	LIVE																			376	B-6359652		
			1	FIRE																						
	B	ORANGE	1	LIVE																			377	B-6327094		
			2	FIRE																						
	B	ORANGE	2	LIVE																			378	B-6359015		
			1	FIRE																						
	B	GREEN	1	LIVE	STM						STM	SLO					STM						379	B-6361184		
			2	FIRE	STM	STM					STM	SLO					STM									
B	GREEN	2	LIVE				BOR	BOR					BOR	BOR								380	B-6327685			
		2	FIRE																							
B	BLUE	1	LIVE	SLO		SR				SR											SR		381	B-6327040		
		1	FIRE	SLO		SR	SR			SLO	SR															
B	BLUE	2	LIVE			SR					SR	SLO									SLO		382	B-6360176		
		2	FIRE				SL																			
B	GOLD	1	LIVE																				383	B-6327779		
		1	FIRE																							
B	GOLD	2	LIVE	BOR			FD			BOR						BOR					FD		384	B-6360169		
		2	FIRE	BOR			FD	FD				SR									SR					

F.L.S.
2-23-83

II

TEST: *Follow-up Spring Eval* DATE: *10/5* TESTER: *HY* PG. *33* WATT: *821341*

MODEL	CASE	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
				ROUND No.						ROUND No.						ROUND No.							
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
<i>M 700 BDL</i>	A	RED 1	1 LIVE CAST FIRE																			385	B6327127
	A	RED 1	2 LIVE STAMPED FIRE	SH		FD				SH		FD								SH		386	B6358282
	A	YELLOW 1	1 LIVE CAST FIRE																			387	B6358194
	A	YELLOW 1	2 LIVE STAMPED FIRE	SH		BOL						BOL							BOL			388	B6327125
	A	ORANGE 2	1 LIVE CAST FIRE	SL																		389	B6326989
	A	ORANGE 2	2 LIVE STAMPED FIRE		SL													FD				390	B6327062
	A	GREEN 2	1 LIVE CAST FIRE															SL				391	B6327610
	A	GREEN 2	2 LIVE STAMPED FIRE			SR																392	B6358331
	A	BLUE 3	1 LIVE CAST FIRE		STM													STM				393	B6327162
	A	BLUE 3	2 LIVE STAMPED FIRE		STM	STM						STM						STM				394	B6327770
	A	GOLD 3	1 LIVE CAST FIRE	STM	STM	STM				STM	STM	STM				STM	STM	STM				395	B6359311
	A	GOLD 3	2 LIVE STAMPED FIRE	BOL	SLD					BOL	SLD					BOL	SLD			SL		396	B6359853

11

TEST: Follow Spring Eval				DATE: 10/10				TESTER: DJ				PG: 34		WA #: 821321										
MODEL	CART	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER	
				ROUND No.						ROUND No.						ROUND No.								
				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
B	RED	1 1	CAST	LIVE			SL			FTD													397	B6359524
				FIRE					FTD						SL									
B	RED	1 1	2	LIVE																			398	B6327410
				FIRE																				
B	YELLOW	1 2	CAST	LIVE																			399	B6361253
				FIRE																				
B	YELLOW	1 2	2	LIVE															SL				400	B6361019
				FIRE			SL					SLO												
B	ORANGE	2 1	CAST	LIVE															SL				401	B6327328
				FIRE																				
B	ORANGE	2 1	2	LIVE																			402	B6360119
				FIRE																				
B	GREEN	2 2	CAST	LIVE																			403	B6327893
				FIRE																				
B	GREEN	2 2	2	LIVE																			404	B6360602
				FIRE																				
B	BLUE	3 1	CAST	LIVE																			405	B6361277
				FIRE																				
B	BLUE	3 1	2	LIVE																			406	B6327798
				FIRE																				
B	GOLD	3 2	CAST	LIVE																			407	B6360210
				FIRE																				
B	GOLD	3 2	2	LIVE																			408	B6256562
				FIRE																				

4000 - BOK

FLS
2-23-83

TEST:		Follower		Spring		Evert		DATE: 10/10/83		TESTER: DJ		PG: 35		WA #: 821321										
CODE	CARD	SPRING	WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
					ROUND No.						ROUND No.						ROUND No.							
					1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
M/700 BDL	A	RED	1	1	CAST	LIVE																409	B6360457	
					FIRE																			
	A	RED	1	1	2	LIVE																410	B6359680	
					STAMPED																			
					FIRE																			
	A	YELLOW	1	2	1	LIVE																411	B6361347	
					CAST																			
					FIRE																			
	A	YELLOW	1	2	2	LIVE																412	B6358611	
					STAMPED																			
					FIRE																			
	A	ORANGE	2	1	1	LIVE																413	B6359805	
				CAST																				
				FIRE																				
A	ORANGE	2	1	2	LIVE																414	B6358232		
				STAMPED																				
				FIRE																				
A	GREEN	2	2	1	LIVE																415	B6327754		
				CAST																				
				FIRE																				
A	GREEN	2	2	2	LIVE																416	B6327115		
				STAMPED																				
				FIRE																				
A	BLUE	3	1	1	LIVE																417	B6359069		
				CAST																				
				FIRE																				
A	BLUE	3	1	2	LIVE																418	B6327108		
				STAMPED																				
				FIRE																				
A	GOLD	3	2	1	LIVE																419	B6327252		
				CAST																				
				FIRE																				
A	GOLD	3	2	2	LIVE																420	B6327469		
				STAMPED																				
				FIRE																				

FLS.
2-23-83

II

PG: 36 WR #: 821321

FOLLOWER	SPRING WEIGHT	FOLLOWER	SLOW						MEDIUM						FAST						GUN No.	SERIAL NUMBER
			ROUND No.						ROUND No.						ROUND No.							
			1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6		
B	RED	1	LIVE																		421	86361264
B	RED	2	LIVE																		422	86360597
B	YELLOW	1	LIVE																		423	86358909
B	YELLOW	2	LIVE																		424	86294922
B	ORANGE	1	LIVE																		425	86359824
B	ORANGE	2	LIVE																		426	86327371
B	GREEN	1	LIVE																		427	86326318
B	GREEN	2	LIVE																		428	86327584
B	BLUE	1	LIVE	SSM	SL	SR															429	86359529
B	BLUE	2	LIVE																		430	86359843
B	GOLD	1	LIVE																		431	86245076
B	GOLD	2	LIVE																		432	86359062

F.L.S.
2-25-81

900591 - 7mm Wby Mag D.A.
903391 - Trigger Pull Spring
910031 - Dry Cycle Firing Pins
910661 - Accuracy - 22-250 Wood vs Synthetic
911501 - Mag Box Development
911371 - Accuracy - .223 - 1:12 Twist
911641 - Trigger housing - Rust Resistance
911961 - 700SS - Accuracy & Int. Abuse
912271 - Dry Cycle Firing Pins
913363 - Stocks Cracking in Gallery Test Jacks

75

xc: W.H. Coleman, II/File
K.W. Soucy
H.C. Munson
L.B. Bosquet
F.E. Martin
File

RESEARCH TEST AND MEASUREMENT REPORT

REPORT# 900591
W.O.# 481152
JANUARY 3, 1991

MODEL 700, 7mm WEATHERBY MAGNUM, DESIGN ACCEPTANCE

MODEL 700, 7mm WEATHERBY MAGNUM, DESIGN ACCEPTANCE

ABSTRACT:

Research and Development finds the Design Acceptance Evaluation of the Model 700 rifle in 7mm Weatherby Magnum caliber to be acceptable. The evaluation consisted of Accuracy, Field Function and High Pressure Strength.

Prepared by: D.R. Thomas
Date Prepared: January 3, 1991

proofread and cleared by:

F.E. Martin
Designer

Fred E. Martin 25 Jan '91

J.R. SNEDEKER
Staff Engineer

James R. Snedeker 25 Jan '91

K.W. SOUCY
Manager Firearms & Ammo Research

W.H. Coleman 1/25/91

W.H. COLEMAN, II
Technical Manager

K.W. Soucy 2-1-91

MODEL 700, 7mm WEATHERBY MAGNUM, DESIGN ACCEPTANCE

TO: J.R. Snedeker
FROM: D.R. Thomas

INTRODUCTION:

In July of 1990 the test lab started to conduct a Design Acceptance Evaluation of the Model 700 Rifle in 7mm Weatherby Magnum caliber. The test was not completed until mid December due to the unavailability of Remington 7mm Weatherby Magnum ammunition. The evaluation used five rifles and consisted of Accuracy, Field Function and High Pressure Strength.

SCOPE OF THE TEST:

To determine if the 7mm Weatherby Magnum caliber sample would meet the Remington Specifications for accuracy, field function and strength.

TEST RESULTS:**ACCURACY:**

The Remington specification for group size for the 7mm Weatherby Magnum is 2.7 inches.

The average group size shot with Weatherby 175 gn. ammunition was 1.56 inches.

The average group size shot with Remington 175 gn. ammunition was 2.85 inches. The large discrepancy in results between the Weatherby and Remington ammunition is do to a problem with the Remington ammunition. This problem is being investigated at Lonoke. (See page 7)

FIELD FUNCTION:

Five rifles were each field tested with Remington and Weatherby ammunition. There were no malfunctions in the 500 rounds fired.

STRENGTH:

One rifle with a plugged bore was subjected to a high pressure round. The resulting damage was typical of all Model 700 rifles subjected to this test.

MODEL 700, 7mm WEATHERBY MAGNUM, DESIGN ACCEPTANCE

REPORT TEXT:**GENERAL:**

The following five rifles were used for the Design Acceptance Evaluation:

C6457706 C6464056 C6461248 C6460127 C6457960

ACCURACY:

All five rifles were used in the accuracy test.

Weatherby, 175 gn. Soft Point index no. 17035, lot# 01913 and Remington 175 gn. CLPSP index no. R7MWB2, lot# P08PC3023 were used for accuracy testing.

A Lyman "All American" 20X scope was used.

Accuracy results per individual rifle are located in the appendix of this report.

FIELD FUNCTION:

All five rifles were used in the Field Function Test. The rifles were fired 100 rounds each in the Field Function Test conducted at the Ilion Fish and Game Club.

The same ammunition types and codes that were used in the accuracy test were also used in the field function test.

STRENGTH:

Rifle C6457706 was used for the high pressure strength test. The high pressure load consisted of 65 gns. of 4227 powder and a 175 gn. Spitzer bullet.

MODEL 700, 7mm WEATHERBY MAGNUM, DESIGN ACCEPTANCE

TEST PROCEDURE:**ACCURACY:**

Three, five shot groups were shot with each ammunition type with each of the five rifles. The accuracy was shot by J.E. Selan and C. Stephens in the Research and Development 100 yard range located in building 52-1A.

Weatherby, 175 gn. Soft Point index no. 17035, lot# 01913 and Remington 175 gn. CLPSP index no. R7MWB2, lot# P08PC3023 were used for accuracy testing.

Standard long action Leupold bases and rings were used in conjunction with a 20X All-American Lyman scope.

The targets were analyzed for group size using the HP 9000 computer and digitizing tablet.

FIELD FUNCTION:

The rifles were subjected to the loading and firing of 50 rounds of each of the following ammunition types:

Weatherby # 17035 175 gn. Soft Point lot# 01913

Remington R7MWB2 175 gn. "Core-Lokt" Soft Point lot# P08PC3023

The field function test was conducted at the Ilion Fish and Game Club.

A round robin method of shooting, alternating shooters every ten rounds, was used throughout the field function testing.

The guns were allowed to air cool every 20 rounds.

STRENGTH:

Four bullets were lodged in the bore of rifle # C6457706.

A high pressure round was developed using the reloading and P&V facilities.

The high pressure round was fired in the "Iron Lung" in the measurement lab.

Estimated pressure for the destructive load fired in an unobstructed Barrel is 150,000 psi. Pressure generated in the plugged bore is much higher.

MODEL 700, 7mm WEATHERBY MAGNUM, DESIGN ACCEPTANCE

APPENDIX

100 YARD ACCURACY RESULTS

<u>SERIAL #</u>	AMMO	GROUP 1 (in.)	GROUP 2 (in.)	GROUP 3 (in.)	AVERAGE (in.)	STD. DEV.
C6457960	Wby.	2.25	1.39	1.59	1.74	.450
	Rem.	2.10	2.64	3.64	2.79	.781
C6464056	Wby.	1.62	1.95	1.63	1.73	.188
	Rem.	1.27	3.19	3.60	2.69	1.244
C6457706	Wby.	1.66	1.59	1.15	1.47	.276
	Rem.	2.86	3.05	4.42	3.44	.851
C6461248	Wby.	1.82	1.51	1.88	1.74	.199
	Rem.	2.81	3.37	2.36	2.85	.506
C6460127	Wby.	1.60	1.19	1.06	1.28	.282
	Rem.	1.74	2.48	3.17	2.46	.715
Overall Average Group Size Weatherby Ammunition					1.56	
Overall Average Group Size Remington Ammunition					2.85	

MODEL 700, 7mm WEATHERBY MAGNUM, DESIGN ACCEPTANCE

COMPARISON BY AMMO TYPE OF ALL FIVE RIFLES (USING ALL THREE GROUPS)

THE CHART BELOW SHOWS THAT THERE IS A SIGNIFICANT DIFFERENCE (@95% C.I.)
BETWEEN THE AVERAGE GROUP SIZE FOR THE TWO TYPES OF AMMUNITION USED.

	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN
Wby	15	1.5927	1.6000	1.5831	0.3152	0.0814
Rem	15	2.847	2.860	2.847	0.797	0.206

	MIN	MAX	Q1	Q3
Wby	1.0600	2.2500	1.3900	1.8200
Rem	1.270	4.420	2.360	3.370

ANALYSIS OF VARIANCE

SOURCE	DF	SS	MS	F	p
FACTOR	1	11.794	11.794	32.11	0.000
ERROR	28	10.284	0.367		
TOTAL	29	22.078			

INDIVIDUAL 95 PCT CI'S FOR MEAN
BASED ON POOLED STDEV

LEVEL	N	MEAN	STDEV	
Wby	15	1.5927	0.3152	(-----*-----)
Rem	15	2.8467	0.7970	(-----*-----)
POOLED STDEV =		0.6060		1.80 2.40 3.00

Report No. 903391

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance		AREA OF TESTING ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☐ Design Change ☐ Stake _____ ☒ Plant Assistance ☐ Other _____	
FIREARM STAT'S. MODEL: <u>700</u> CAL or GAGE: _____ BARREL TYPE: _____ PROOFED: YES _____ NO _____		REPORT REQ'D. FORMAL _____ TEST RESULTS ONLY ☒	
		DATE REQUESTED: <u>12/5/90</u> DATE NEEDED BY: <u>ASAP</u> REQUESTED BY: <u>J. Snedeker</u> WORK ORDER NO: <u>481152</u>	

TEST TYPE ☐ Strength Test ☐ Ammunition Test ☐ Dry Cycle Test ☐ Photo/Video ☒ Function Test ☐ Environmental Test ☐ Measurements ☐ Other _____ ☐ Accuracy Test ☐ Customer Complaint ☐ Endurance Test _____			
---	--	--	--

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

- Assemble Two Fire Controls to M/700's (leave Trigger adjusting Screw engaged only 2-3 Threads.)
- Check Trigger Pull
- Shoot 200 rounds each. Note any change in Trigger Pull. Be Careful gun May follow down.
- Recheck Trigger Pull

part 2 JFA 621.

GUNS REQUIRED:

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: _____
 TEST COMPLETED BY: _____
 REPORT DATE: _____

Trigger Pulls

Fire Control
12 KI

<u>Before</u>	<u>after</u>
5.8	5.0
5.2	5.0
5.6	5.0
5.3	5.2

(Screw backed into
into the wood after
200 Rds fired.)
(Disassembled hard)
(Screw protrudes .060)

Fire Control
14 EI

<u>Before</u>	<u>after</u>
4.0	3.8
4.2	4.0
4.0	3.8
4.0	3.8

(Screw protrudes .042) before
(Screw protrudes .055) (after)

Fire Control
14 EI after filing Stock

<u>Before</u>	<u>after</u>
3.2	3.0
3.0	3.0
3.0	3.0
3.0	3.0

(Screw protrudes .170 Before Firing)
(" " .122 After Firing)

<u>Before</u>	<u>After</u>
*4.6	*4.0
*4.8	*4.4
*5.0	*4.6
*5.2	*4.4
avg 4.85	4.35

* Creep

Screw protrudes .175 Before
AFTER
BACKED OUT INTO WOOD .200

TEST AND MEASUREMENT LAB - TEST REPORT

REQUESTER: J.R. Snedeker WRITTEN BY: D.R. Thomas 1/7/91
 WORK ORDER: 481152 REPORT NO.: 903391
 TEST TYPE: function
FIREARM STAT'S: MODEL: 700 CAL: .338 Win. Mag.

REASON FOR TEST:

Production found that they had some trigger pull springs that had on one end a slightly increased diameter, ranging from .0005" to a maximum of .003". When assembled these springs could be held in position by the screw threads in the trigger spring hole. This test was done to see that if the adjusting screw was unsealed and adjusted out, and the spring end stayed in position on the thread, what the effect on the trigger pull would be .

EQUIPMENT REQUIRED:

Two Fire Controls (assembled with springs with displaced coils)
 Two Model 700 rifles
 800 rounds

TEST PROCEDURE:

The adjustment screw was backed out as far as possible to still allow assembly to the Stock (approx. .040 in.)
 The trigger pull was then measured.
 200 rounds were then fired on the gun.
 The trigger pull was remeasured and the position of the screw was observed.
 This procedure was repeated for two fire controls, then the Stock was filed to allow the screw to be backed out farther and the test was repeated.

TEST RESULTS:

FIRE CONTROL	TRIGGER PULL (lbs.)		COMMENT
	BEFORE	AFTER	
			STANDARD STOCK
12KI	5.5	5.0	Screw backed out into wood
14EI	4.0	3.8	Screw protrudes .042 before / .055 after
			STOCK FILED
12KI	4.9	4.4	Screw protrudes .175 before/ .200 after
14EI	3.0	3.0	Screw protrudes .170 before/ .122 after

Under normal conditions the screw could not adjusted out far enough to cause the complete loss of trigger pull.
 Even when additional clearance was added to allow the adjusting screw to be backed out farther the trigger pull did not drop below 3 lbs.

Report No. 910031

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☒ Design Change Stake _____ ☐ Plant Assistance ☐ Other	
<u>FIREARM STAT'S.</u> MODEL: <u>700</u> CAL or GAGE: _____ BARREL TYPE: _____ PROOFED: YES _____ NO _____	<u>REPORT REQ'D.</u> FORMAL _____ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>12-1-90</u> DATE NEEDED BY: <u>12-31-90</u> REQUESTED BY: <u>E. FRAPPIER</u> WORK ORDER NO: _____
<u>TEST TYPE</u> ☐ Strength Test ☐ Ammunition Test ☒ Dry Cycle Test ☐ Photo/Video ☐ Function Test ☐ Environmental Test ☐ Measurements ☐ Other _____ ☐ Accuracy Test ☐ Customer Complaint ☐ Endurance Test		

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

DRY CYCLE TO 10,000 CYCLES EACH, FOUR EACH OF THE FOLLOWING SAMPLES

4 CURRENT PRODUCTION M/700 FIRING PINS
4 VENDOR SAMPLE M/700 FIRING PINS.

-GUNS REQUIRED:

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 1-3-91
TEST COMPLETED BY: R. W. Howe
REPORT DATE: 1-3-91

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: E. FRAPPIER TESTER: R. W. Howe DATE: 1/13/91
REPORT NO.: 910031 WORK ORDER NO.: _____
WRITTEN BY: R. W. HOWE
TEST TYPE: DRY CYCLE

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: _____
BARREL TYPE: _____ PROOFED: YES _____ NO _____

REASON FOR TEST :

TO EVALUATE VENDOR SAMPLE M/700 FIRING PINS

EQUIPMENT REQUIRED :

M/700 COCK + FIRE DRY CYCLE MACHINES
TEST LAB M/700 RIFLES
FOUR SAMPLES EACH OF CURRENT PRODUCT AND VENDOR
EXPERIMENTAL FIRING PINS.

TEST PROCEDURE :

PLACE EACH SAMPLE F.P. IN TEST LAB 700S AND DRY
CYCLE FUNCTION TO 10,000 CYCLES OR FAILURE.

TEST RESULTS :

<u>CURRENT PRODUCT</u>	<u>EXPERIMENTAL "VENDOR" SAMPLE</u>
1 10,000 CYC - OK	1- TIP BROKE BETWEEN 8-9,000 CYC
2 10,000 CYC - OK	2 10,000 CYC - OK
3 10,000 CYC - OK	3 TIP BROKE BETWEEN 6-7,000 CYC.
4 10,000 CYC - OK	4 10,000 CYC OK

Report No. 910661

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	AREA OF TESTING <table border="0"> <tr> <td>☐ Safety Related</td> <td>☐ Litigation</td> </tr> <tr> <td>☐ Competitive Evaluation</td> <td>☐ Warehouse Audit</td> </tr> <tr> <td>☒ New Design</td> <td>☐ Cost Reduction</td> </tr> <tr> <td>☐ Design Change</td> <td>Stake </td> </tr> <tr> <td>☐ Plant Assistance</td> <td>☐ Other </td> </tr> </table>		☐ Safety Related	☐ Litigation	☐ Competitive Evaluation	☐ Warehouse Audit	☒ New Design	☐ Cost Reduction	☐ Design Change	Stake	☐ Plant Assistance	☐ Other
☐ Safety Related	☐ Litigation											
☐ Competitive Evaluation	☐ Warehouse Audit											
☒ New Design	☐ Cost Reduction											
☐ Design Change	Stake											
☐ Plant Assistance	☐ Other											
FIREARM STAT'S MODEL: <u>M/700 VARMINT</u> CAL or GAGE: <u>22-250</u> BARREL TYPE: <u>VARMINT</u> PROOFED: YES ☒ NO ☐	REPORT REQ'D. FORMAL ☐ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>3/7/91</u> DATE NEEDED BY: <u>4/1/91</u> REQUESTED BY: <u>J. RONKAWEN</u> WORK ORDER NO: <u>481162</u>										

TEST TYPE			
☐ Strength Test ☐ Function Test ☒ Accuracy Test	☐ Ammunition Test ☐ Environmental Test ☐ Customer Complaint	☐ Dry Cycle Test ☐ Measurements ☐ Endurance Test	☐ Photo/Video ☐ Other

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

TO TEST THE ACCURACY OF THE M/700 VARMINT WITH WOOD AND SYNTHETIC STOCKS. PLEASE SHOOT 5 FIVE SHOT GROUPS WITH AMMUNITION QUALIFIED IN A GUN OF KNOWN ACCURACY FOR EACH STOCK.

-GUNS REQUIRED: SUPPLIED BY JIM RONKAWEN
 M/700 VARMINT .22-250 REM WITH STANDARD WOOD STOCK
 - LEESIX SYNTHETIC STOCK
 - MACMILLAN SYNTHETIC STOCK
 - H.S. PRECISION SYNTHETIC STOCK

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 4-9-91
 TEST COMPLETED BY: J. SELAN
 REPORT DATE: 4-9-91

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: J. RONKAINEN TESTER: J. SELAN DATE: 4/9/91
 REPORT NO.: 910661 WORK ORDER NO.: 481152
 WRITTEN BY: J. SELAN
 TEST TYPE: ACCURACY

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: 22/250
 BARREL TYPE: VARMINT PROOFED: YES ☒ NO ☐

REASON FOR TEST :

TO TEST ACCURACY OF THE M-700 VARMINT WITH WOOD AND SYNTHETIC STOCKS.

EQUIPMENT REQUIRED :

- M-700 VARMINT 22/250 WITH STANDARD WOOD STOCK. (SN#6360812)
- LEE SIX SYNTHETIC STOCK.
- McMILLAN "
- H.S PRECISION "
- M-40XB- 22/250 SN. #24277 B.
- REMINGTON AMMO: 55 GR. "POWER-LOK" H.P. (R22501) LOT. # N240C5721.
- LYMAN- ALL AMERICAN SCOPE. 20X - RANGE. H.P. 6000 COMPUTER.

TEST PROCEDURE :

- SHOOT 5 X 5 SHOT WITH 40XB- FOR AMMO QUALIFICATION
- SHOOT 5 X 5 SHOT GROUPS. WITH EACH STOCK SUPPLIED.
- CLEAN BARREL BEFORE TEST. COOL AND CLEAN BETWEEN GROUPS.
- FIRE ONE FOULING ROUND. AND PROCEED TO FIRE GROUP.
- TORQUE HEX HEAD FRONT AND REAR GUARD SCREWS TO 65 IN. LBS.

TEST RESULTS : ACCURACY RESULTS.

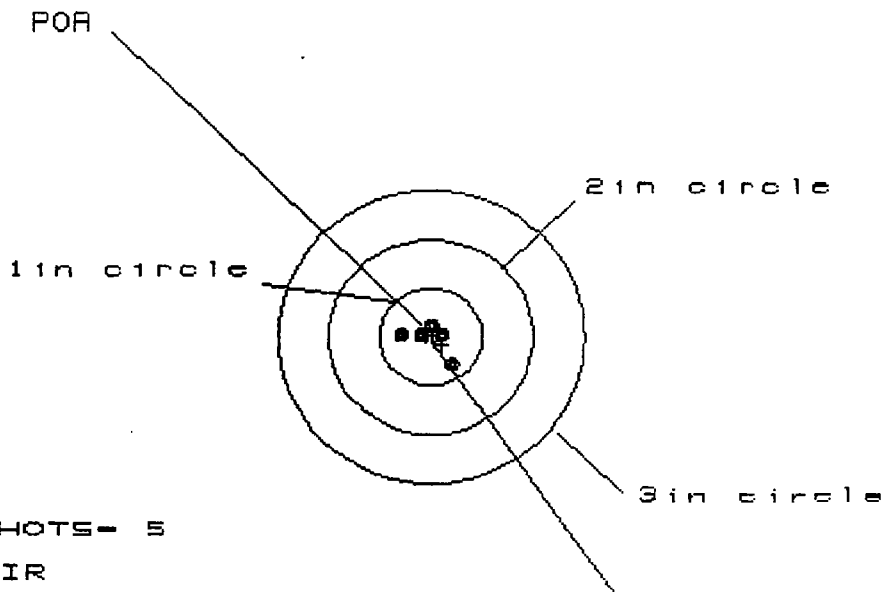
WOOD -	AVG. .837	
H.S. PRECISION	AVG. .843	
LEE SIX	AVG. .804	
Mc MILLAN.	AVG. .921	
40XB.	AVG. .686	AMMO QUALIFICATION

* THE H.S PRECISION STOCK WAS SUPPLIED WITH STANDARD FRONT AND REAR GUARD SCREWS. IT WAS DECIDED TO SHOOT THE STOCK ~~WITH~~ HEX HEAD FRONT & REAR SCREWS, TO KEEP THE TEST UNIFORM. AT 65 INCH POUNDS. AVERAGE WITH THE STANDARD SCREWS WAS. .934

12 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/910661

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .509

VS= .372

GS= .558

Avg. G.S. = .686

CENTROID *

Ammo QUALIFICATION

PATTERN #	:	1		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.242	.141	.072
MINIMUM X	:	-.267	-.206	-.094
MAXIMUM Y	:	.140	.082	.061
MINIMUM Y	:	-.232	-.061	-.051
CENTROID X	:	-.105	-.166	-.097
CENTROID Y	:	.079	.137	.158
POA TO CENTROID in.	:	.132	.216	.186
MIN RADIUS	:	.090	.039	.065
MEAN RADIUS	:	.188	.129	.081
MAX RADIUS	:	.336	.215	.107
HORIZONTAL SPREAD	:	.509	.347	.166
VERTICAL SPREAD	:	.372	.143	.112
EXTREME SPREAD	:	.558	.354	.171
NUMBER IN ONE INCH CIRCLE	=		5	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

m-40VB- H-2
SER. #24277B

Ammo:
REMINGTON 22/250
55 GR POWER-LOKE HP
INDEX- R22502
LOT- N-24 0C5721

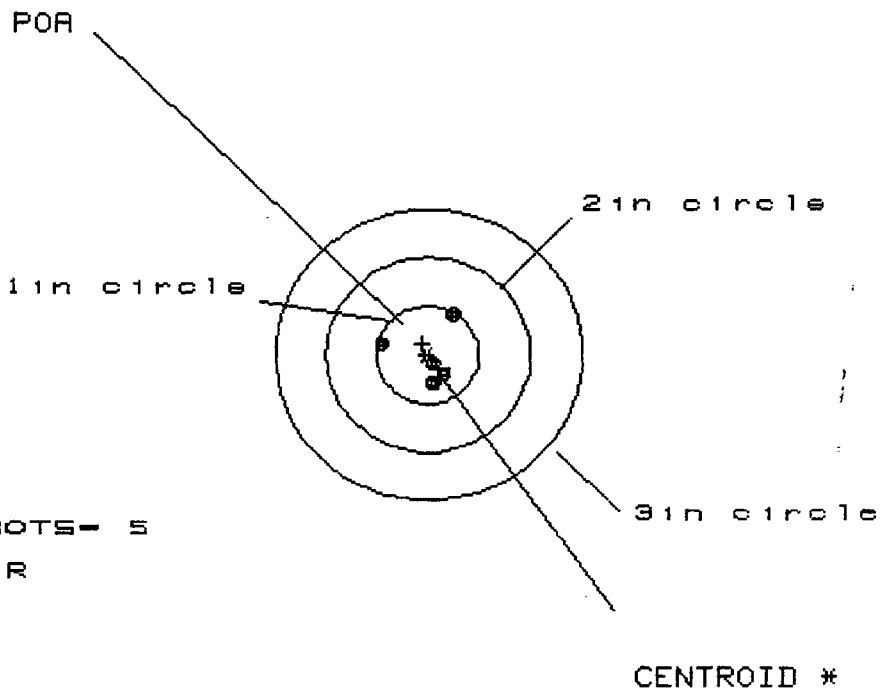
SCOPE:
LYMAN SUPER-TARGET
SPOT- 20X

RANGE- 100 YDS.
BENCH- RESTED.

12 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/910661

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1 in = 5

2 in = 5

3 in = 5

HS= .615

VS= .663

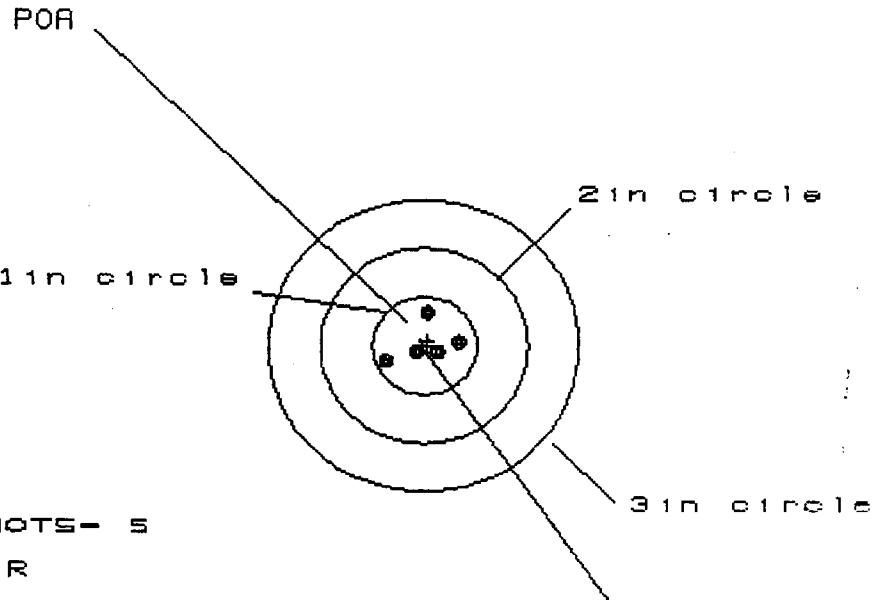
GS= .688

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.202	.236	.115
MINIMUM X	:	-.413	-.362	-.065
MAXIMUM Y	:	.388	.196	.119
MINIMUM Y	:	-.275	-.178	-.113
CENTROID X	:	.053	.002	.123
CENTROID Y	:	-.115	-.212	-.277
POA TO CENTROID in.	:	.126	.212	.303
MIN RADIUS	:	.044	.077	.115
MEAN RADIUS	:	.286	.232	.125
MAX RADIUS	:	.437	.412	.136
HORIZONTAL SPREAD	:	.615	.598	.180
VERTICAL SPREAD	:	.663	.374	.232
EXTREME SPREAD	:	.688	.655	.232
NUMBER IN ONE INCH CIRCLE	=		5	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/910661

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .725

VS= .519

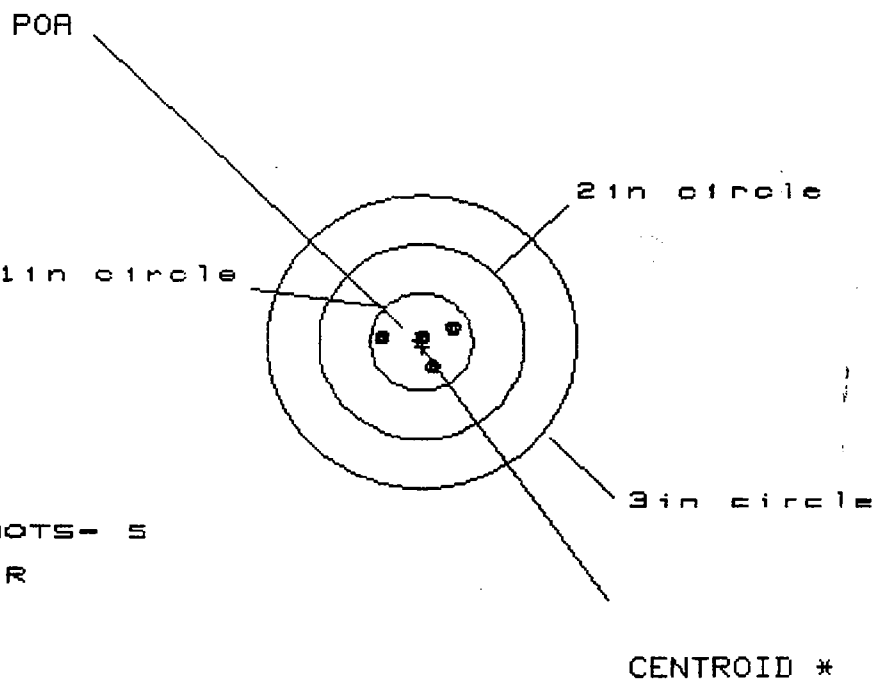
GS= .748

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.310	.206	.175
MINIMUM X	:	-.415	-.134	-.165
MAXIMUM Y	:	.334	.287	.049
MINIMUM Y	:	-.185	-.130	-.034
CENTROID X	:	-.027	.077	.108
CENTROID Y	:	-.045	.001	-.094
POA TO CENTROID in.	:	.052	.077	.143
MIN RADIUS	:	.072	.131	.035
MEAN RADIUS	:	.264	.205	.128
MAX RADIUS	:	.455	.302	.182
HORIZONTAL SPREAD	:	.725	.340	.340
VERTICAL SPREAD	:	.519	.417	.083
EXTREME SPREAD	:	.748	.447	.346
NUMBER IN ONE INCH CIRCLE	=		5	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

12 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/910661

CENTERFIRE PATTERNS # 4

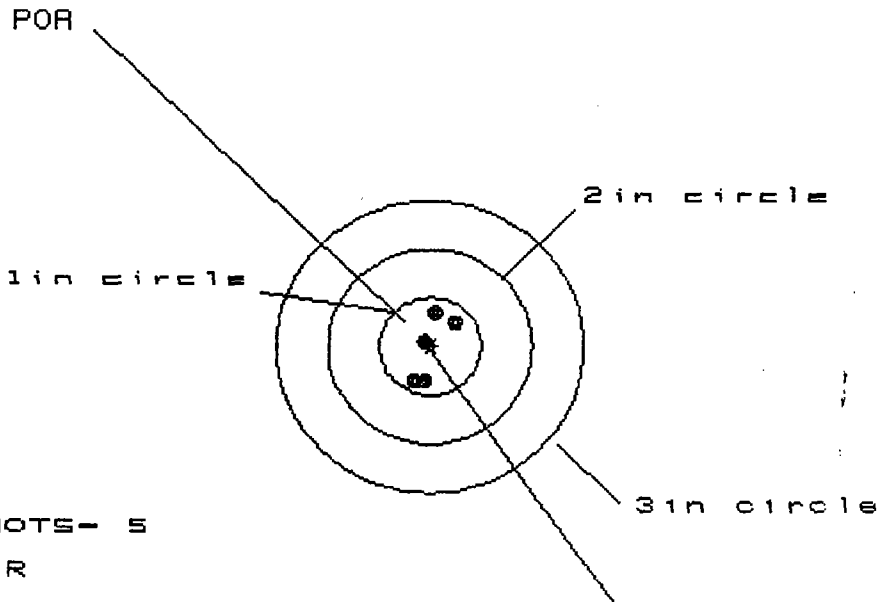


PATTERN #	:	4		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.325	.229	.044
MINIMUM X	:	-.387	-.102	-.026
MAXIMUM Y	:	.120	.141	.116
MINIMUM Y	:	-.257	-.236	-.190
CENTROID X	:	-.009	.087	.011
CENTROID Y	:	.055	.034	-.012
POA TO CENTROID in.	:	.056	.094	.017
MIN RADIUS	:	.007	.097	.075
MEAN RADIUS	:	.213	.182	.130
MAX RADIUS	:	.396	.268	.195
HORIZONTAL SPREAD	:	.712	.331	.070
VERTICAL SPREAD	:	.377	.377	.306
EXTREME SPREAD	:	.713	.459	.314
NUMBER IN ONE INCH CIRCLE	=	5		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

12 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/910661

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .328

VS= .710

GS= .721

CENTROID *

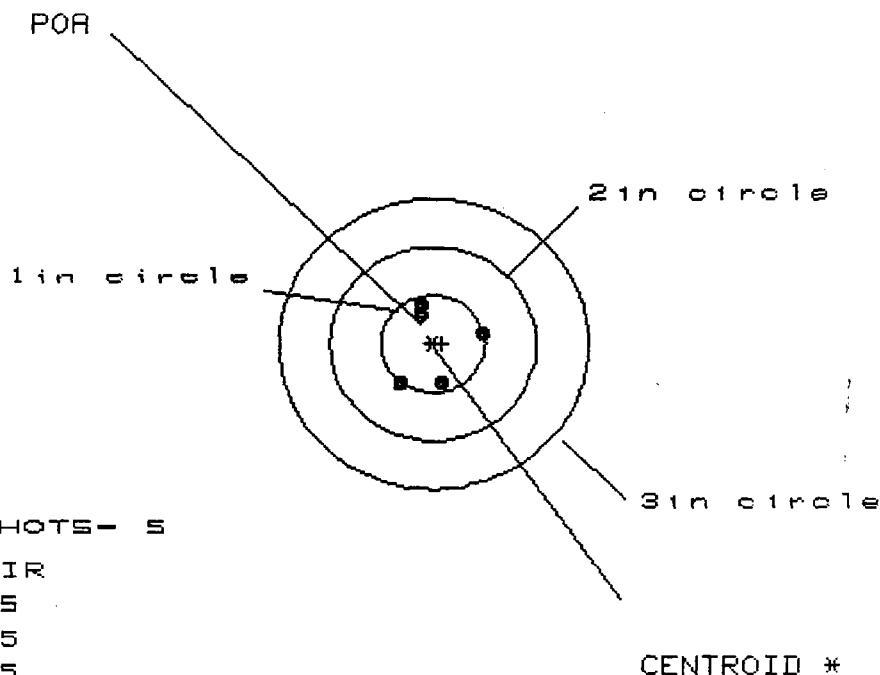
PATTERN #	:	5		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.211	.213	.174
MINIMUM X	:	-.117	-.115	-.110
MAXIMUM Y	:	.372	.293	.212
MINIMUM Y	:	-.338	-.245	-.323
CENTROID X	:	.059	.057	.096
CENTROID Y	:	-.050	-.143	-.062
POR TO CENTROID in.	:	.078	.154	.114
MIN RADIUS	:	.103	.194	.128
MEAN RADIUS	:	.293	.270	.248
MAX RADIUS	:	.372	.362	.341
HORIZONTAL SPREAD	:	.328	.328	.284
VERTICAL SPREAD	:	.710	.538	.535
EXTREME SPREAD	:	.721	.630	.606
NUMBER IN ONE INCH CIRCLE	=	5		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/WOOD

CENTERFIRE PATTERNS

1



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .760

VS= .792

GS= .894

AVG. G.S. = .837

C 6360812

PATTERN #

:

1

22-250 BDL, VARMINI.

SHOTS (BEST OF)

:

5

4

3

MAXIMUM X

:

.485

.182

.131

MINIMUM X

:

-.275

-.154

-.071

MAXIMUM Y

:

.392

.410

.283

MINIMUM Y

:

-.400

-.382

-.477

CENTROID X

:

-.079

-.200

-.149

CENTROID Y

:

-.001

-.019

.108

POA TO CENTROID in.

:

.079

.201

.184

MIN RADIUS

:

.335

.323

.207

MEAN RADIUS

:

.419

.385

.330

MAX RADIUS

:

.490

.412

.495

HORIZONTAL SPREAD

:

.760

.336

.202

VERTICAL SPREAD

:

.792

.792

.760

EXTREME SPREAD

:

.894

.805

.784

NUMBER IN ONE INCH CIRCLE =

5

5

NUMBER IN TWO INCH CIRCLE =

5

5

NUMBER IN THREE INCH CIRCLE =

5

5

Ammd: REMINGTON

22-250 REM. KSCR. POWER-104
H.P.

INDEX: R-22502

LOT: N240C5721

SCOPE: LYMAN

ALL AMERICAN - 20-X

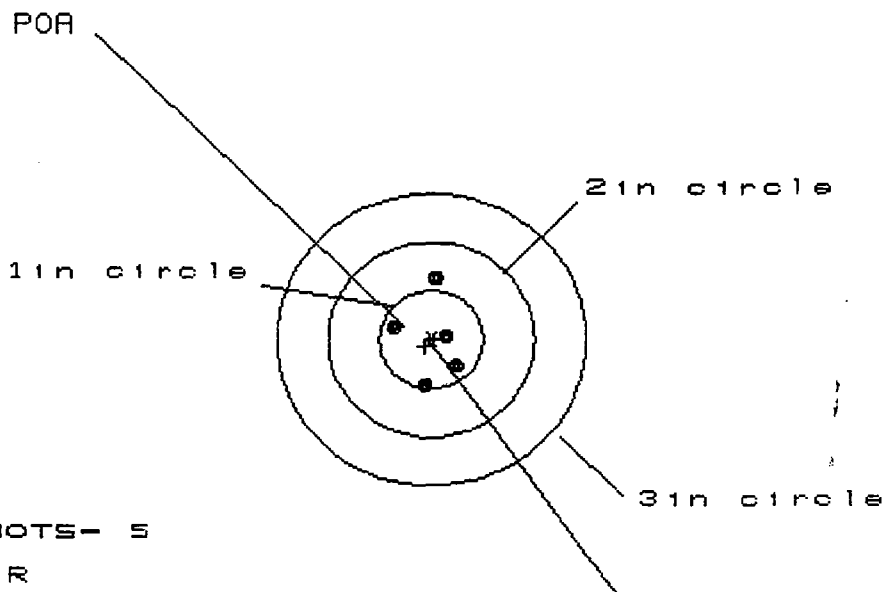
RANGE: 100 YDS

BENCH RESTED

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/WOOD

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .564

VS= 1.053

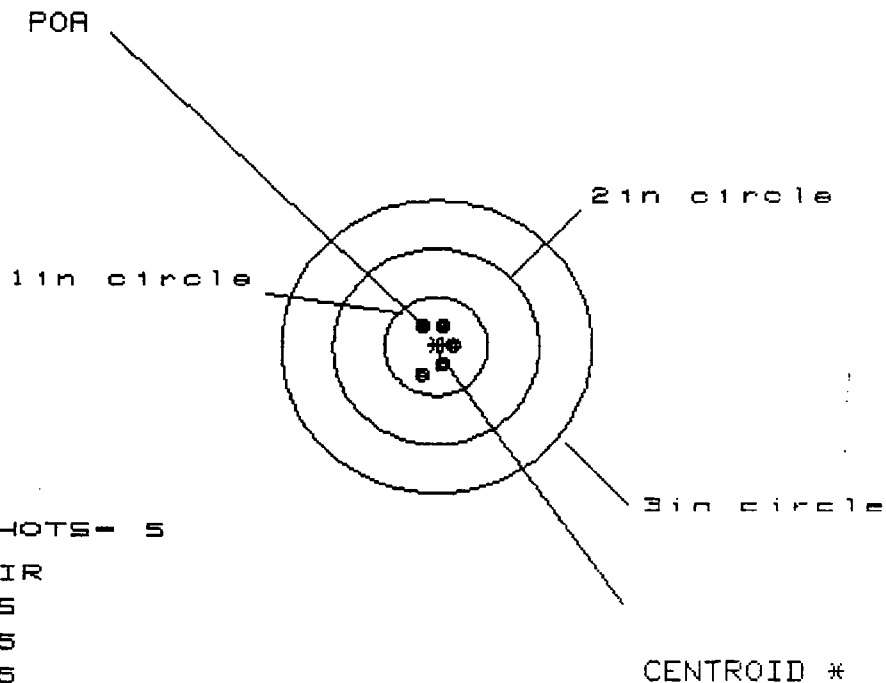
GS= 1.056

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.230	.238	.226
MINIMUM X	:	-.334	-.326	-.338
MAXIMUM Y	:	.619	.292	.199
MINIMUM Y	:	-.434	-.280	-.250
CENTROID X	:	.060	.052	.064
CENTROID Y	:	.068	-.086	.007
POA TO CENTROID in.	:	.091	.101	.065
MIN RADIUS	:	.117	.191	.124
MEAN RADIUS	:	.384	.299	.284
MAX RADIUS	:	.620	.438	.393
HORIZONTAL SPREAD	:	.564	.564	.564
VERTICAL SPREAD	:	1.053	.572	.449
EXTREME SPREAD	:	1.056	.721	.721
NUMBER IN ONE INCH CIRCLE	=		4	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/WOOD

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .346

VS= .479

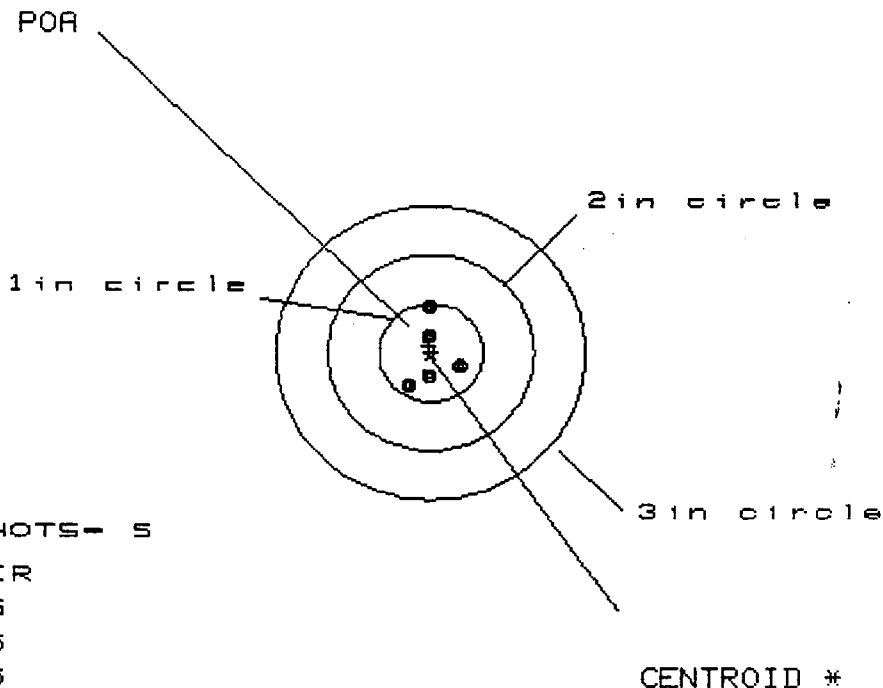
GS= .515

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.156	.108	.049
MINIMUM X	:	-.190	-.178	-.025
MAXIMUM Y	:	.226	.163	.175
MINIMUM Y	:	-.253	-.239	-.185
CENTROID X	:	-.058	-.010	.049
CENTROID Y	:	-.017	.046	-.008
POA TO CENTROID in.	:	.060	.047	.050
MIN RADIUS	:	.157	.117	.050
MEAN RADIUS	:	.226	.181	.138
MAX RADIUS	:	.317	.242	.187
HORIZONTAL SPREAD	:	.346	.286	.074
VERTICAL SPREAD	:	.479	.402	.360
EXTREME SPREAD	:	.515	.455	.360
NUMBER IN ONE INCH CIRCLE	=	5		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/WOOD

CENTERFIRE PATTERNS # 4



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .442

VS= .792

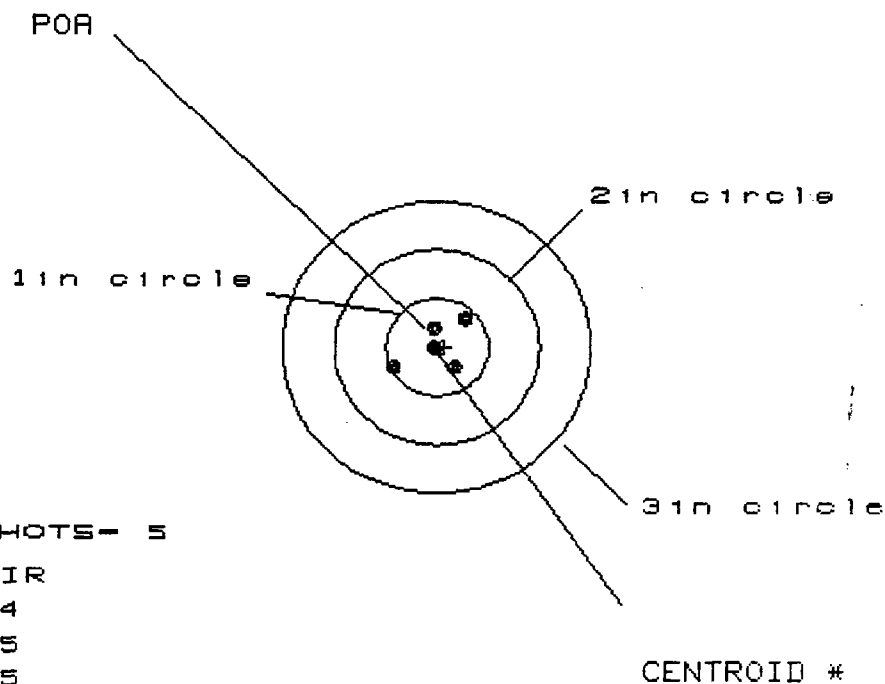
GS= .806

PATTERN #	:	4		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.262	.254	.191
MINIMUM X	:	-.180	-.188	-.113
MAXIMUM Y	:	.497	.284	.227
MINIMUM Y	:	-.295	-.171	-.188
CENTROID X	:	.019	.027	.090
CENTROID Y	:	-.072	-.196	-.139
POA TO CENTROID in.	:	.074	.198	.166
MIN RADIUS	:	.160	.140	.195
MEAN RADIUS	:	.309	.233	.218
MAX RADIUS	:	.498	.285	.241
HORIZONTAL SPREAD	:	.442	.442	.304
VERTICAL SPREAD	:	.792	.455	.415
EXTREME SPREAD	:	.806	.486	.416
NUMBER IN ONE INCH CIRCLE	=	5		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/WOOD

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .769

VS= .492

GS= .912

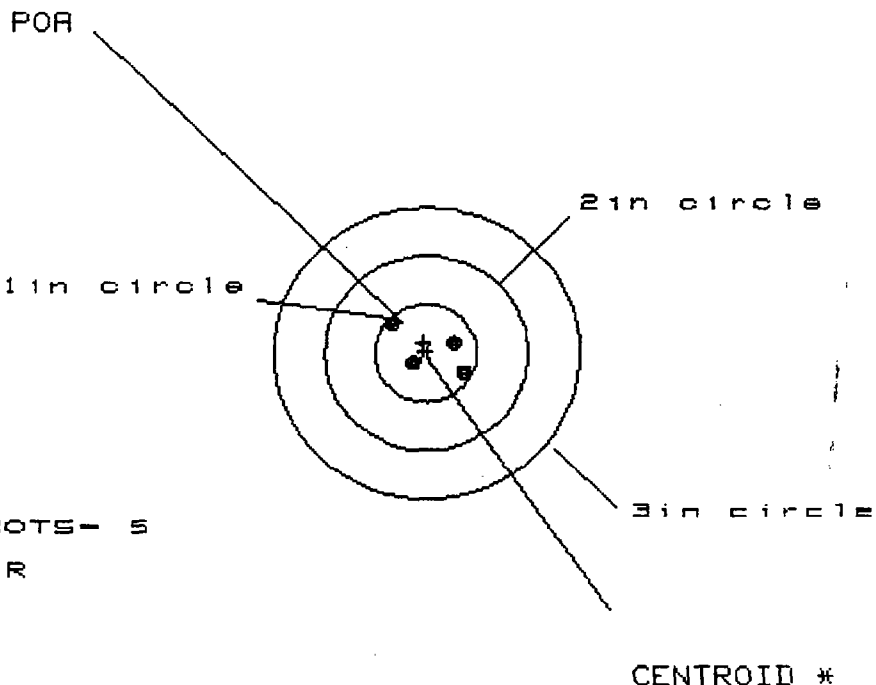
PATTERN #	:	5		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.304	.188	.149
MINIMUM X	:	-.465	-.158	-.095
MAXIMUM Y	:	.280	.227	.179
MINIMUM Y	:	-.212	-.265	-.189
CENTROID X	:	-.071	.045	-.018
CENTROID Y	:	.001	.054	-.022
POA TO CENTROID in.	:	.071	.070	.028
MIN RADIUS	:	.012	.133	.054
MEAN RADIUS	:	.278	.224	.166
MAX RADIUS	:	.510	.295	.241
HORIZONTAL SPREAD	:	.769	.346	.244
VERTICAL SPREAD	:	.492	.492	.368
EXTREME SPREAD	:	.912	.502	.442
NUMBER IN ONE INCH CIRCLE	=		4	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/SIX

CENTERFIRE PATTERNS

1



OF SHOTS- 5

IN CIR

1in - 5

2in - 5

3in = 5

HS- .659

VS= .419

GS= .781

AVG. G.S. = .804

#C 6360812

PATTERN # :

1

2250 BDL. VARWINT.

SHOTS (BEST OF) :

5

4

3

MAXIMUM X :

.340

.261

.297

MINIMUM X :

-.319

-.252

-.166

MAXIMUM Y :

.260

.173

.142

MINIMUM Y :

-.159

-.094

-.100

CENTROID X :

.030

.109

.023

CENTROID Y :

-.107

-.172

-.141

POA TO CENTROID in.:

.111

.204

.143

MIN RADIUS :

.158

.219

.138

MEAN RADIUS :

.295

.257

.220

MAX RADIUS :

.412

.277

.330

HORIZONTAL SPREAD :

.659

.513

.463

VERTICAL SPREAD :

.419

.267

.242

EXTREME SPREAD :

.781

.522

.522

NUMBER IN ONE INCH CIRCLE =

5

NUMBER IN TWO INCH CIRCLE =

5

NUMBER IN THREE INCH CIRCLE =

5

AMMO: REMINGTON

55 GR. POWER-LOK. H.P.

INDEX- R22562

LOT- N240C5721

SCOPE- LYMAN

ALL AMERICAN- 20X

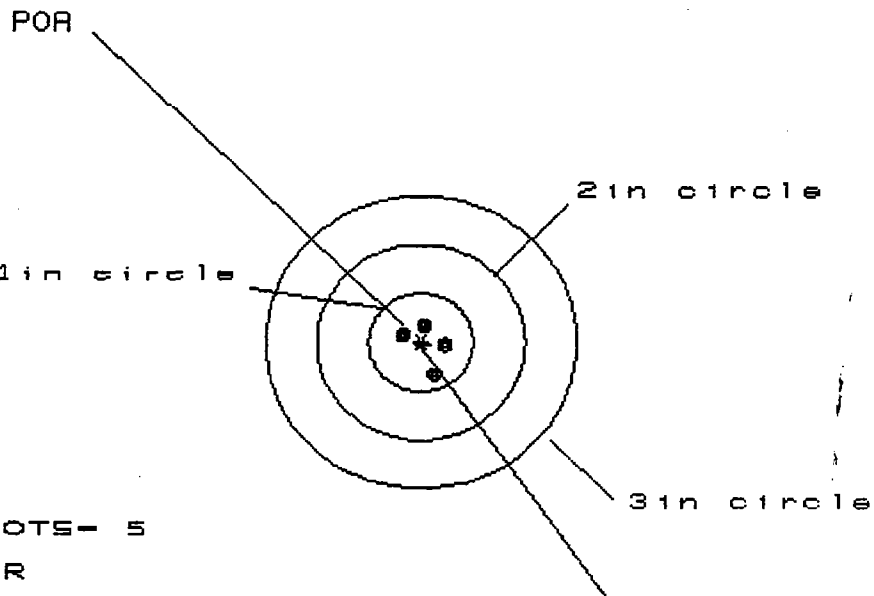
RANGE: 100 YDS.

BENCH RESTED.

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/SIX

CENTERFIRE PATTERNS # 2



OF SHOTS- 5
IN CIR
1in = 5
2in = 5
3in = 5
HS= .426
VS= .486
GS= .535

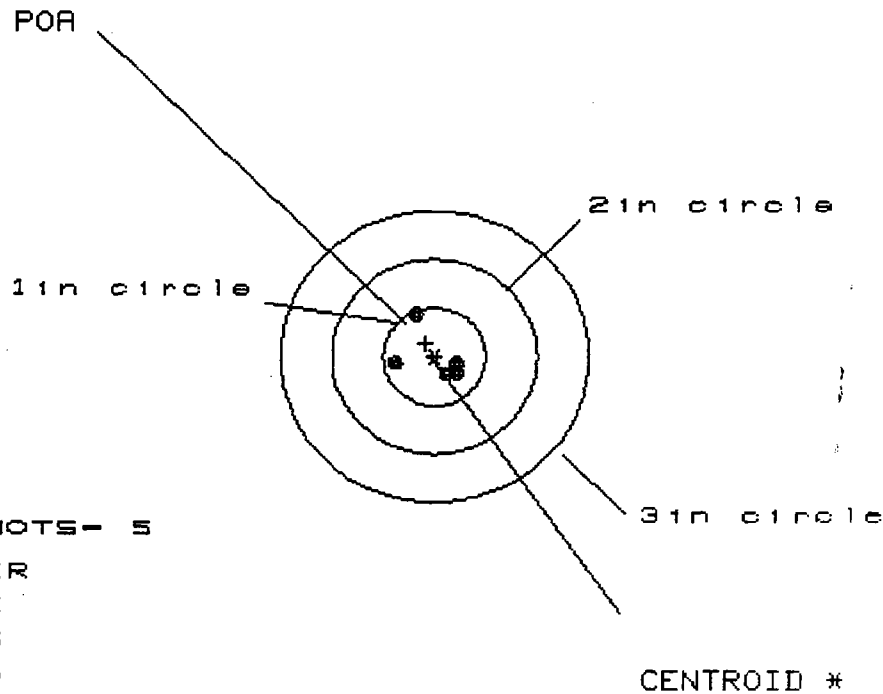
CENTROID #

PATTERN #	:	2	4	3
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.220	.253	.195
MINIMUM X	:	-.206	-.174	-.231
MAXIMUM Y	:	.167	.087	.092
MINIMUM Y	:	-.319	-.114	-.109
CENTROID X	:	-.028	-.061	-.003
CENTROID Y	:	.022	.102	.097
POA TO CENTROID in.	:	.036	.119	.097
MIN RADIUS	:	.177	.127	.099
MEAN RADIUS	:	.239	.188	.185
MAX RADIUS	:	.345	.277	.231
HORIZONTAL SPREAD	:	.426	.426	.426
VERTICAL SPREAD	:	.486	.201	.201
EXTREME SPREAD	:	.535	.444	.444
NUMBER IN ONE INCH CIRCLE	=	5	5	5
NUMBER IN TWO INCH CIRCLE	=	5	5	5
NUMBER IN THREE INCH CIRCLE	=	5	5	5

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/SIX

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .665

VS= .586

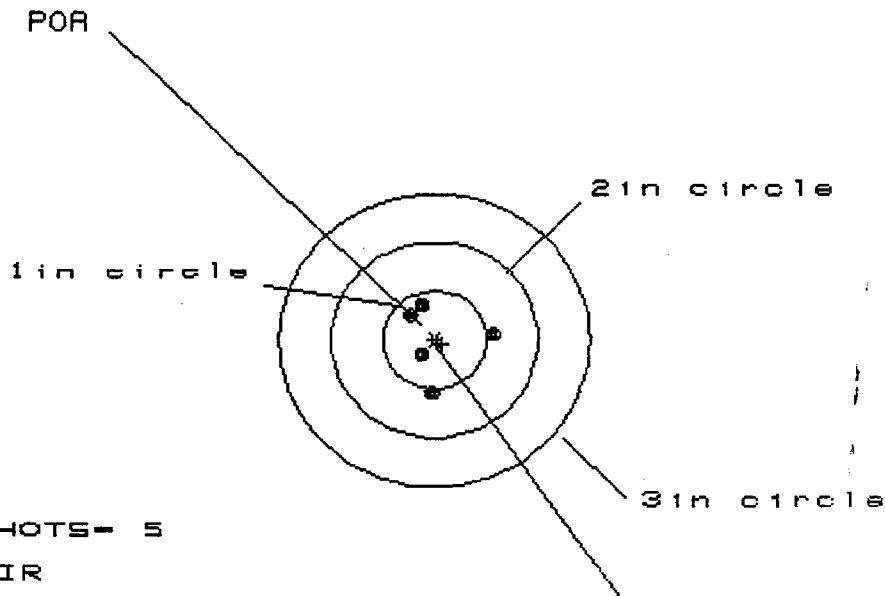
GS= .710

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.258	.208	.055
MINIMUM X	-.407	-.458	-.088
MAXIMUM Y	.430	.047	.022
MINIMUM Y	-.156	-.048	-.033
CENTROID X	.082	.133	.285
CENTROID Y	-.137	-.244	-.260
POA TO CENTROID in.	.160	.278	.386
MIN RADIUS	.194	.081	.040
MEAN RADIUS	.323	.233	.063
MAX RADIUS	.474	.460	.094
HORIZONTAL SPREAD	.665	.665	.143
VERTICAL SPREAD	.586	.096	.055
EXTREME SPREAD	.710	.667	.149
NUMBER IN ONE INCH CIRCLE	= 5		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/SIX

CENTERFIRE PATTERNS # 4



OF SHOTS- 5

IN CIR

1in - 3

2in - 5

3in - 5

HS- .768

VS- .901

GS- .902

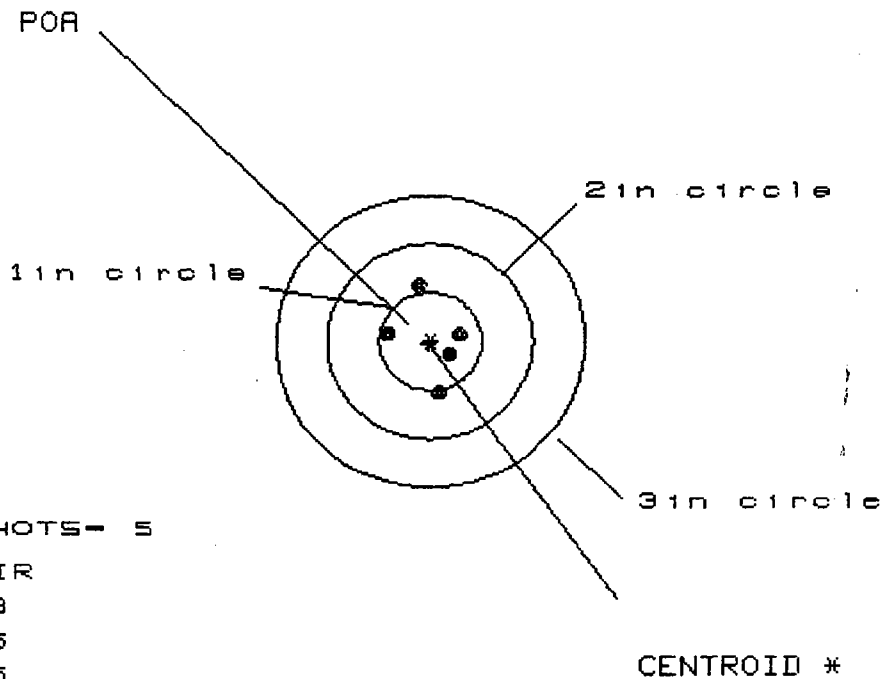
CENTROID #

PATTERN #	:	4		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.532	.520	.063
MINIMUM X	:	-.236	-.248	-.075
MAXIMUM Y	:	.350	.212	.200
MINIMUM Y	:	-.551	-.273	-.285
CENTROID X	:	-.065	-.053	-.226
CENTROID Y	:	.045	.183	.195
POA TO CENTROID in.	:	.079	.190	.299
MIN RADIUS	:	.201	.239	.114
MEAN RADIUS	:	.399	.336	.203
MAX RADIUS	:	.553	.521	.286
HORIZONTAL SPREAD	:	.768	.768	.138
VERTICAL SPREAD	:	.901	.485	.485
EXTREME SPREAD	:	.902	.780	.488
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/SIX

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1in - 3

2in - 5

3in = 5

HS= .666

VS= 1.077

GS= 1.087

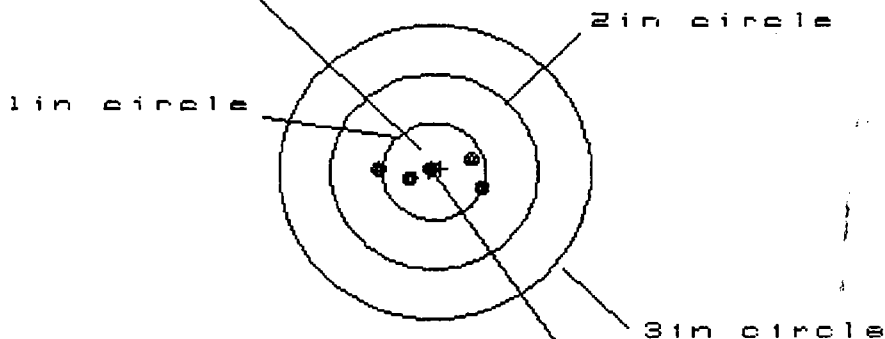
PATTERN #	:	5		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.246	.264	.243
MINIMUM X	:	-.420	-.402	-.423
MAXIMUM Y	:	.535	.399	.070
MINIMUM Y	:	-.542	-.242	-.109
CENTROID X	:	.017	-.001	.020
CENTROID Y	:	.024	.160	.027
POA TO CENTROID in.	:	.029	.160	.033
MIN RADIUS	:	.211	.271	.210
MEAN RADIUS	:	.395	.350	.296
MAX RADIUS	:	.547	.413	.424
HORIZONTAL SPREAD	:	.666	.666	.666
VERTICAL SPREAD	:	1.077	.641	.179
EXTREME SPREAD	:	1.087	.692	.667
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/MCNILLAN

CENTERFIRE PATTERNS # 1

POA



OF SHOTS - 5

IN CIR

1 in = 4

2 in = 5

3 in = 5

HS = .983

VS = .272

GS = 1.007

AVG. G.S. = .921

CENTROID #

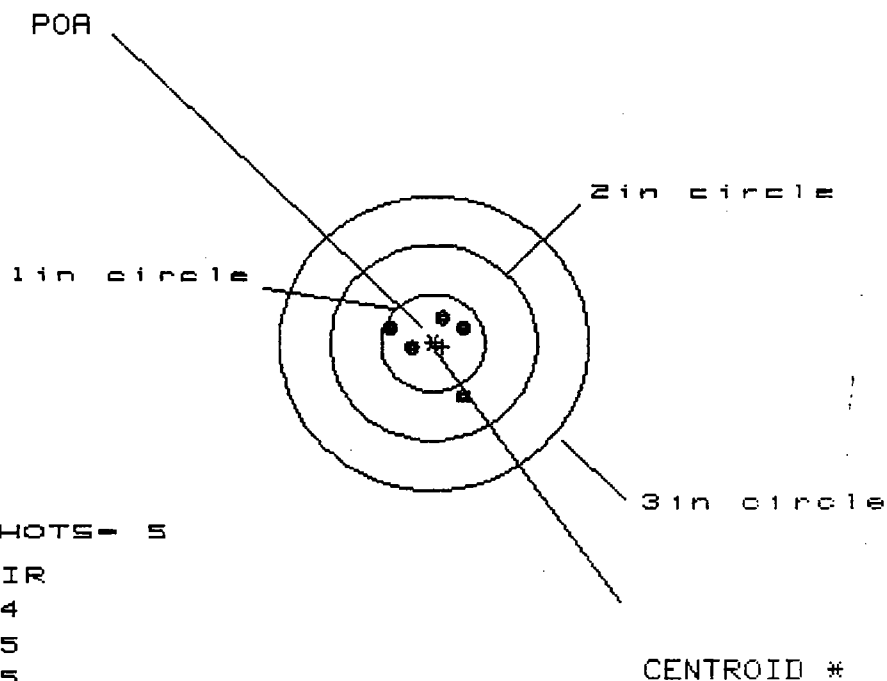
#C6360812

PATTERN #	:	1			22-250 BDL VARMINT
SHOTS (BEST OF)	:	5	4	3	<u>AMMO:</u> REMINGTON
MAXIMUM X	:	.427	.288	.321	22-250 .55GR. POWER-LOX
MINIMUM X	:	-.556	-.364	-.268	H.P.
MAXIMUM Y	:	.124	.142	.098	<u>INDEX:</u> R22502
MINIMUM Y	:	-.148	-.130	-.142	LOT. N240C5721
CENTROID X	:	-.060	.079	-.017	<u>SCOPE:</u> LYMAN
CENTROID Y	:	-.031	-.049	-.005	ALL AMERICAN - 20X
POA TO CENTROID in.	:	.068	.093	.018	
MIN RADIUS	:	.070	.173	.069	
MEAN RADIUS	:	.344	.283	.236	
MAX RADIUS	:	.560	.377	.336	
HORIZONTAL SPREAD	:	.983	.652	.589	<u>RANGE:</u> 100 YDS.
VERTICAL SPREAD	:	.272	.272	.240	BENCH RESTED.
EXTREME SPREAD	:	1.007	.653	.636	
NUMBER IN ONE INCH CIRCLE	=		4		
NUMBER IN TWO INCH CIRCLE	=		5		
NUMBER IN THREE INCH CIRCLE	=		5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/MCNILLAN

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in - 4

2in - 5

3in - 5

HS- .763

VS- .843

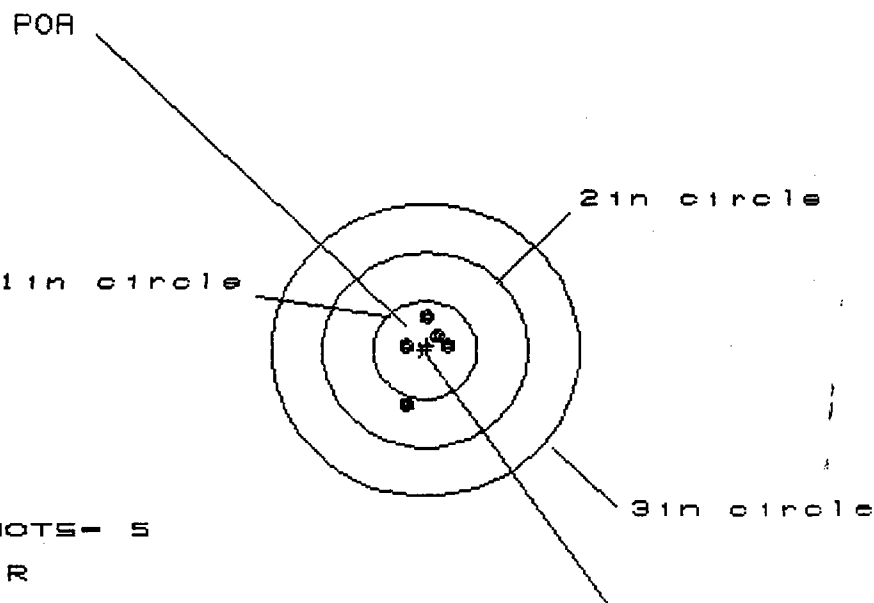
GS- 1.021

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.306	.382	.255
MINIMUM X	-.457	-.381	-.256
MAXIMUM Y	.285	.145	.139
MINIMUM Y	-.558	-.177	-.183
CENTROID X	-.091	-.167	-.040
CENTROID Y	.038	.178	.184
POA TO CENTROID in.	.099	.244	.188
MIN RADIUS	.209	.193	.139
MEAN RADIUS	.393	.295	.237
MAX RADIUS	.636	.385	.315
HORIZONTAL SPREAD	.763	.763	.511
VERTICAL SPREAD	.843	.322	.322
EXTREME SPREAD	1.021	.766	.559
NUMBER IN ONE INCH CIRCLE	=	4	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/MCHILLAN

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .368

VS= .913

GS= .941

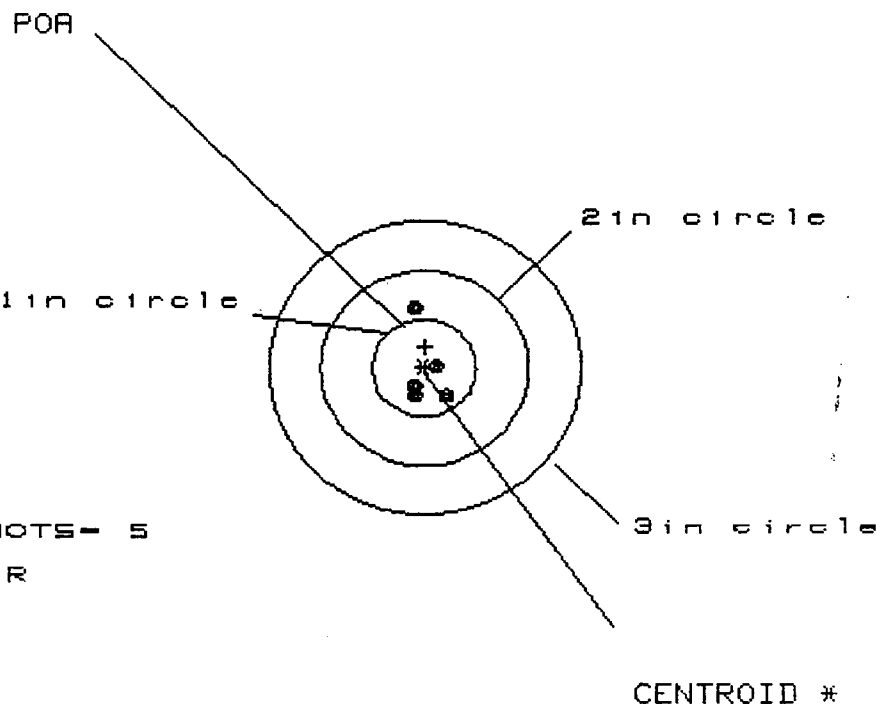
CENTROID #

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.185	.139	.138
MINIMUM X	-.183	-.208	-.209
MAXIMUM Y	.347	.205	.094
MINIMUM Y	-.566	-.126	-.057
CENTROID X	-.016	.030	.031
CENTROID Y	-.046	.096	.027
POA TO CENTROID in.	.048	.100	.041
MIN RADIUS	.163	.075	.117
MEAN RADIUS	.300	.174	.159
MAX RADIUS	.595	.243	.216
HORIZONTAL SPREAD	.368	.347	.347
VERTICAL SPREAD	.913	.331	.151
EXTREME SPREAD	.941	.390	.348
NUMBER IN ONE INCH CIRCLE =	4		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/MCNILLAN

CENTERFIRE PATTERNS # 4



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .359

VS= .839

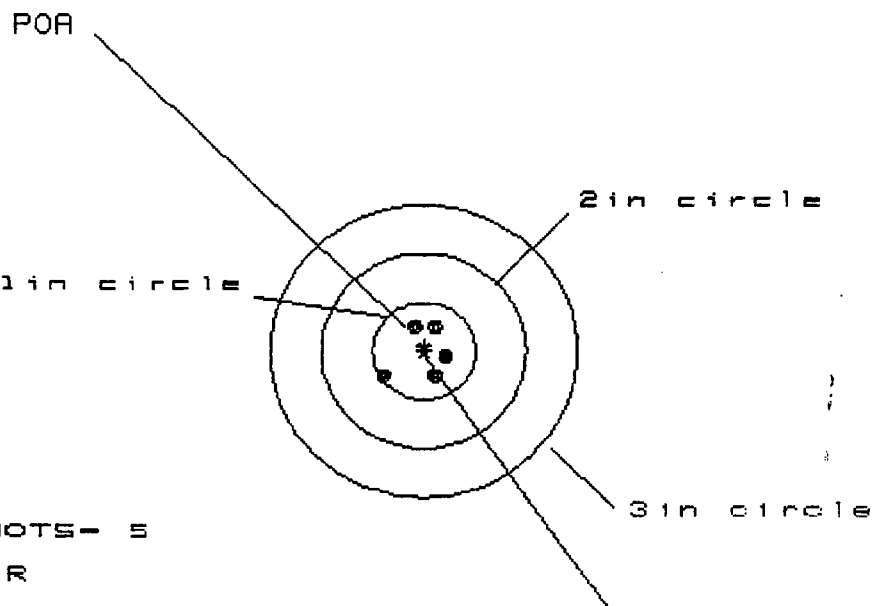
GS= .901

PATTERN #	4	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.225	.192	.143
MINIMUM X	-.134	-.141	-.078
MAXIMUM Y	.592	.205	.176
MINIMUM Y	-.247	-.099	-.128
CENTROID X	-.012	.022	-.042
CENTROID Y	-.219	-.367	-.338
POA TO CENTROID in.	.219	.368	.341
MIN RADIUS	.127	.143	.092
MEAN RADIUS	.305	.184	.154
MAX RADIUS	.607	.220	.227
HORIZONTAL SPREAD	.359	.333	.221
VERTICAL SPREAD	.839	.304	.304
EXTREME SPREAD	.901	.369	.369
NUMBER IN ONE INCH CIRCLE	= 4		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/MCILLAN

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .585

VS= .526

GS= .731

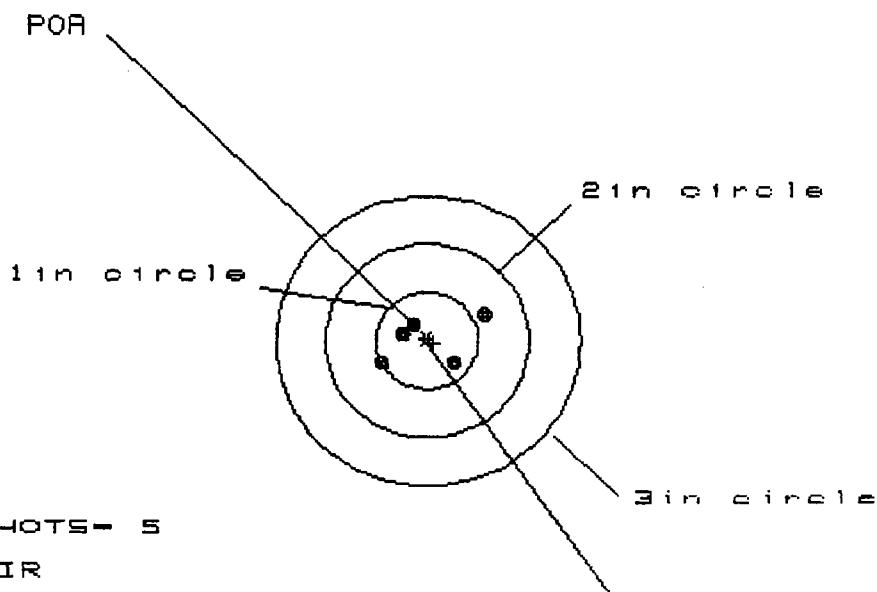
CENTROID *

PATTERN #	5	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.221	.130	.147
MINIMUM X	-.364	-.207	-.190
MAXIMUM Y	.276	.214	.243
MINIMUM Y	-.250	-.261	-.190
CENTROID X	-.005	.086	.069
CENTROID Y	-.051	.011	-.060
POA TO CENTROID in.	.052	.087	.092
MIN RADIUS	.229	.180	.156
MEAN RADIUS	.295	.233	.220
MAX RADIUS	.442	.270	.309
HORIZONTAL SPREAD	.585	.337	.337
VERTICAL SPREAD	.526	.475	.433
EXTREME SPREAD	.731	.492	.492
NUMBER IN ONE INCH CIRCLE =	5		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

15 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/HPRECISION

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

ME = .026

VS = .487

GS = 1.046

Avg. GS = .843

* C6360812

PATTERN #

1

22-250 DOL VARMINT

SHOTS (BEST OF)

5

4

3

MAXIMUM X

.536

.440

.354

MINIMUM X

-.390

-.257

-.219

MAXIMUM Y

.245

.226

.166

MINIMUM Y

-.242

-.181

-.214

CENTROID X

-.062

-.196

-.110

CENTROID Y

.027

-.034

.026

POA TO CENTROID in.

.067

.198

.113

MIN RADIUS

.247

.172

.214

MEAN RADIUS

.388

.296

.284

MAX RADIUS

.589

.466

.414

HORIZONTAL SPREAD

.926

.696

.573

VERTICAL SPREAD

.487

.407

.380

EXTREME SPREAD

1.046

.697

.630

NUMBER IN ONE INCH CIRCLE =

4

NUMBER IN TWO INCH CIRCLE =

5

NUMBER IN THREE INCH CIRCLE =

5

ammo: REMINGTON

55GR. POWER-LOK. HP.

INDEX: R22501

LOT- N240C5721

SCOPE: LYMAN

ALL-AMERICAN-20X

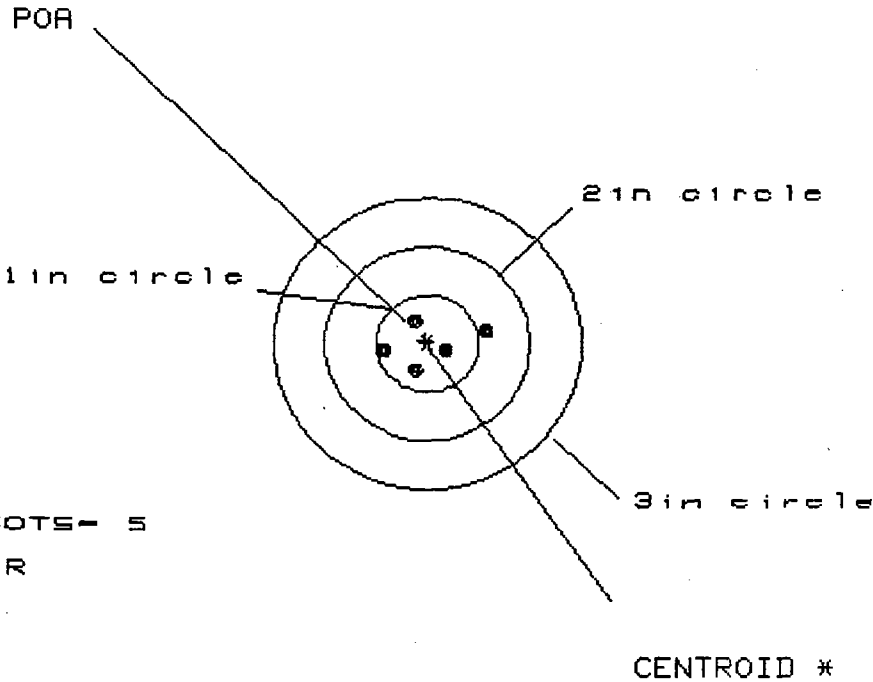
RANGE-100 YDS.

BENCH RESTED

15 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/HPRECISION

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .975

VS= .554

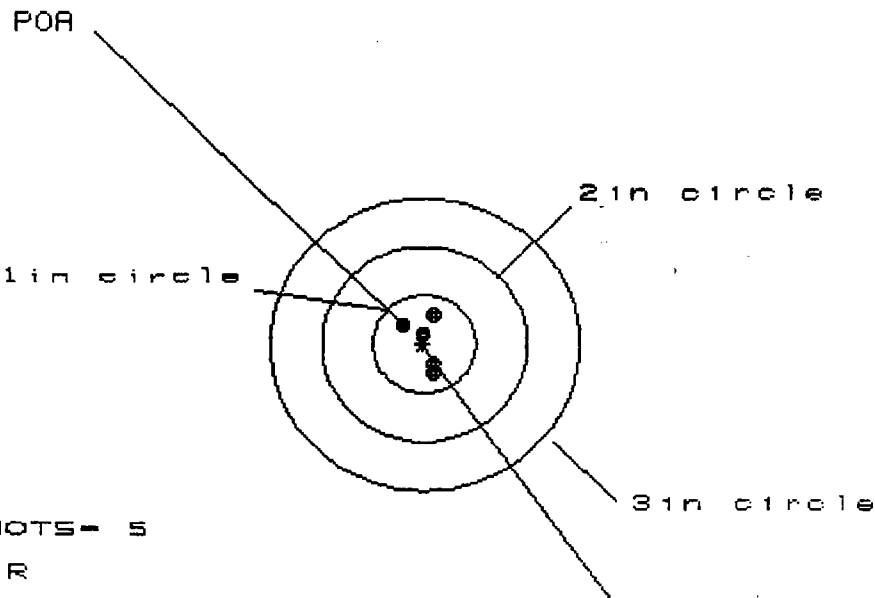
GS= .989

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.537	.296	.195
MINIMUM X	:	-.438	-.303	-.114
MAXIMUM Y	:	.243	.279	.284
MINIMUM Y	:	-.311	-.275	-.270
CENTROID X	:	.029	-.106	-.005
CENTROID Y	:	-.036	-.072	-.077
POA TO CENTROID in.	:	.046	.128	.077
MIN RADIUS	:	.170	.275	.195
MEAN RADIUS	:	.355	.289	.261
MAX RADIUS	:	.557	.304	.295
HORIZONTAL SPREAD	:	.975	.599	.309
VERTICAL SPREAD	:	.554	.554	.554
EXTREME SPREAD	:	.989	.600	.555
NUMBER IN ONE INCH CIRCLE	=		4	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

15 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/HPRECISION

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .301

VS= .577

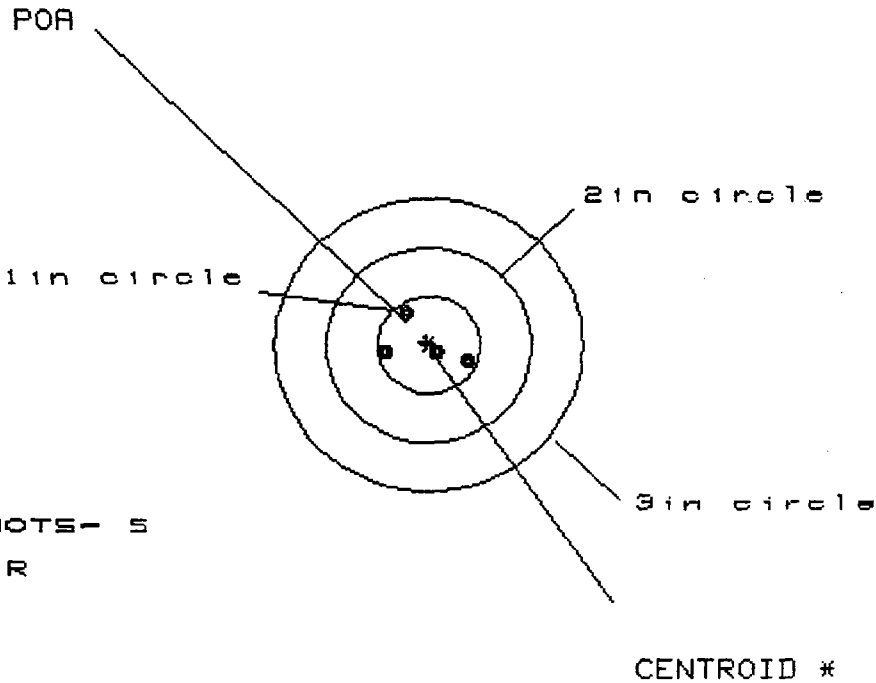
GS= .584

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.101	.095	.037
MINIMUM X	-.200	-.174	-.049
MAXIMUM Y	.253	.172	.204
MINIMUM Y	-.324	-.263	-.231
CENTROID X	.013	-.013	.045
CENTROID Y	-.001	.080	.048
POA TO CENTROID in.	.013	.081	.066
MIN RADIUS	.077	.010	.056
MEAN RADIUS	.227	.169	.165
MAX RADIUS	.339	.279	.234
HORIZONTAL SPREAD	.301	.269	.086
VERTICAL SPREAD	.577	.435	.435
EXTREME SPREAD	.584	.448	.436
NUMBER IN ONE INCH CIRCLE	= 5		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

15 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/HPRECISION

CENTERFIRE PATTERNS # 4



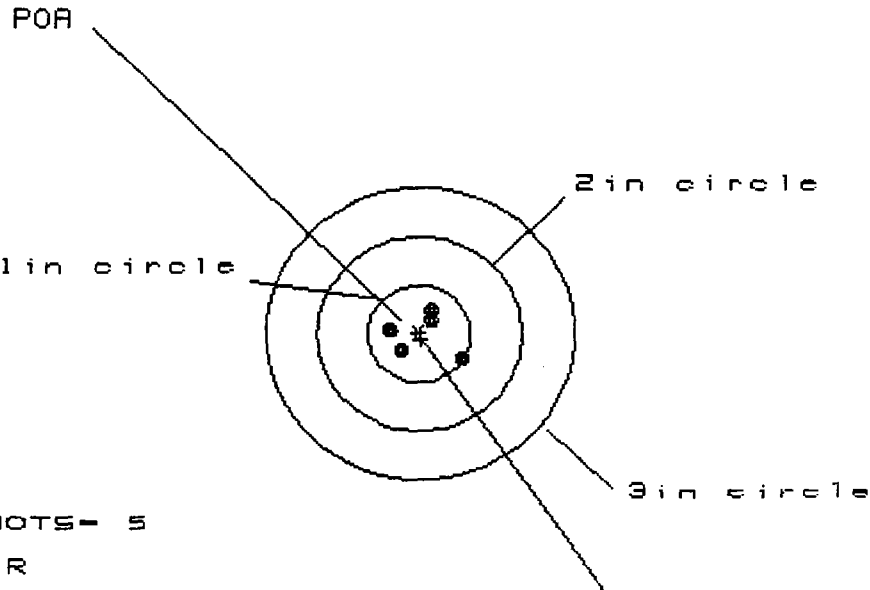
OF SHOTS- 5
IN CIR
1in = 5
2in = 5
3in = 5
HS= .850
VS= .565
GS= .859

PATTERN #	4	3	2
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.414	.219	.108
MINIMUM X	-.436	-.332	-.188
MAXIMUM Y	.355	.303	.258
MINIMUM Y	-.210	-.135	-.145
CENTROID X	.025	-.079	.032
CENTROID Y	-.035	.017	.062
POA TO CENTROID in.	.043	.081	.070
MIN RADIUS	.088	.202	.138
MEAN RADIUS	.304	.278	.213
MAX RADIUS	.464	.358	.319
HORIZONTAL SPREAD	.850	.551	.296
VERTICAL SPREAD	.565	.438	.403
EXTREME SPREAD	.859	.552	.500
NUMBER IN ONE INCH CIRCLE	= 5		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

15 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/HPRECISSION

CENTERFIRE PATTERNS # 5



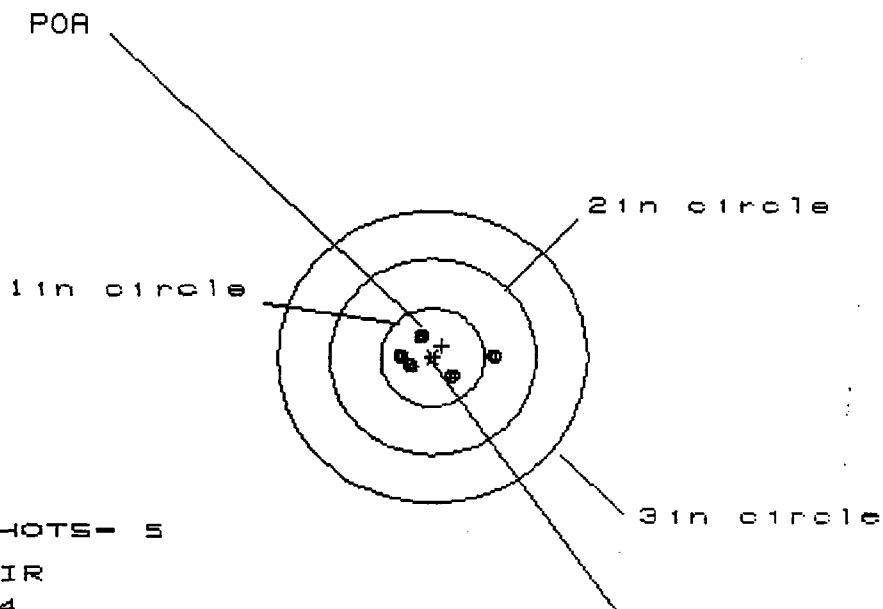
OF SHOTS- 5
 # IN CIR
 1 in = 5
 2 in = 5
 3 in = 5
 HS= .655
 VS= .509
 GS= .731

PATTERN #	5	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.368	.172	.106
MINIMUM X	-.287	-.195	-.203
MAXIMUM Y	.227	.156	.147
MINIMUM Y	-.282	-.197	-.206
CENTROID X	-.015	-.107	-.041
CENTROID Y	.058	.129	.138
POA TO CENTROID in.	.060	.167	.144
MIN RADIUS	.156	.176	.113
MEAN RADIUS	.282	.211	.195
MAX RADIUS	.463	.240	.289
HORIZONTAL SPREAD	.655	.367	.309
VERTICAL SPREAD	.509	.353	.353
EXTREME SPREAD	.731	.469	.469
NUMBER IN ONE INCH CIRCLE	= 5		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/PRECISION

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .950

VS= .316

GS= .950

Avg. G.S. = .934

CENTROID #

C.6360812

PATTERN #	1	2	3	4	5
SHOTS (BEST OF)	5	4	3	2	1
MAXIMUM X	.591	.319	.248	.171	.109
MINIMUM X	-.359	-.212	-.171	-.109	-.088
MAXIMUM Y	.171	.184	.207	.165	.150
MINIMUM Y	-.145	-.132	-.109	-.165	-.150
CENTROID X	-.088	-.235	-.165	-.150	-.128
CENTROID Y	-.114	-.128	-.150	-.128	-.109
POA TO CENTROID in.	.144	.268	.223	.197	.158
MIN RADIUS	.224	.158	.197	.158	.128
MEAN RADIUS	.339	.227	.230	.271	.345
MAX RADIUS	.593	.345	.271	.419	.530
HORIZONTAL SPREAD	.950	.530	.419	.316	.248
VERTICAL SPREAD	.316	.316	.316	.453	.566
EXTREME SPREAD	.950	.566	.453		
NUMBER IN ONE INCH CIRCLE	=	4			
NUMBER IN TWO INCH CIRCLE	=	5			
NUMBER IN THREE INCH CIRCLE	=	5			

22-250REM BDL. VARMINI

PMMD: REMINGTON

22-250-55GR POWER-LOK
H.P.

INDEX: R22502

LOT. N240C5721

SCOPE: LYMAN

ALL AMERICAN-20-X

RANGE- 100 YDS

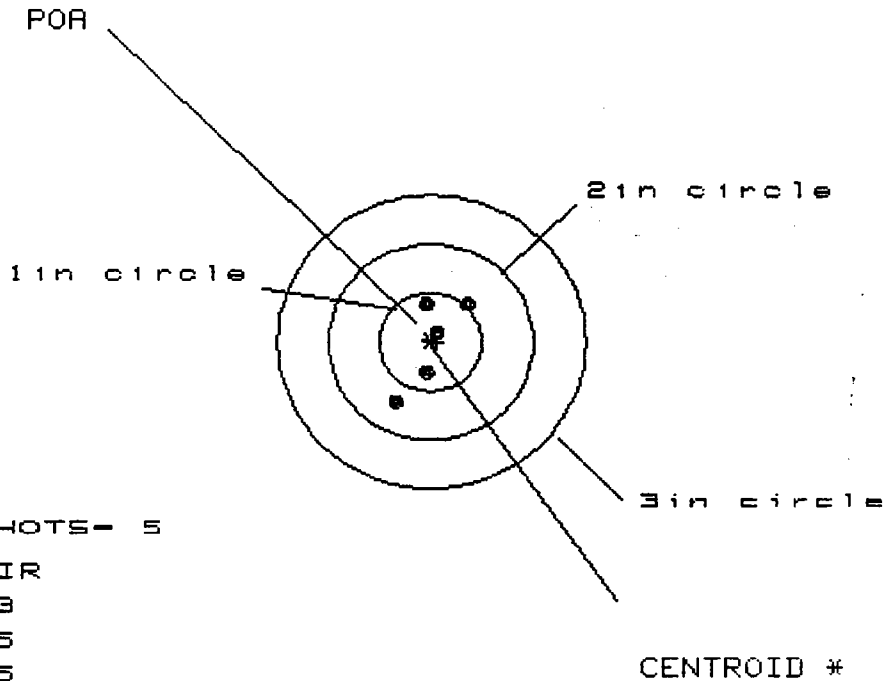
BENCH. RESTED

PRODUCTION. FRONT & REAR GUARD SCREWS

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/PRECISION

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= .679

VS= 1.005

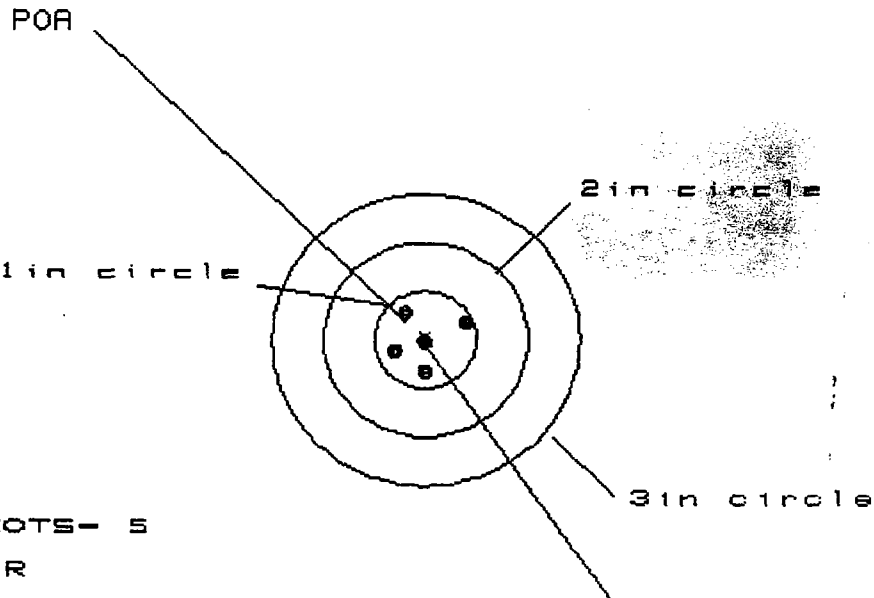
GS= 1.213

PATTERN #	2	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.368	.290	.041
MINIMUM X	-.311	-.158	-.061
MAXIMUM Y	.440	.299	.325
MINIMUM Y	-.565	-.457	-.358
CENTROID X	-.064	.014	-.083
CENTROID Y	.006	.147	.048
POA TO CENTROID in.	.064	.148	.096
MIN RADIUS	.078	.087	.052
MEAN RADIUS	.398	.311	.247
MAX RADIUS	.645	.464	.359
HORIZONTAL SPREAD	.679	.448	.102
VERTICAL SPREAD	1.005	.756	.683
EXTREME SPREAD	1.213	.840	.688
NUMBER IN ONE INCH CIRCLE =	3		
NUMBER IN TWO INCH CIRCLE =	5		
NUMBER IN THREE INCH CIRCLE =	5		

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/PRECISION

CENTERFIRE PATTERNS # 3



OF SHOTS- 5
 # IN CIR
 1in = 5
 2in = 5
 3in = 5
 HS= .704
 VS= .539
 GS= .779

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.407	.125	.060
MINIMUM X	-.297	-.195	-.118
MAXIMUM Y	.261	.306	.270
MINIMUM Y	-.278	-.233	-.269
CENTROID X	.001	-.101	-.036
CENTROID Y	.018	-.027	.009
POA TO CENTROID in.	.018	.105	.037
MIN RADIUS	.024	.128	.058
MEAN RADIUS	.277	.231	.209
MAX RADIUS	.446	.311	.295
HORIZONTAL SPREAD	.704	.320	.178
VERTICAL SPREAD	.539	.539	.539
EXTREME SPREAD	.779	.568	.568
NUMBER IN ONE INCH CIRCLE =	5	5	5
NUMBER IN TWO INCH CIRCLE =	5	5	5
NUMBER IN THREE INCH CIRCLE =	5	5	5

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/PRECISION

CENTERFIRE PATTERNS # 4

POA

1 in circle

2 in circle

3 in circle

CENTROID *

OF SHOTS- 5

IN CIR

1 in = 4

2 in = 5

3 in = 5

HS= .717

VS= .545

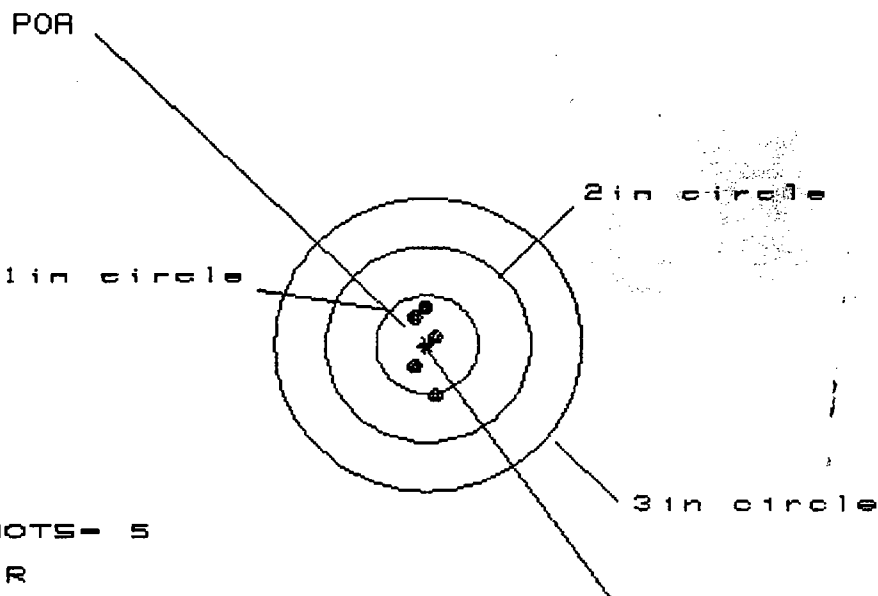
GS= .901

PATTERN #	4	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.352	.433	.341
MINIMUM X	-.365	-.278	-.180
MAXIMUM Y	.380	.076	.053
MINIMUM Y	-.165	-.070	-.087
CENTROID X	-.099	-.186	-.094
CENTROID Y	-.096	-.191	-.168
POA TO CENTROID in.	.138	.267	.193
MIN RADIUS	.158	.103	.169
MEAN RADIUS	.332	.234	.237
MAX RADIUS	.518	.437	.343
HORIZONTAL SPREAD	.717	.711	.521
VERTICAL SPREAD	.545	.146	.140
EXTREME SPREAD	.901	.722	.535
NUMBER IN ONE INCH CIRCLE =		4	
NUMBER IN TWO INCH CIRCLE =		5	
NUMBER IN THREE INCH CIRCLE =		5	

14 Mar 1991

FILE:/PATTERNING/CENTERFIRE_PATT/PRECISION

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1 in = 5

2 in = 5

3 in = 5

HS= .231

VS= .808

GS= .828

CENTROID #

PATTERN #	:	5		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.122	.148	.139
MINIMUM X	:	-.109	-.078	-.087
MAXIMUM Y	:	.333	.215	.233
MINIMUM Y	:	-.475	-.350	-.279
CENTROID X	:	.022	-.009	.000
CENTROID Y	:	.021	.139	.068
POA TO CENTROID in.	:	.030	.140	.068
MIN RADIUS	:	.149	.150	.146
MEAN RADIUS	:	.304	.225	.226
MAX RADIUS	:	.490	.353	.283
HORIZONTAL SPREAD	:	.231	.226	.226
VERTICAL SPREAD	:	.808	.565	.512
EXTREME SPREAD	:	.828	.565	.513
NUMBER IN ONE INCH CIRCLE	=	5		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

Report No. 911501

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	AREA OF TESTING ☐ Safety Related ☐ Competitive Evaluation ☒ New Design ☐ Design Change ☐ Plant Assistance ☐ Litigation ☐ Warehouse Audit ☐ Cost Reduction Stake ☐ Other	
FIREARM STAT'S MODEL: <u>M 700</u> CAL or GAGE: <u>30-06</u> BARREL TYPE: <u>Sporter</u> PROOFED: YES ☐ NO ☒	REPORT REQ'D. FORMAL ☐ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>5-30-91</u> DATE NEEDED BY: <u>5-31-91</u> REQUESTED BY: <u>F. MARTIN</u> WORK ORDER NO: <u>481155</u>

TEST TYPE

☐ Strength Test	☐ Ammunition Test	☐ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other
☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST: Please SHOOT Double Proof Test - Then SHOOT 20 Service Rounds 180GR Soft Point - SHOOT 10 Rnds WITH BOTH CATCHES Engaged - 5 EACH Disengaged As Discussed Previously

-GUNS REQUIRED: Supplied

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 5-31-91
TEST COMPLETED BY: SS
REPORT DATE: 5-31-91

Magazine Box

Rifle was double proofed.

Headspace Before Min +.003

After Min +.003

10 rounds shot with both catches engaged
No Malfunctions.

5 rds. shot with one catch disengaged

Right catch disengaged Box fell out

Left catch disengaged Box stayed in.

5 rds. shot with both catches disengaged
Box fell out.

Report No. 911371

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☐ Design Change ☐ Stake _____ ☒ Plant Assistance ☐ Other _____	
<u>FIREARM STAT'S.</u> MODEL: <u>700</u> CAL or GAGE: <u>.223</u> BARREL TYPE: <u>VARMINY OR STD.</u> PROOFED: YES ☒ NO ☐	<u>REPORT REQ'D.</u> FORMAL ☐ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>5/17/91</u> DATE NEEDED BY: <u>6/15/91</u> REQUESTED BY: <u>J. RANKINE</u> WORK ORDER NO: <u>401152</u>
<u>TEST TYPE</u> ☐ Strength Test ☐ Ammunition Test ☐ Dry Cycle Test ☐ Photo/Video ☐ Function Test ☐ Environmental Test ☐ Measurements ☐ Other _____ ☒ Accuracy Test ☐ Customer Complaint ☐ Endurance Test _____		

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

THE PURPOSE OF THE TEST IS TO COMPARE THE EFFECTIVENESS OF OUR CURRENT 1:12 TWIST TO STABILIZE HEAVY .223 MATCH BULLETS. WE HAVE HAD CUSTOMER COMPLAINTS OF ACCURACY PROBLEMS WHEN USING 69 grain MATCH BULLETS IN OUR GUNS. WITH A GUN OF KNOWN ACCURACY, FIRE 5 FIVE SHOT GROUPS USING BOTH FEDERAL MATCH AMMO (SPEC 223M) AND REMINGTON MATCH AMMO (SUPPLIED BY LOWOKE).

-GUNS REQUIRED:

1 m/700 .223 REM OF KNOWN ACCURACY WITH A 1:12 TWIST, BARREL CAN BE EITHER STD. OR VARMINY CONTOUR.

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 13 June 91
TEST COMPLETED BY: CS
REPORT DATE: 13 June 91

TEST AND MEASUREMENT LAB

TEST REPORT

REQUESTER: J. RONKAINEN
WORK ORDER: 481152

WRITTEN BY: C. STEPHENS
REPORT NO.: 911371

DATE: 6/13/91

FIREARM STAT'S: MODEL: 700
BARREL TYPE: VARMINT

GAGE: 223
PROOFED: YES

REASON FOR TEST:

To test the accuracy of the current 1:12 twist barrels to stabilize heavy .223 match bullets.

EQUIPMENT REQUIRED:

100 yd. range, Remington and Federal match ammo, one M/700 rifle, digitizing equipment.

TEST PROCEDURE:

Both ammo types were shot using the same rifle and five groups of five shots each at 100 yards using a rest.

TEST RESULTS:

The attached data sheet contains the results obtained.

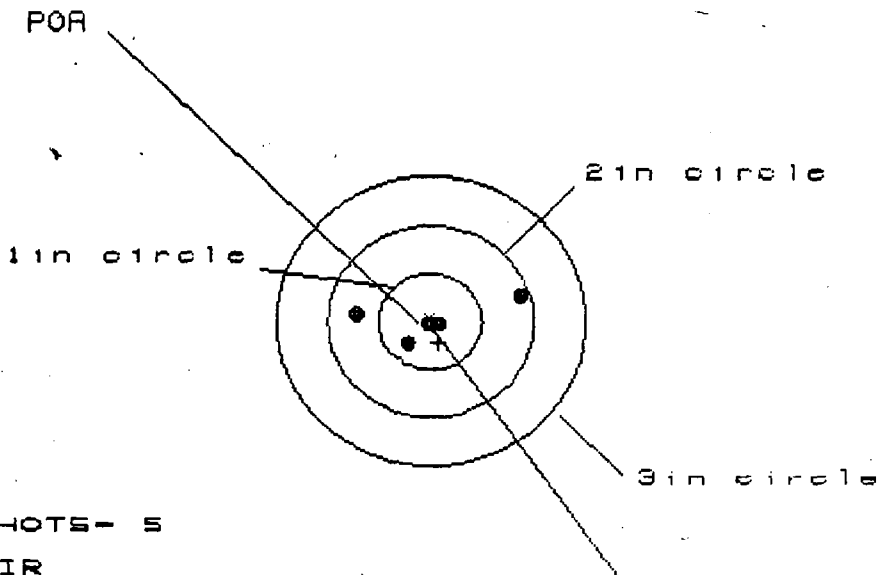
411571
C. Stephens
13 June 91

.223 Accuracy

		1	2	3	4	5	6	
	AMMO	Group 1	Group 2	Group 3	Group 4	Group 5	Aug.	
1	Rem. 60gn							1
2	H.P.	1.60	1.16	.93	1.00	.80	1.1	2
3	Lot J11DC9600							3
4								4
5								5
6	Fed. 69gn							6
7	H.P.	1.37	1.34	1.10	1.69	1.30	1.36	7
8	Lot 8851521474							8
9								9
10								10
11								11
12	Gun							12
13	#B6853171							13
14	Varmint							14
15								15
16								16
17								17
18								18
19								19
20								20
21								21
22								22
23								23
24								24
25								25
26								26
27								27
28								28
29								29
30								30
31								31
32								32
33								33
34								34
35								35
36								36
37								37

Rem.

CENTERFIRE PATTERNS # 1



OF SHOTS- 5
 # IN CIR
 1in = 3
 2in = 5
 3in = 5
 ME = 1.584
 VS = .513
 GS = 1.603

PATTERN #	1	1		
SHOTS (BEST OF)	5	4	3	
MAXIMUM X	.871	.343	.178	
MINIMUM X	-.713	-.495	-.192	
MAXIMUM Y	.295	.120	.053	
MINIMUM Y	-.218	-.144	-.104	
CENTROID X	-.079	-.297	-.132	
CENTROID Y	.217	.143	.103	
POA TO CENTROID in.	.231	.330	.168	
MIN RADIUS	.074	.146	.053	
MEAN RADIUS	.435	.294	.152	
MAX RADIUS	.920	.509	.218	
HORIZONTAL SPREAD	1.584	.838	.370	
VERTICAL SPREAD	.513	.264	.157	
EXTREME SPREAD	1.603	.845	.402	
NUMBER IN ONE INCH CIRCLE	=	3		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

Rem

CENTERFIRE PATTERNS # 2

POA

1 in circle

2 in circle

3 in circle

CENTROID *

OF SHOTS - 5

IN CIR

1 in = 2

2 in = 3

3 in = 5

IN = .0007

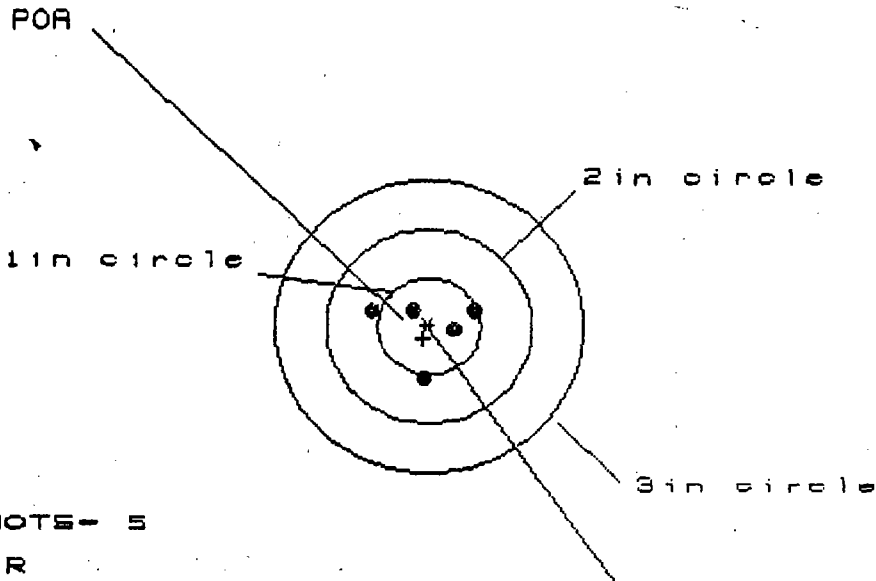
VS = 1.127

GS = 1.158

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.327	.342	.380
MINIMUM X	:	-.480	-.465	-.351
MAXIMUM Y	:	.417	.239	.115
MINIMUM Y	:	-.710	-.290	-.210
CENTROID X	:	-.018	-.033	-.147
CENTROID Y	:	.093	.271	.191
POA TO CENTROID in.	:	.095	.273	.241
MIN RADIUS	:	.195	.269	.212
MEAN RADIUS	:	.457	.369	.324
MAX RADIUS	:	.713	.465	.397
HORIZONTAL SPREAD	:	.807	.807	.731
VERTICAL SPREAD	:	1.127	.529	.325
EXTREME SPREAD	:	1.158	.837	.731
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

Rem

CENTERFIRE PATTERNS # 3



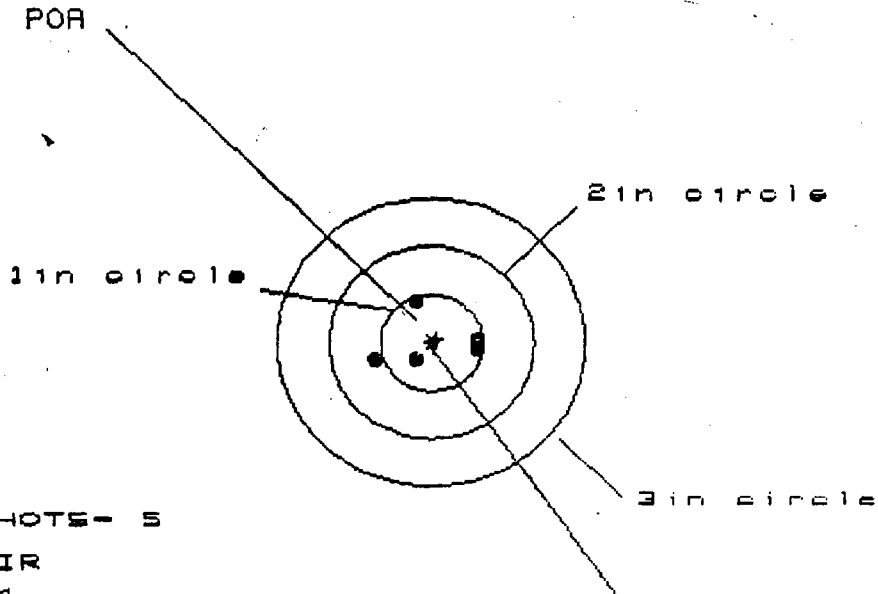
OF SHOTS - 5
 # IN CIR
 1 in 4
 2 in 5
 3 in 5
 HSI .932
 VSI .698
 GSI .932

CENTROID *

PATTERN #	3	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.411	.281	.235
MINIMUM X	-.521	-.266	-.312
MAXIMUM Y	.203	.243	.091
MINIMUM Y	-.495	-.455	-.142
CENTROID X	.057	.187	.233
CENTROID Y	.126	.086	.238
POA TO CENTROID in.	.139	.206	.333
MIN RADIUS	.244	.124	.162
MEAN RADIUS	.396	.327	.242
MAX RADIUS	.545	.476	.325
HORIZONTAL SPREAD	.932	.547	.547
VERTICAL SPREAD	.698	.698	.233
EXTREME SPREAD	.932	.779	.549
NUMBER IN ONE INCH CIRCLE	= 4		
NUMBER IN TWO INCH CIRCLE	= 5		
NUMBER IN THREE INCH CIRCLE	= 5		

Rem

CENTERFIRE PATTERNS # 4



OF SHOTS- 5

IN CIR

1 in = 4

2 in = 5

3 in = 5

HS- .978

VS- .607

GS- 1.004

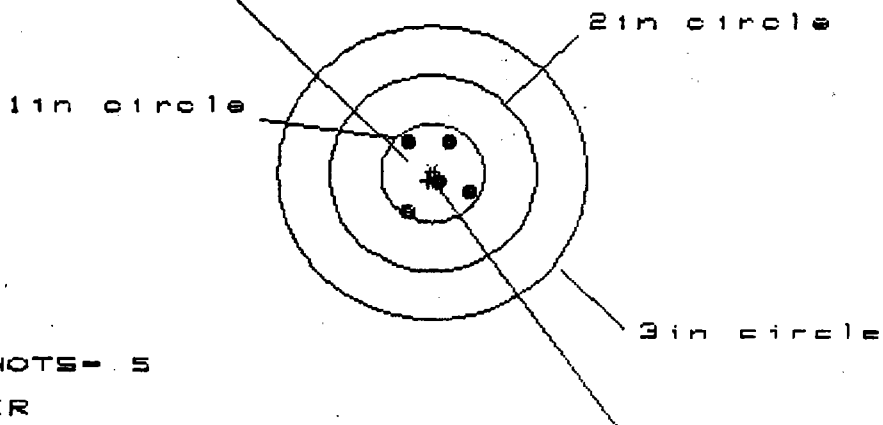
CENTROID *

PATTERN #	5	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.469	.342	.398
MINIMUM X	-.509	-.326	-.212
MAXIMUM Y	.401	.349	.340
MINIMUM Y	-.206	-.200	-.209
CENTROID X	-.047	.080	-.034
CENTROID Y	-.042	.009	.019
POA TO CENTROID in.	.063	.080	.039
MIN RADIUS	.248	.309	.297
MEAN RADIUS	.424	.374	.368
MAX RADIUS	.549	.461	.419
HORIZONTAL SPREAD	.978	.668	.610
VERTICAL SPREAD	.607	.549	.549
EXTREME SPREAD	1.004	.751	.751
NUMBER IN ONE INCH CIRCLE =		4	
NUMBER IN TWO INCH CIRCLE =		5	
NUMBER IN THREE INCH CIRCLE =		5	

Rem

CENTERFIRE PATTERNS # 5

POA



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS- .600

VS- .728

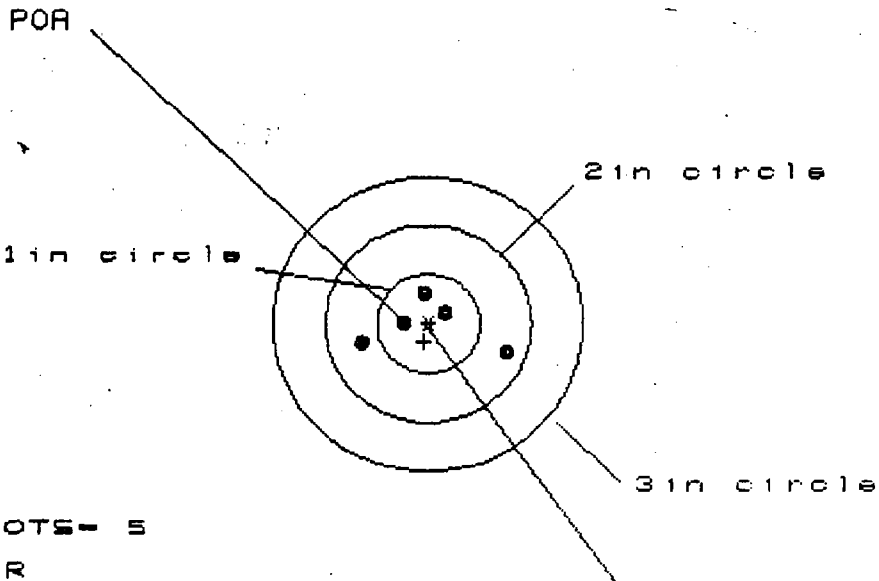
GS- .798

CENTROID *

PATTERN #	5		
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.314	.242	.151
MINIMUM X	-.286	-.273	-.101
MAXIMUM Y	.330	.230	.270
MINIMUM Y	-.398	-.248	-.171
CENTROID X	.043	.115	.206
CENTROID Y	.077	.177	.100
POA TO CENTROID in.	.089	.211	.229
MIN RADIUS	.098	.176	.141
MEAN RADIUS	.327	.269	.215
MAX RADIUS	.490	.357	.275
HORIZONTAL SPREAD	.600	.515	.252
VERTICAL SPREAD	.728	.478	.441
EXTREME SPREAD	.798	.703	.485
NUMBER IN ONE INCH CIRCLE =		5	
NUMBER IN TWO INCH CIRCLE =		5	
NUMBER IN THREE INCH CIRCLE =		5	

Fed.

CENTERFIRE PATTERNS # 6



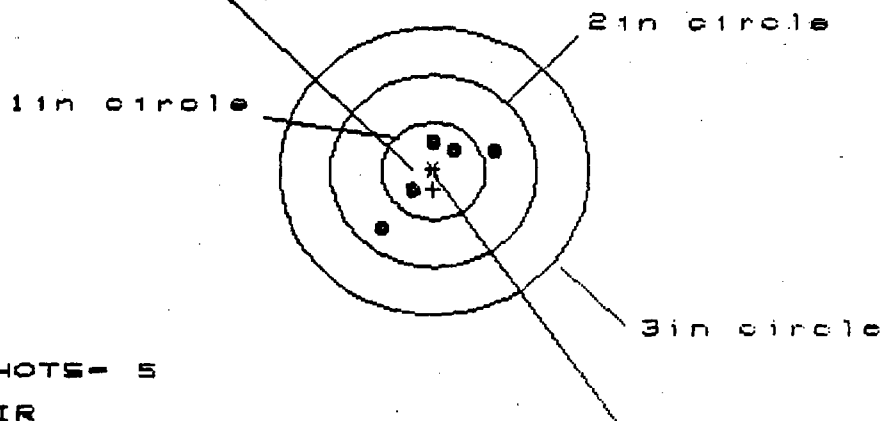
OF SHOTS - 5
 # IN CIR
 1in = 3
 2in = 5
 3in = 5
 ME = 1.271
 VS = .527
 GS = 1.371

PATTERN #	1	6	4	3
SHOTS (BEST OF)	5		4	3
MAXIMUM X	.726		.310	.156
MINIMUM X	-.645		-.463	-.173
MAXIMUM Y	.277		.215	.120
MINIMUM Y	-.250		-.282	-.105
CENTROID X	.041		-.141	.013
CENTROID Y	.183		.245	.340
POA TO CENTROID in.	.187		.283	.340
MIN RADIUS	.191		.022	.122
MEAN RADIUS	.425		.290	.160
MAX RADIUS	.768		.542	.202
HORIZONTAL SPREAD	1.371		.773	.329
VERTICAL SPREAD	.527		.497	.225
EXTREME SPREAD	1.371		.853	.341
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

Fed

CENTERFIRE PATTERNS # 7

POA



OF SHOTS - 5

IN CIR

1in = 3

2in = 5

3in = 5

HE = 1.063

VS = .894

GS = 1.348

PATTERN #	7		
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.557	.430	.172
MINIMUM X	-.506	-.295	-.152
MAXIMUM Y	.296	.146	.173
MINIMUM Y	-.598	-.287	-.260
CENTROID X	.007	.133	-.010
CENTROID Y	.186	.336	.309
POA TO CENTROID in.	.187	.362	.309
MIN RADIUS	.218	.066	.174
MEAN RADIUS	.433	.284	.223
MAX RADIUS	.784	.438	.301
HORIZONTAL SPREAD	1.063	.726	.324
VERTICAL SPREAD	.894	.433	.433
EXTREME SPREAD	1.348	.814	.475
NUMBER IN ONE INCH CIRCLE =		3	
NUMBER IN TWO INCH CIRCLE =		5	
NUMBER IN THREE INCH CIRCLE =		5	

Fed

CENTERFIRE PATTERNS # 8

POA

1in circle

2in circle

3in circle

CENTROID *

OF SHOTS - 5

IN CIR

1in = 2

2in = 5

3in = 5

HS = .856

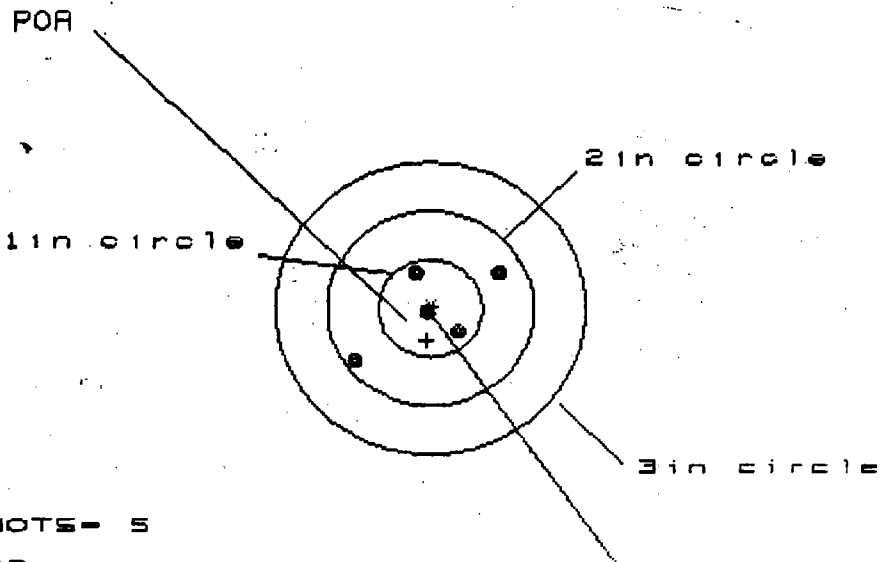
VS = .925

GS = 1.105

PATTERN #	1	2	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.277	.132	.174
MINIMUM X	-.579	-.371	-.327
MAXIMUM Y	.452	.390	.211
MINIMUM Y	-.473	-.536	-.152
CENTROID X	.024	.169	.125
CENTROID Y	.099	.162	.340
POA TO CENTROID in.	.102	.234	.362
MIN RADIUS	.268	.111	.215
MEAN RADIUS	.453	.366	.274
MAX RADIUS	.631	.552	.332
HORIZONTAL SPREAD	.856	.503	.501
VERTICAL SPREAD	.925	.925	.363
EXTREME SPREAD	1.105	.925	.569
NUMBER IN ONE INCH CIRCLE	=	2	
NUMBER IN TWO INCH CIRCLE	=	5	
NUMBER IN THREE INCH CIRCLE	=	5	

Fed

CENTERFIRE PATTERNS # 9



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= 1.418

VS= .920

GS= 1.690

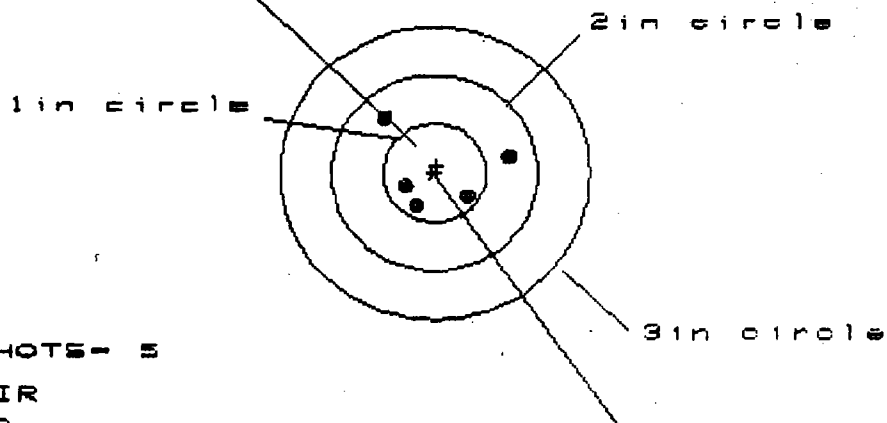
CENTROID *

PATTERN #	5	4	3
SHOTS (BEST OF)	5	4	3
MAXIMUM X	.646	.453	.238
MINIMUM X	-.772	-.340	-.189
MAXIMUM Y	.394	.262	.291
MINIMUM Y	-.526	-.342	-.254
CENTROID X	.036	.229	.078
CENTROID Y	.329	.461	.373
POA TO CENTROID in.	.331	.514	.381
MIN RADIUS	.010	.236	.062
MEAN RADIUS	.483	.377	.252
MAX RADIUS	.934	.524	.348
HORIZONTAL SPREAD	1.418	.793	.427
VERTICAL SPREAD	.920	.604	.545
EXTREME SPREAD	1.690	.795	.692
NUMBER IN ONE INCH CIRCLE =		3	
NUMBER IN TWO INCH CIRCLE =		5	
NUMBER IN THREE INCH CIRCLE =		5	

Fed.

CENTERFIRE PATTERNS # 10

POA



OF SHOTS - 5

IN CIR

1in = 3

2in = 5

3in = 5

HS = 1.219

VS = .914

GS = 1.304

CENTROID #

PATTERN #	:	10		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.692	.560	.325
MINIMUM X	:	-.527	-.381	-.194
MAXIMUM Y	:	.586	.271	.098
MINIMUM Y	:	-.328	-.181	-.091
CENTROID X	:	-.017	.115	-.072
CENTROID Y	:	-.071	-.218	-.308
POA TO CENTROID in.	:	.073	.246	.317
MIN RADIUS	:	.285	.169	.159
MEAN RADIUS	:	.504	.385	.234
MAX RADIUS	:	.788	.622	.325
HORIZONTAL SPREAD	:	1.219	.941	.519
VERTICAL SPREAD	:	.914	.452	.189
EXTREME SPREAD	:	1.304	.988	.530
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☒ Production Acceptance		AREA OF TESTING ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☐ Design Change ☐ Stake _____ ☒ Plant Assistance ☐ Other _____	
FIREARM STATS. MODEL: <u>700</u> CAL or GAGE: _____ BARREL TYPE: _____ PROOFED: YES _____ NO _____		REPORT REQ'D. FORMAL _____ TEST RESULTS ONLY ☒	
		DATE REQUESTED: <u>3-6-91</u> DATE NEEDED BY: <u>6-20-91</u> REQUESTED BY: <u>J. SNEDEKER</u> WORK ORDER NO: <u>481152</u>	
TEST TYPE ☐ Strength Test ☐ Ammunition Test ☒ Dry Cycle Test ☐ Photo/Video ☒ Function Test ☒ Environmental Test ☐ Measurements ☐ Other _____ ☐ Accuracy Test ☐ Customer Complaint ☐ Endurance Test			

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:TO EVALUATE RUST RESISTANCE

PLEASE CHECK 15 OF EACH OF THE FOLLOWING M/700 TRIGGER HOUSING ASSEMBLIES FOR RUST RESISTANCE AND FUNCTION AFTER APPROX 90 DAYS EXPOSURE TO PLANT TEMP. AND HUMIDITY AND TWO OF EACH SAMPLE AFTER 90 DAYS FOR FUNCTION BY DRY CYCLE TESTING TO 5,000 CYCLES EACH.

SAMPLE A. RUST PEL 45

B. PRO COR 18N

C. REM OIL

-GUNS REQUIRED:

ALL SAMPLES TO HAVE "MOLYKOTE" AT SEAR/CONNECTOR SURFACE

15 OF EACH ABOVE SAMPLES PROVIDED

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 6-10-91
 TEST COMPLETED BY: R.W. HOWE
 REPORT DATE: 6-12-91

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: J. R. SNADDER TESTER: R. W. HOWE DATE: 6/12/91
REPORT NO.: 911691 WORK ORDER NO.: 481152
WRITTEN BY: R. W. HOWE
TEST TYPE: DRY CYCLE + ENVIRONMENTAL

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: _____
BARREL TYPE: _____ PROOFED: YES _____ NO _____

REASON FOR TEST :

TO DETERMINE IF THE FOLLOWING LUBRICANTS OR
RUST INHIBITORS ARE SUITABLE FOR USE IN M/700 FIRE
CONTROL PRODUCTION TO PROTECT THE PARTS FROM RUST
DURING AND AFTER ASSEMBLY AND IF THEY HAVE ANY
ADVERSE EFFECT ON THE ASSEMBLIES FUNCTION OR
APPEARANCE.

- SAMPLE A. Rust Pel 45
B. PRO COR 18N
C. REM OIL

EQUIPMENT REQUIRED:

1. 15 SAMPLES OF EACH ABOVE TYPE TRIGGER HOUSING
2. M/700 COCK & FIRE DRY CYCLE MACHINE.
3. TEST LAB M/700 TEST RIFLE

TEST PROCEDURE

2. RUST RESISTANCE "ENVIRONMENTAL TEST"

AFTER APROX. 90 DAY EXPOSURE TO AMBIANT
PLANT TEMPERATURE AND HUMIDITY VISUALLY INSPECT
15 OF EACH OF THE SAMPLES LISTED BELOW FOR
RUST OR CORROSION AND CHECK EACH MANUALLY FOR
FUNCTION. ALL SAMPLES TO HAVE MOLYKOTE APPLIED TO THE
SEAR/CONNECTOR SURFACE AND COATED WITH THE FOLLOWING
A. Rust Pel 45, B. PRO COR 18N, C. REM OIL

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: J.R. SNEDEKER TESTER: R.W. HOWE DATE: 6/12/91
REPORT NO.: 911641 WORK ORDER NO.: 481152
WRITTEN BY: R.W. HOWE
TEST TYPE: DRY CYCLE + ENVIRONMENTAL

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: _____
BARREL TYPE: _____ PROOFED: YES _____ NO _____

TEST PROCEDURE CONT

2. FOLLOWING RUST RESISTANCE EVALUATION
ASSEMBLE TWO OF EACH SAMPLE INTO TEST
LAB 700 RIFLE AND DRY CYCLE TO 5,000 CYCLES
EACH. CHECK TRIGGER PULL AND SAFE "ON"-"OFF" FORCES
AT ZERO AND FIVE THOUSAND CYCLE LEVELS ON
ALL SAMPLES.

NOTE: SAFE IS CYCLED FROM "OFF" TO "ON" TO "OFF"
ONCE IN EVERY TWENTY COCK & FIRE CYCLES.

TEST RESULTS:

1. - VISUAL AND MANUAL CHECK FOR RUST, CORROSION AND
FUNCTION AFTER 90 DAY EXPOSURE TO PLANT TEMPERATURE
AND HUMIDITY.

15 SAMPLES OF EACH TYPE (ALL WITH MOLYKOTE ON
SEAR CONNECTOR SURFACE)
TYPE A. RUST PEL 45 - OK
B. PRO COR 18N - OK
C. REM OIL - OK

{ FUNCTION GOOD AND
NO RUST OR CORROSION

2. DRY CYCLE TEST

TWO OF EACH SAMPLE TO 5,000 DRY CYCLES
EACH. TRIGGER PULL AND SAFE "ON"-"OFF" FORCES
TAKEN AT 0 AND 5000 CYCLE LEVELS.

DATA ON NEXT PAGE.

TEST RESULTS:REPORT # 911641

DATA

6-12-91

	SAMPLE #	0 CYCLES			5000 CYCLES			FUNCTION APPEARANCE
		TRIGGER PULL	SAFE ON	SAFE OFF	TRIGGER PULL	SAFE ON	SAFE OFF	
A. RUST PEL 45	1	5.50	7.75	5.50	6.00	7.75	5.50	OK
	2	5.50	6.50	5.50	5.75	6.50	5.25	OK
B. PRO COR 18N	1	4.10	6.00	4.50	4.20	6.00	4.50	OK
	2	4.80	7.50	6.00	5.50	7.50	5.50	OK
C. REM OIL	1	4.50	6.25	4.00	4.50	6.50	3.75	OK
	2	5.20	7.50	6.20	5.25	7.40	5.80	OK

Report No. 911961

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☒ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance	<u>AREA OF TESTING</u> <table border="0"> <tr> <td>☐ Safety Related</td> <td>☐ Litigation</td> </tr> <tr> <td>☐ Competitive Evaluation</td> <td>☐ Warehouse Audit</td> </tr> <tr> <td>☒ New Design</td> <td>☐ Cost Reduction</td> </tr> <tr> <td>☐ Design Change</td> <td>Stake </td> </tr> <tr> <td>☐ Plant Assistance</td> <td>☐ Other </td> </tr> </table>		☐ Safety Related	☐ Litigation	☐ Competitive Evaluation	☐ Warehouse Audit	☒ New Design	☐ Cost Reduction	☐ Design Change	Stake	☐ Plant Assistance	☐ Other
☐ Safety Related	☐ Litigation											
☐ Competitive Evaluation	☐ Warehouse Audit											
☒ New Design	☐ Cost Reduction											
☐ Design Change	Stake											
☐ Plant Assistance	☐ Other											
<u>FIREARM STAT'S.</u> MODEL: <u>700 SS</u> CAL or GAGE: <u>280 REM</u> BARREL TYPE: <u>24" STAINLESS</u> PROOFED: YES ☒ NO ☐	<u>REPORT REQ'D.</u> FORMAL ☒ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>7/15/91</u> DATE NEEDED BY: <u>7/22/91</u> REQUESTED BY: <u>J. ROUNKAINEN</u> WORK ORDER NO: <u>481152</u>										

<u>TEST TYPE</u>			
☒ Strength Test ☐ Function Test ☒ Accuracy Test	☐ Ammunition Test ☐ Environmental Test ☐ Customer Complaint	☐ Dry Cycle Test ☐ Measurements ☐ Endurance Test	☐ Photo/Video ☐ Other

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

- ① PLEASE SHOOT ACCURACY TEST (3 - 5 SHOT GROUPS) WITH QUALIFIED AMMO
- ② PLEASE DO AN INTENTIONAL ABUSE TEST.

-GUNS REQUIRED:

1. M/700 SS PROVIDED BY JIM ROUNKAINEN
 # C6624494

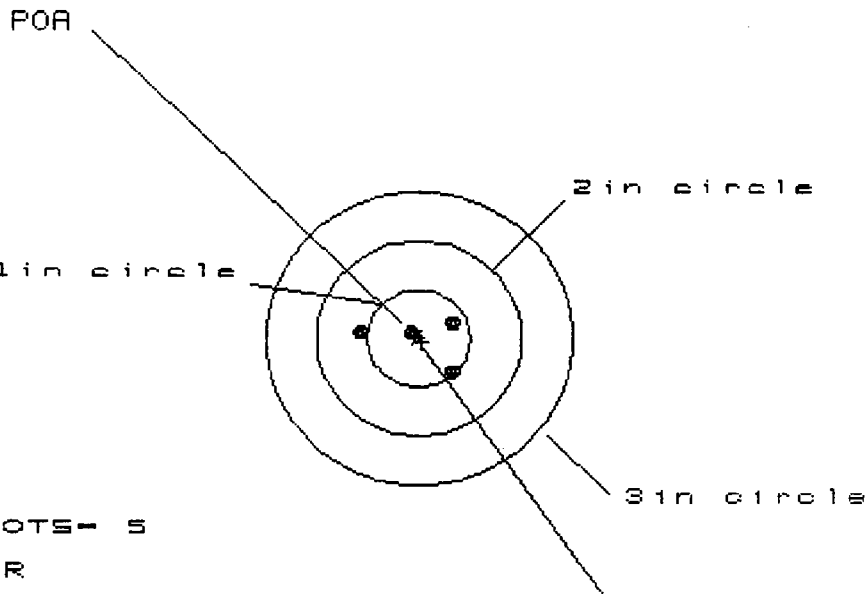
NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: _____
 TEST COMPLETED BY: _____
 REPORT DATE: _____

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/40X280

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .925

VS= .527

GS= .955

Avg G.S. = .980

CENTROID *

m-40x. #05265B-B.

TO QUALIFY .280 REM. AMMO.

PATTERN # : 1

SHOTS (BEST OF) :

5

4

3

MAXIMUM X :

.356

.214

.266

140 GR. P.S.P.

MINIMUM X :

-.569

-.189

-.137

LOT- E11B2507

MAXIMUM Y :

.172

.185

.071

INDEX- R280R3

MINIMUM Y :

-.355

-.342

-.052

SCOPE: LYMAN

CENTROID X :

-.031

.111

.059

SUPER TARGET SPOT

CENTROID Y :

.038

.025

.139

20X

POA TO CENTROID in.:

.049

.114

.151

MIN RADIUS :

.068

.199

.130

MEAN RADIUS :

.318

.265

.184

BENCH RESTED

MAX RADIUS :

.571

.375

.275

100 YDS.

HORIZONTAL SPREAD :

.925

.403

.403

VERTICAL SPREAD :

.527

.527

.123

EXTREME SPREAD :

.955

.551

.421

NUMBER IN ONE INCH CIRCLE =

4

NUMBER IN TWO INCH CIRCLE =

5

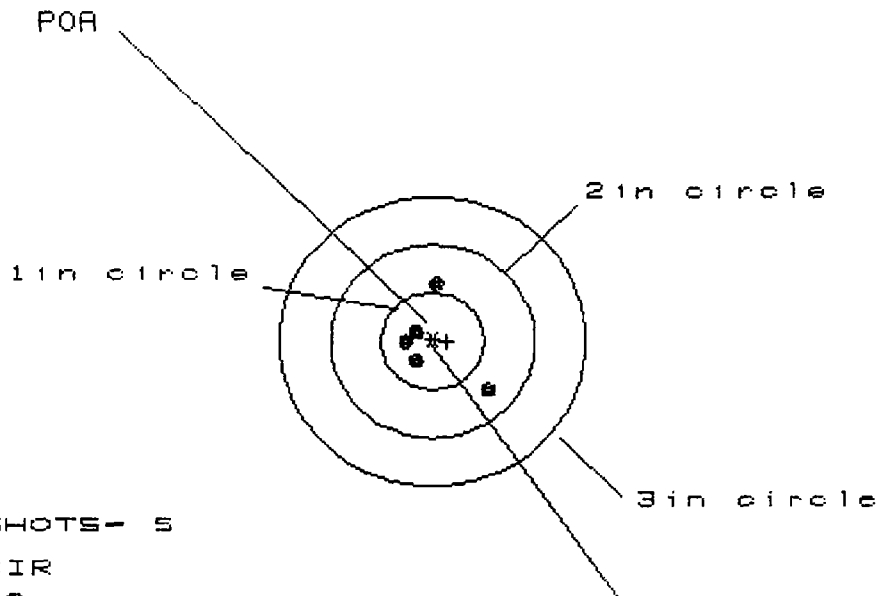
NUMBER IN THREE INCH CIRCLE =

5

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/40X280

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= .827

VS= 1.145

GS= 1.227

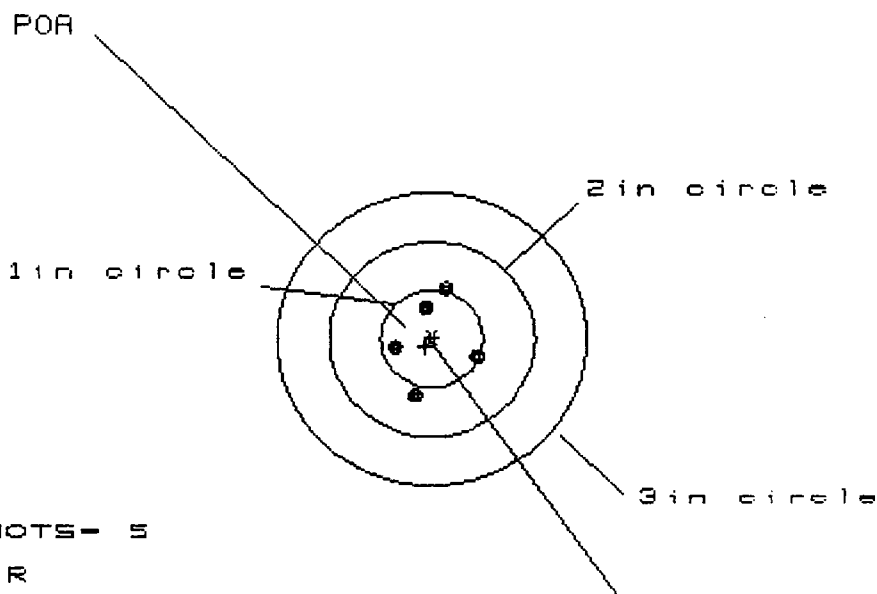
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.531	.221	.087
MINIMUM X	:	-.296	-.164	-.090
MAXIMUM Y	:	.594	.457	.136
MINIMUM Y	:	-.551	-.331	-.179
CENTROID X	:	-.140	-.272	-.346
CENTROID Y	:	.003	.140	-.012
POA TO CENTROID in.	:	.140	.306	.347
MIN RADIUS	:	.227	.073	.099
MEAN RADIUS	:	.426	.277	.145
MAX RADIUS	:	.765	.508	.199
HORIZONTAL SPREAD	:	.827	.385	.177
VERTICAL SPREAD	:	1.145	.788	.315
EXTREME SPREAD	:	1.227	.815	.326
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/40X280

CENTERFIRE PATTERNS # 3



OF SHOTS- 5

IN CIR

1in = 3

2in = 5

3in = 5

HS= .7000

VS= 1.089

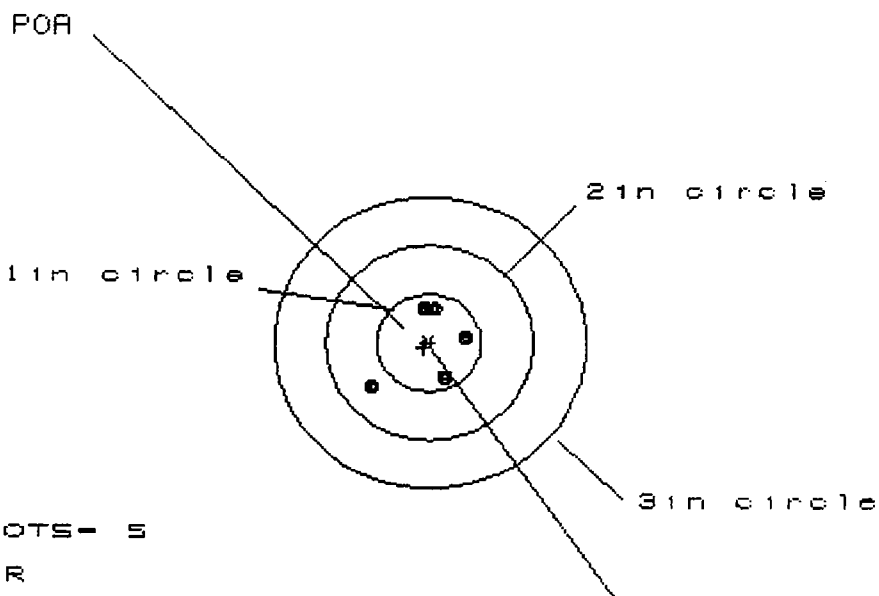
GS= 1.128

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.413	.372	.402
MINIMUM X	:	-.367	-.408	-.378
MAXIMUM Y	:	.535	.396	.281
MINIMUM Y	:	-.554	-.345	-.213
CENTROID X	:	.060	.101	.071
CENTROID Y	:	.080	.219	.087
POA TO CENTROID in.	:	.100	.241	.112
MIN RADIUS	:	.288	.159	.282
MEAN RADIUS	:	.450	.382	.374
MAX RADIUS	:	.578	.507	.455
HORIZONTAL SPREAD	:	.780	.780	.780
VERTICAL SPREAD	:	1.089	.741	.494
EXTREME SPREAD	:	1.128	.793	.793
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/40X280

CENTERFIRE PATTERNS # 4



OF SHOTS- 5

IN CIR

1in = 4

2in = 5

3in = 5

HS= .847

VS= .765

GS= .954

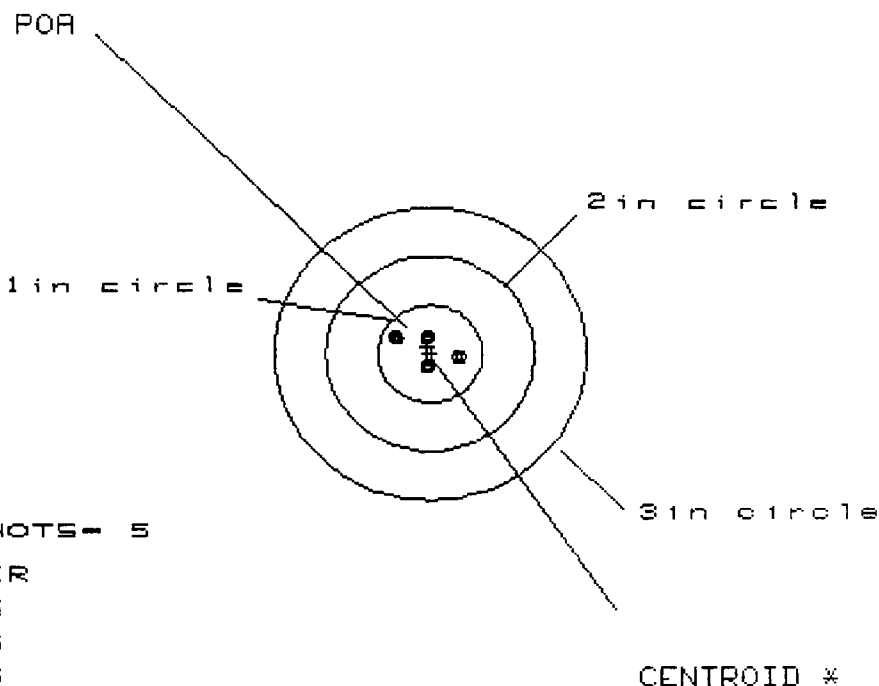
CENTROID *

PATTERN #	:	4		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.345	.219	.241
MINIMUM X	:	-.502	-.163	-.141
MAXIMUM Y	:	.362	.261	.110
MINIMUM Y	:	-.403	-.454	-.216
CENTROID X	:	.051	.177	.155
CENTROID Y	:	.047	.148	.299
POA TO CENTROID in.	:	.070	.231	.337
MIN RADIUS	:	.346	.228	.146
MEAN RADIUS	:	.423	.320	.216
MAX RADIUS	:	.644	.459	.324
HORIZONTAL SPREAD	:	.847	.382	.382
VERTICAL SPREAD	:	.765	.715	.326
EXTREME SPREAD	:	.954	.751	.502
NUMBER IN ONE INCH CIRCLE	=		4	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/40X280

CENTERFIRE PATTERNS # 5



OF SHOTS- 5

IN CIR

1in = 5

2in = 5

3in = 5

HS= .613

VS= .373

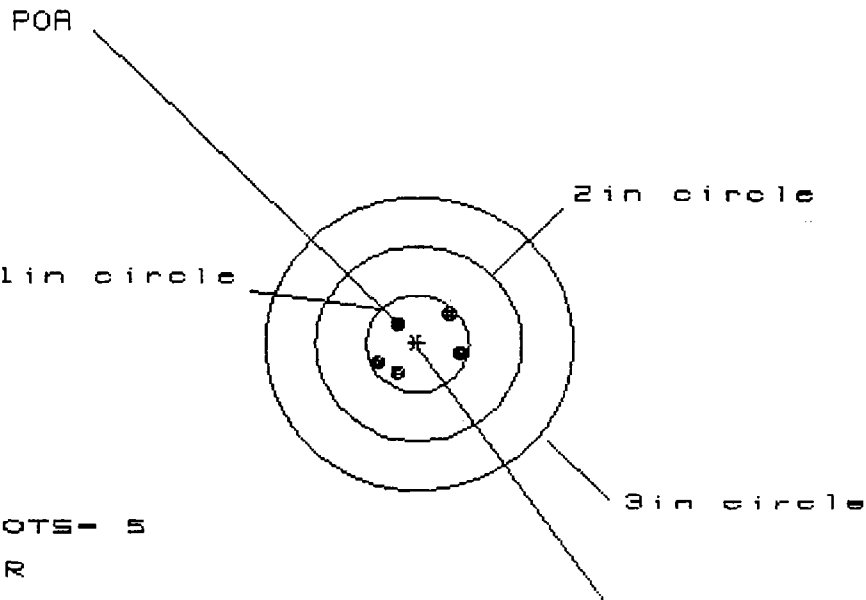
GS= .635

PATTERN #	:	5		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.289	.208	.002
MINIMUM X	:	-.324	-.071	-.001
MAXIMUM Y	:	.201	.238	.246
MINIMUM Y	:	-.172	-.135	-.127
CENTROID X	:	.030	.111	.041
CENTROID Y	:	-.073	-.110	-.118
POA TO CENTROID in.	:	.079	.156	.125
MIN RADIUS	:	.164	.145	.119
MEAN RADIUS	:	.237	.188	.164
MAX RADIUS	:	.357	.248	.246
HORIZONTAL SPREAD	:	.613	.279	.003
VERTICAL SPREAD	:	.373	.373	.373
EXTREME SPREAD	:	.635	.373	.373
NUMBER IN ONE INCH CIRCLE	=	5		
NUMBER IN TWO INCH CIRCLE	=	5		
NUMBER IN THREE INCH CIRCLE	=	5		

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/70055

CENTERFIRE PATTERNS # 1



OF SHOTS- 5

IN CIR

1 in = 5

2 in = 5

3 in = 5

HS= .813

VS= .633

GS= .971

AVG. G.S. = 1.30

M-700 STAINLESS STEEL

C 66244 94 .280 REM.

PATTERN # 1

SHOTS (BEST OF)	5	4	3
MAXIMUM X	.390	.479	.368
MINIMUM X	-.423	-.334	-.184
MAXIMUM Y	.346	.311	.263
MINIMUM Y	-.287	-.201	-.249
CENTROID X	-.012	-.101	.010
CENTROID Y	-.011	-.097	-.049
POA TO CENTROID in.	.016	.140	.050
MIN RADIUS	.277	.214	.310
MEAN RADIUS	.396	.344	.333
MAX RADIUS	.498	.480	.368
HORIZONTAL SPREAD	.813	.813	.552
VERTICAL SPREAD	.633	.512	.512
EXTREME SPREAD	.971	.832	.618
NUMBER IN ONE INCH CIRCLE =	5	5	5
NUMBER IN TWO INCH CIRCLE =	5	5	5
NUMBER IN THREE INCH CIRCLE =	5	5	5

Ammo: .280 REM.

140GR. P.S.P.

LOT- E 11I B2507

INDEX- R-280 R3

SCOPE:

LYMAN- ALL AMERICAN

20X-

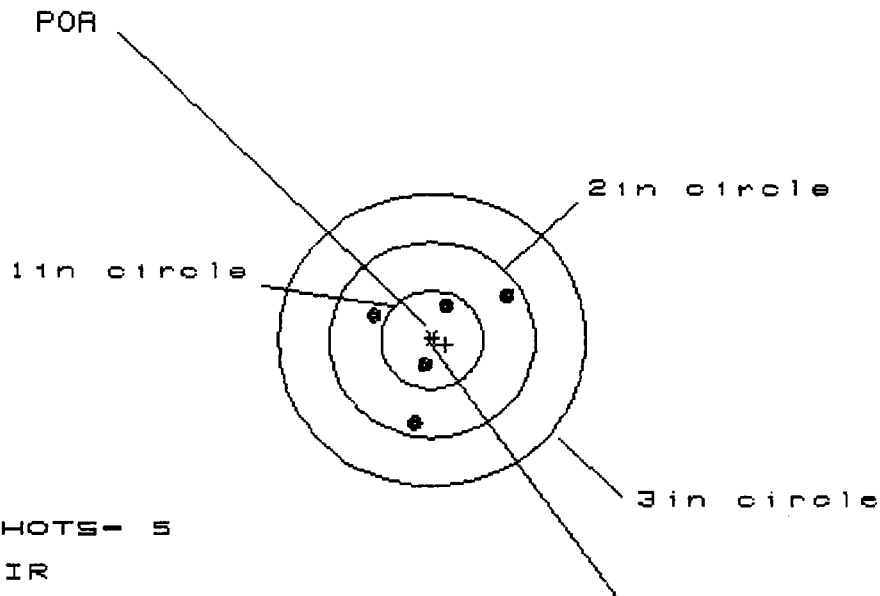
BENCH RESTED

100 YDS.

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/70055

CENTERFIRE PATTERNS # 2



OF SHOTS- 5

IN CIR

1in = 2

2in = 5

3in = 5

HS= 1.303

VS= 1.315

GS= 1.563

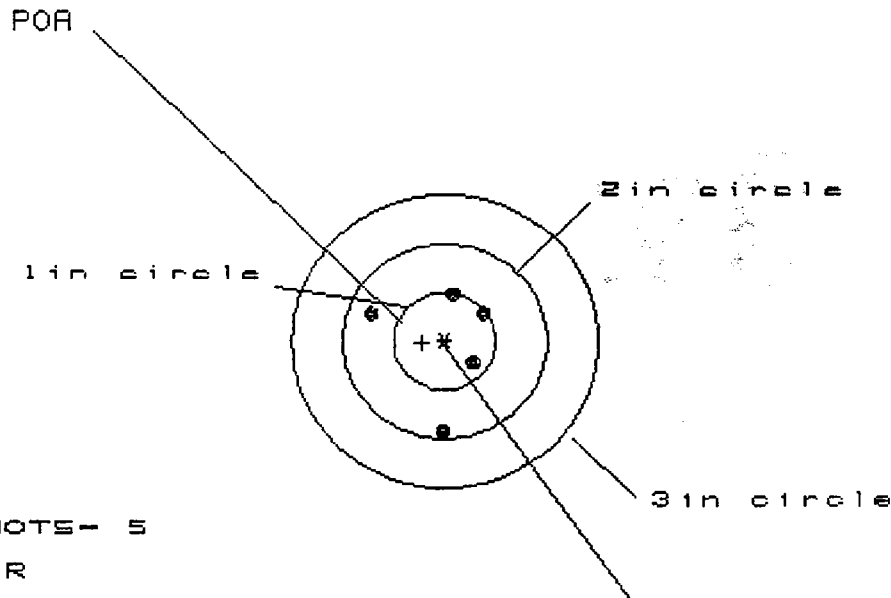
CENTROID *

PATTERN #	:	2		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.713	.277	.293
MINIMUM X	:	-.590	-.412	-.396
MAXIMUM Y	:	.473	.428	.186
MINIMUM Y	:	-.842	-.724	-.323
CENTROID X	:	-.133	-.311	-.327
CENTROID Y	:	.048	-.070	.172
POA TO CENTROID in.	:	.141	.319	.369
MIN RADIUS	:	.219	.120	.339
MEAN RADIUS	:	.579	.479	.368
MAX RADIUS	:	.855	.726	.419
HORIZONTAL SPREAD	:	1.303	.689	.689
VERTICAL SPREAD	:	1.315	1.152	.509
EXTREME SPREAD	:	1.563	1.194	.691
NUMBER IN ONE INCH CIRCLE	=		2	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

16 Jul 1991

FILE:/PATTERNING/CENTERFIRE_PATT/70055

CENTERFIRE PATTERNS # 3



OF SHOTS - 5

IN CIR

1 in = 3

2 in = 5

3 in = 5

HS = 1.038

VS = 1.352

GS = 1.359

PATTERN #	:	3		
SHOTS (BEST OF)	:	5	4	3
MAXIMUM X	:	.347	.337	.104
MINIMUM X	:	-.691	-.700	-.145
MAXIMUM Y	:	.482	.264	.297
MINIMUM Y	:	-.870	-.432	-.399
CENTROID X	:	.219	.228	.462
CENTROID Y	:	.014	.232	.199
POA TO CENTROID in.	:	.220	.325	.503
MIN RADIUS	:	.356	.279	.145
MEAN RADIUS	:	.586	.461	.292
MAX RADIUS	:	.871	.707	.401
HORIZONTAL SPREAD	:	1.038	1.038	.249
VERTICAL SPREAD	:	1.352	.696	.696
EXTREME SPREAD	:	1.359	1.110	.720
NUMBER IN ONE INCH CIRCLE	=		3	
NUMBER IN TWO INCH CIRCLE	=		5	
NUMBER IN THREE INCH CIRCLE	=		5	

REMINGTON ARMS COMPANY, INC.
Ball Research Division

SUMMARY OF INTENTIONAL GUN ABUSE TEST

DATA

By C. Stephens

Date 19 July 91

FIREARM:

Make Remington

Model 700

Grade _____

Gauge _____

Serial Number C6624494

Origin _____

Test Number Assigned _____

Comments Stainless

HISTORY:

Condition _____

Previous Rounds Fired 500+

Headspace at Test _____

Test Date 19 July 91

ABUSIVE

LOAD USED:

Powder Type 4198

Powder Weight 53.5 gn

Case Make and Type Rem

Total Bullet Weight 175gn

Total Shot Weight _____

Estimated Pressure 120 Kpsi

ADDITIONAL
COMMENTS:

Cracked Stock, Locked up Bolt.

Report No. 912271

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

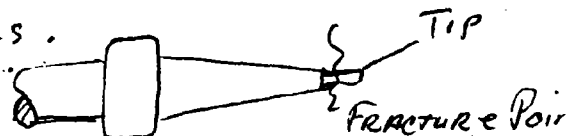
☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☒ Production Acceptance		AREA OF TESTING ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☐ Design Change Stake _____ ☒ Plant Assistance ☐ Other _____	
FIREARM STAT'S. MODEL: <u>M 200</u> CAL. or GAGE: _____ BARREL TYPE: _____ PROOFED: YES _____ NO _____		REPORT REQ'D. FORMAL _____ TEST RESULTS ONLY ☒	
		DATE REQUESTED: <u>2-18-91</u> DATE NEEDED BY: <u>ASAP</u> REQUESTED BY: <u>F. MARTIN</u> WORK ORDER NO: <u>480263</u>	

TEST TYPE

☐ Strength Test	☐ Ammunition Test	☒ Dry Cycle Test	☐ Photo/Video
☐ Function Test	☐ Environmental Test	☐ Measurements	☐ Other _____
☐ Accuracy Test	☐ Customer Complaint	☐ Endurance Test	

EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

Select - 6 - Firing Pin Assy
 Randomly From 12 Supplied
 Dry Cycle 2000 Cycles MAX.
 Inspect Every 500 Cycles.



Rem. F. Pins Have Broken Tips At 1000 Cycles
 (±) When Dry Fired (Empty Chamber). Vendor Now
 Forming Tip Need To Evaluate This Change

-GUNS REQUIRED:

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 8-14-91
 TEST COMPLETED BY: R. W. HOWE
 REPORT DATE: 8-20-91

. TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: F. MARTIN TESTER: R.W. HOWE DATE: 8/14/91
 REPORT NO.: 912271 WORK ORDER NO.: 480263
 WRITTEN BY: R.W. HOWE
 TEST TYPE: DRY CYCLE

FIREARM STAT'S : MODEL: 700 CAL or GAUGE: X
 BARREL TYPE: X PROOFED: YES Y NO X

REASON FOR TEST :

TO EVALUATE VENDOR SAMPLE M/700 FIRING PINS WITH VENDOR FORMED TIPS.

EQUIPMENT REQUIRED :

M/700 COCK & FIRE DRY CYCLE MACHINE
TEST LAB M/700 RIFLE
SIX - SAMPLE VENDOR FIRING PINS
THREE REMINGTON CURRENT PRODUCT FIRING PINS

TEST PROCEDURE :

EACH TEST SAMPLE FIRING PIN WAS PLACED IN M/700 TEST RIFLE AND DRY CYCLE FUNCTIONED TO CYCLE LEVELS AS STATED BELOW IN TEST RESULTS

ALL SAMPLES CHECKED EVERY 500 CYCLES FOR TIP BREAKAGE

TEST RESULTS :

VENDOR SAMPLE	TOTAL CYCLES	RESULTS	CURRENT PROD. SAMPLE	TOTAL CYCLES	RESULTS
# 1	2,000	NO BREAKAGE	# 1	10,000	NO BREAKAGE
# 2	10,000	" "	# 2	10,000	" "
# 3	10,000	" "	# 3	10,000	" "
# 4	2,000	" "			
# 5	2,000	" "			
# 6	10,000	" "			

NOTE:

VENDOR FORMED TIP M/700 FIRING PIN SAMPLES APPEAR TO HAVE A MUCH HIGHER QUALITY FINISH THAN CURRENT PRODUCT REMINGTON PINS.

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: J. RONKAINEN TESTER: J. SELAN DATE: 12/5/91
 REPORT NO.: 913363 WORK ORDER NO.: 480263
 WRITTEN BY: J. SELAN
 TEST TYPE: PLANT ASSISTANCE

FIREARM STAT'S : MODEL: M-700 - SYNTHETIC STOCK CAL or GAUGE: 30/06
 BARREL TYPE: 24" PROOFED: YES ☒ NO ☐

REASON FOR TEST : LONG ACTION IN M-700. STANDARD CALIBER. IN A
"LEE SIX" SYNTHETIC STOCK HAVE BEEN CRACKING WHEN FUNCTION
TESTED IN THE GALLERY. THIS TEST IS TO SEE IF THE CRACKING IS
CAUSED BY THE SHOOTING JACKS IN THE GALLERY.

EQUIPMENT REQUIRED :

2- MODEL 700'S LONG ACTION 30-06 SPRG. WITH SYNTHETIC STOCKS
 (ALTERED.) SER. # C6678167 - C6678128
 REMINGTON 30-06 SPRG. 180 GR SOFT POINT. CORE-LOKT (INDEX R0064) LOT # 325FB3505
 100 YARD RANGE
 SHOOTING JACKS.

TEST PROCEDURE :

PROOF IN LIGHT JACK - DISASSEMBLE AND CHECK FOR CRACKS - REASSEMBLE
 PROOF IN HEAVY JACK - DISASSEMBLE AND CHECK FOR CRACKS - REASSEMBLE.
 FIRE - 1 BOX OF SHELLS IN LIGHT JACK - INSPECT AT 5-10-15-20 ROUND LEVELS.
 FIRE - 1 BOX OF SHELLS IN HEAVY JACK - INSPECT AT 5-10-15-20 ROUND LEVELS.
 FIRE - 1 BOX OF SHELLS FROM SHOULDER - INSPECT FOR CRACKS AT 20 ROUND LEVEL.
 IF STOCKS DO NOT CRACK DURING TEST LISTED ABOVE, THEY WILL BE RUN
 THROUGH THE STANDARD GALLERY FUNCTION TEST AND INSPECTED AGAIN FOR
 CRACKS AFTER PROOF AND AFTER FUNCTION TESTING.
TEST RESULTS :

C-6678167. PROOF. HEAVY JACK.

* CRACKED. FRONT PORTION OF RECEIVER AREA. RIGHT OF CENTER - FROM
 RECOIL LUG TO MAGAZINE WELL

PROOFED IN LIGHT JACK - NO CONTINUATION OF CRACKS.

- FIRED IN LIGHT JACK - TO CHECK WEB BETWEEN REAR OF MAGAZINE WELL
 AND TRIGGER ASSEMBLY CUT

LIGHT JACK - 5-10-15-20 ROUNDS - WERE ACCEPTABLE.

HEAVY JACK - 5-ROUND LEVEL CRACKED AT JUNCTION OF WEB AND TRIGGER
 ASSEMBLY CUT. RIGHT SIDE. TAKEN OUT OF TEST.

Report No. 913363

RESEARCH TEST & MEASUREMENT LAB WORK REQUEST

☐ Developmental ☐ Design Acceptance ☐ Pre-Pilot ☐ Pilot ☐ Production Acceptance		AREA OF TESTING ☐ Safety Related ☐ Litigation ☐ Competitive Evaluation ☐ Warehouse Audit ☐ New Design ☐ Cost Reduction ☐ Design Change ☐ Stake _____ ☒ Plant Assistance ☐ Other _____	
FIREARM STAT'S. MODEL: <u>700 AS</u> CAL or GAGE: <u>30-06</u> BARREL TYPE: <u>22"</u> PROOFED: YES ☒ NO ☐		REPORT REQ'D. FORMAL ☐ TEST RESULTS ONLY ☒	DATE REQUESTED: <u>11/26/91</u> DATE NEEDED BY: <u>12/6/91</u> REQUESTED BY: <u>J. KONKAINEN</u> WORK ORDER NO: <u>480263</u>

TEST TYPE ☐ Strength Test ☐ Ammunition Test ☐ Dry Cycle Test ☐ Photo/Video ☒ Function Test ☐ Environmental Test ☐ Measurements ☐ Other _____ ☐ Accuracy Test ☐ Customer Complaint ☐ Endurance Test _____			
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EXPLAIN IN DETAIL THE REASON FOR THIS TEST:

M/700 AS LONG ACTION, STD. CALIBER, STOCKS HAVE BEEN CRACKING WHEN FUNCTION TESTED IN THE GALLERY. THIS TEST IS TO SEE IF THE CRACKING IS CAUSED BY THE SHOOTING JACKS IN THE GALLERY. PLEASE SHOOT THE FOLLOWING TEST ON THE TWO RIFLES PROVIDED:

- ✓ PROOF IN LIGHT JACK - DISASSEMBLE AND CHECK FOR CRACKS - REASSEMBLE
- ✓ PROOF IN HEAVY JACK - DISASSEMBLE AND CHECK FOR CRACKS - REASSEMBLE
- FIRE 1 BOX OF SHELLS IN LIGHT JACK - INSPECT AT 5, 10, 15, AND 20 ROUND LEVELS
- FIRE 1 BOX OF SHELLS IN HEAVY JACK - INSPECT AT 5, 10, 15, AND 20 ROUND LEVELS
- FIRE 1 BOX OF SHELLS FROM SHOULDER - INSPECT FOR CRACKS AT 20 RD. LEVEL

IF THE STOCKS DO NOT CRACK DURING THE TEST LISTED ABOVE, THEY WILL BE RUN THROUGH THE STANDARD GALLERY FUNCTION TEST AND INSPECTED AGAIN FOR CRACKS AFTER PROOF AND AFTER FUNCTION TESTING.

WHEN REASSEMBLING THE GUN, MAKE SURE THE GUARD SCREWS ARE WELL TIGHTENED BEFORE

-GUNS REQUIRED:

2 - M/700 AS 30-06 S&W RIFLES WITH ALTERED STOCKS (PROVIDED BY J. KONKAINEN)

NOTE: NO firearms or parts will be tested in the Labs unless they are accompanied by a Work Request, and both are delivered to the Labs by the designer or engineer. All Work Requests are to be filled out in detail. No Exceptions.

DATE COMPLETED: 12-5-91TEST COMPLETED BY: J. SELANREPORT DATE: 12-5-91

TEST AND MEASUREMENT LAB TEST RESULTS

REQUESTER: _____ TESTER: _____ DATE: ____ / ____ / ____
REPORT NO.: _____ WORK ORDER NO.: _____
WRITTEN BY: _____
TEST TYPE: _____

FIREARM STAT'S : MODEL: _____ CAL or GAUGE: _____
BARREL TYPE: _____ PROOFED: YES ____ NO ____

REASON FOR TEST :

EQUIPMENT REQUIRED :

TEST PROCEDURE :

TEST RESULTS :

C 6678128 PROOF HEAVY JACK.

* CRACKED FRONT PORTION OF RECEIVER AREA - RIGHT OF CENTER. FROM RECOIL
LUG TO MAGAZINE WELL.

PROOFED IN LIGHT JACK - NO CONTINUATION OF CRACKS.

FIRE IN LIGHT JACK TO CHECK WEB AREA BETWEEN REAR OF MAGAZINE
WELL AND TRIGGER ASSEMBLY CUT.

LIGHT JACK - 5-10-15-20 LEVELS - WERE ACCEPTABLE

HEAVY JACK - 5-10-15-20 LEVELS WERE ACCEPTABLE

FIRE 20 ROUNDS FROM THE SHOULDER - ACCEPTABLE