

DATA CARD - CIRCLE

Range	Date	Time	Equip		Ammunition		Weather	Light	Wind	Altitude
			Rifle	Scope	Bullet Wt.	Type	Precip	Direction 	Direction 	Mirage <small>LIGHT MEDIUM HEAVY</small>
Slope	Location				Powder	Charge	Humid			
			Primer	Case	Temp		Intensity	MPH _____		

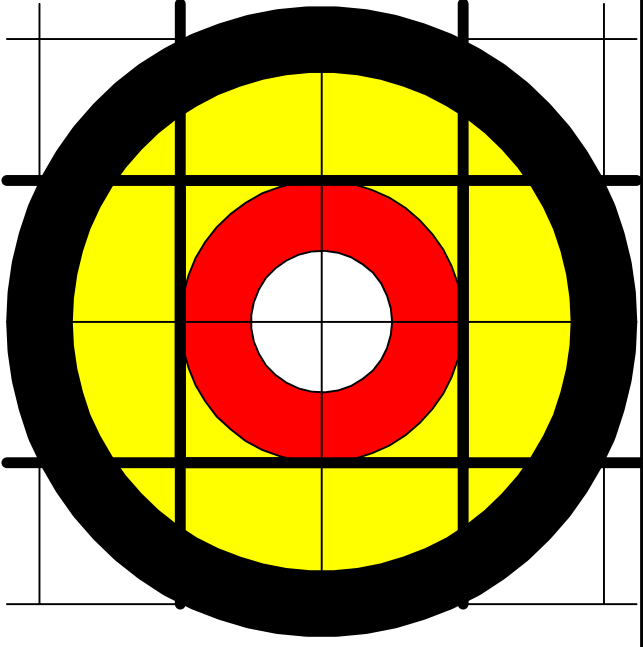
Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Remarks:											

DATA CARD - CIRCLE

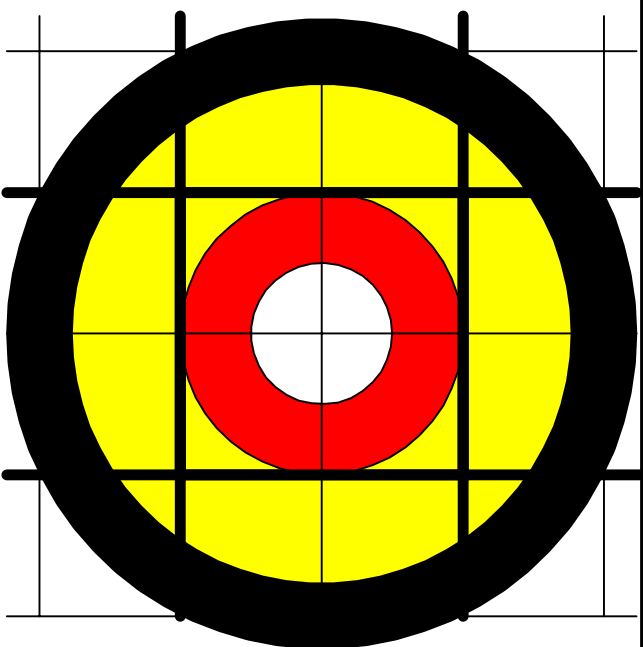
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			Rifle	Scope	Bullet Wt.	Type	Precip	Direction 	Direction 	Mirage <small>LIGHT MEDIUM HEAVY</small>
Slope	Location				Powder	Charge	Humid			
			Primer	Case	Temp		Intensity	MPH _____		

Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Remarks:											



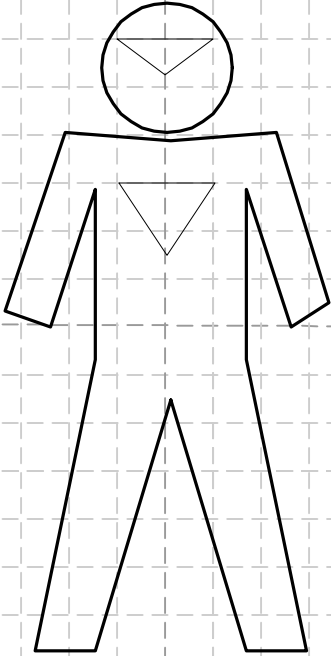
LOAD DEVELOPMENT

Range	Date	Time	Equip	Ammunition		Weather	Light	Wind	Altitude		
				Bullet Wt.	Type						
Slope	Location		Scope	Rifle	Powder	Precip	Direction	Direction	Mirage		
				Charge	Humid						
				Primer	Case	Temp	Intensity	MPH _____	<small>LIGHT MEDIUM HEAVY</small>		
Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
fps											
Call	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
fps											
Call	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Avg											
ES											
SD											



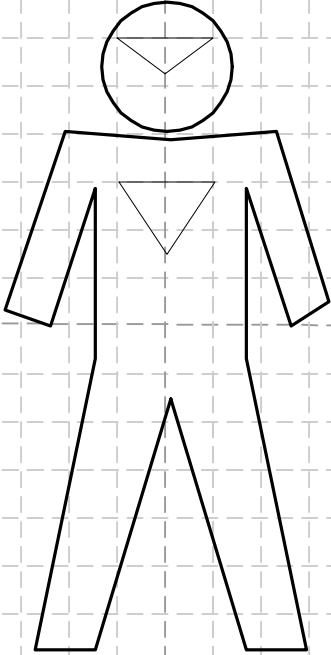
LOAD DEVELOPMENT

Range	Date	Time	Equip	Ammunition		Weather	Light	Wind	Altitude		
				Bullet Wt.	Type						
Slope	Location		Scope	Rifle	Powder	Precip	Direction	Direction	Mirage		
				Charge	Humid						
				Primer	Case	Temp	Intensity	MPH _____	<small>LIGHT MEDIUM HEAVY</small>		
Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
fps											
Call	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
fps											
Call	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	
Avg											
ES											
SD											

DATA CARD - MAN SIZED

Range		Date	Time		Equip		Ammunition			Weather	Light	Wind	Altitude		
					Rifle		Bullet Wt	Type		Precip					
					Scope		Powder	Charge		Humid			Mirage		
Slope		Location					Primer	Case		Temp	Intensity	MPH _____	<small>LIGHT MEDIUM HEAVY</small>		
Shot	1	2	3	4	5	6	7	8	9	10					
Elev															
Wind															
Call	+	+	+	+	+	+	+	+	+	+					
Shot	11	12	13	14	15	16	17	18	19	20					
Elev															
Wind															
Call	+	+	+	+	+	+	+	+	+	+					
Remarks:															

DATA CARD - MAN SIZED

Range		Date	Time		Equip		Ammunition			Weather	Light	Wind	Altitude		
					Rifle		Bullet Wt	Type		Precip					
					Scope		Powder	Charge		Humid			Mirage		
Slope		Location					Primer	Case		Temp	Intensity	MPH _____	<small>LIGHT MEDIUM HEAVY</small>		
Shot	1	2	3	4	5	6	7	8	9	10					
Elev															
Wind															
Call	+	+	+	+	+	+	+	+	+	+					
Shot	11	12	13	14	15	16	17	18	19	20					
Elev															
Wind															
Call	+	+	+	+	+	+	+	+	+	+					
Remarks:															

DATA CARD - TORSO

Range	Date	Time	Equip		Ammunition		Weather	Light	Wind	Altitude	
			Rifle	Scope	Bullet Wt.	Type	Precip	Direction	Direction	Mirage <small>LIGHT MEDIUM HEAVY</small>	
Slope	Location				Powder	Charge	Humid	Intensity	MPH _____		
					Primer	Case	Temp				
Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Remarks:											

DATA CARD - TORSO

Range	Date	Time	Equip		Ammunition		Weather	Light	Wind	Altitude	
			Rifle	Scope	Bullet Wt.	Type	Precip	Direction	Direction	Mirage <small>LIGHT MEDIUM HEAVY</small>	
Slope	Location				Powder	Charge	Humid	Intensity	MPH _____		
					Primer	Case	Temp				
Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
Call	+	+	+	+	+	+	+	+	+	+	
Remarks:											

COLD BORE SHOTS LOG

#	Date	Range	Wind	Temp	Altitude	Rifle	Scope	Ammunition		
1										
Notes										
2					Notes					
3					Notes					
4					Notes					

COLD BORE SHOTS LOG

#	Date	Range	Wind	Temp	Altitude	Rifle	Scope	Ammunition		
1										
Notes										
2					Notes					
3					Notes					
4					Notes					

Weapon _____

CUMLATIVE ROUND COUNT

Page _____

#	Date	Location	Rounds	Cumlative	#	Date	Location	Rounds	Cumlative
1					12				
2					13				
3					14				
4					15				
5					16				
6					17				
7					18				
8					19				
9					20				
10					21				
11					22				

Weapon _____

CUMLATIVE ROUND COUNT

Page _____

#	Date	Location	Rounds	Cumlative	#	Date	Location	Rounds	Cumlative
1					12				
2					13				
3					14				
4					15				
5					16				
6					17				
7					18				
8					19				
9					20				
10					21				
11					22				

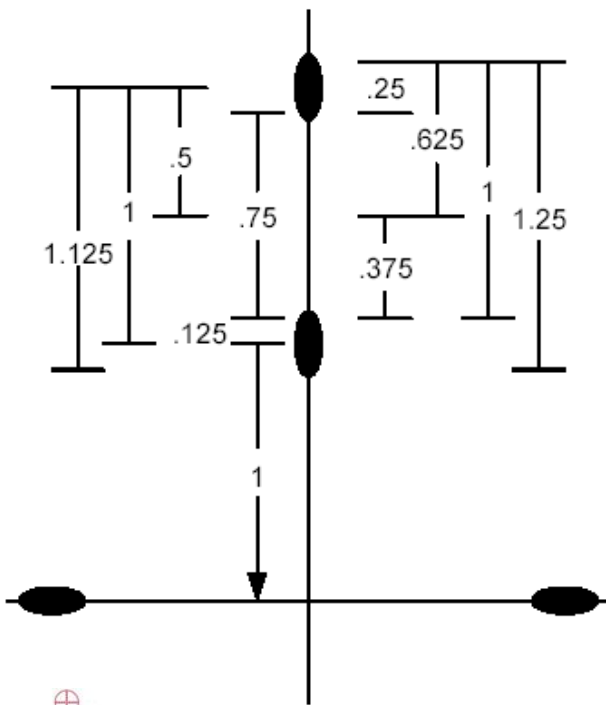
Target Height : Mil-Dot Ranges

M/I	6	8	12	18	24	27	30	32	36	60	70	80
0.2	833	1111										
0.3	555	741	1111									
0.4	417	555	833	1250								
0.5	333	444	666	1000								
0.6	278	370	555	833	1111							
0.7	238	317	476	714	952	1071						
0.8	208	278	417	625	833	937	1041					
0.9	185	247	370	555	741	833	926	987	1111			
1.0	167	222	333	500	666	750	833	889	1000			
1.1	151	202	303	454	606	682	757	808	909			
1.2	139	185	278	417	555	625	694	741	833			
1.3	128	171	256	385	513	577	641	684	769			
1.4	119	159	238	357	476	536	595	635	714	1190		
1.5	111	148	222	333	444	500	555	592	666	1111		
1.6	104	139	208	312	417	469	521	555	625	1041		
1.7	98	131	196	294	392	441	490	523	588	980	1143	
1.8	93	123	185	278	370	417	463	494	555	926	1080	
1.9	88	117	175	263	351	395	438	468	526	877	1023	1169
2.0	83	111	167	250	333	375	417	444	500	833	972	1111
2.1	79	106	159	238	317	357	397	423	476	793	926	1058
2.2	76	101	151	227	303	341	379	404	454	757	884	1010
2.3	72	97	145	217	290	326	362	386	435	724	845	966
2.4	69	93	139	208	278	312	347	370	417	694	810	926
2.5	67	89	133	200	267	300	333	355	400	666	778	889

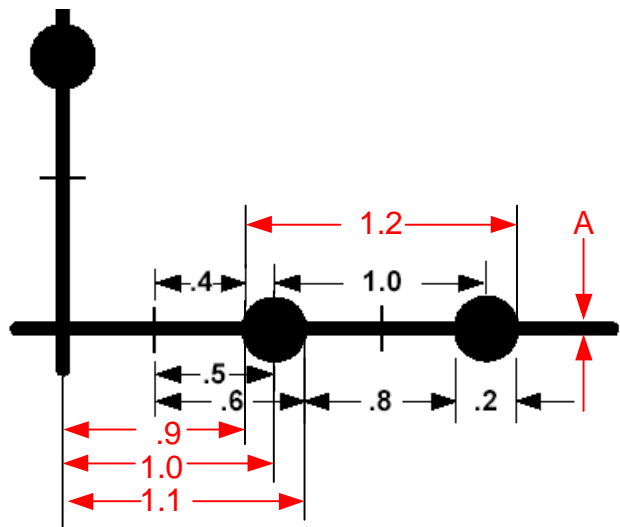
Target Height : Mil-Dot Ranges

M/I	6	8	12	18	24	27	30	32	36	60	70	80
2.6	64	85	128	192	256	288	320	342	385	641	748	854
2.7	62	82	123	185	247	278	309	329	370	617	720	823
2.8	60	79	119	179	238	268	298	317	357	595	694	793
2.9	57	77	115	172	230	259	287	306	345	575	670	766
3.0	56	74	111	167	222	250	278	296	333	555	648	741
3.1	54	72	107	161	215	242	269	287	322	537	627	717
3.2	52	69	104	156	208	234	260	278	312	521	607	694
3.3	50	67	101	151	202	227	252	269	303	505	589	673
3.4	49	65	98	147	196	221	245	261	294	490	572	653
3.5	48	63	95	143	190	214	238	254	286	476	555	635
3.6	46	62	93	139	185	208	231	247	278	463	540	617
3.7	45	60	90	135	180	203	225	240	270	450	525	600
3.8	44	58	88	132	175	197	219	234	263	438	512	585
3.9	43	57	85	128	171	192	214	228	256	427	498	570
4.0	42	56	83	125	167	187	208	222	250	417	486	555
4.1	41	54	81	122	163	183	203	217	244	406	474	542
4.2	40	53	79	119	159	179	198	212	238	397	463	529
4.3	39	52	77	116	155	174	194	207	232	387	452	517
4.4	38	50	76	114	151	170	189	202	227	379	442	505
4.5	37	49	74	111	148	167	185	197	222	370	432	494
4.6	36	48	72	109	145	163	181	193	217	362	423	483
4.7	35	47	71	106	142	160	177	189	213	355	414	473
4.8	35	46	69	104	139	156	174	185	208	347	405	463
4.9	34	45	68	102	136	153	170	181	204	340	397	453
5.0	33	44	67	100	133	150	167	178	200	333	389	444

Marine 'Football' System



Gen-2 Mil-Dot



MOA

CONVERSIONS

MIL

10

1000

36

9

900

32.4

8

800

28.4

7

700

25.2

6

600

21.6

5

500

18

4

400

14.4

3

300

10.8

2

200

7.2

1

100

3.6

0

0

0

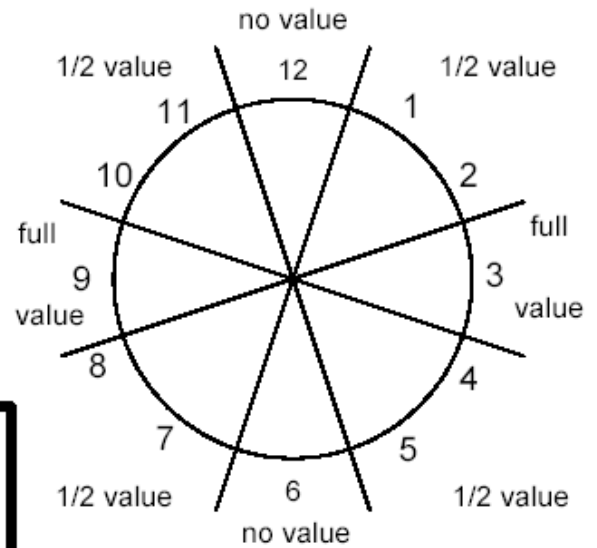
INCHES

YARDS

INCHES

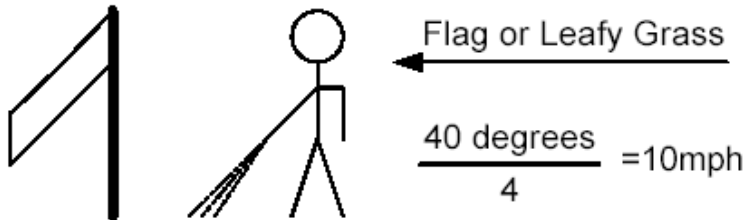
Wind

- 0-3 mph - Hardly felt on face, causes smoke to drift
- 3-5 mph - Lightly felt on face
- 5-8 mph - Keeps tree leaves in constant motion
- 8-12 mph - Raises dust and loose Paper
- 12-15 mph - Causes small trees to sway
- 15-20 mph - Causes large trees to sway



Formula

$$\text{Wind Speed} = \frac{\text{Estimated Angle}}{4}$$



gusty winds often change the value, watch mirage 'shimmer' for shifts



Range Estimation

Distance in Yards

$$\frac{\text{Target Size (inches)} \times 27.77}{\text{Mil Reading of Target}}$$

Distance in Meters

$$\frac{\text{Target Size (inches)} \times 25.4}{\text{Mil Reading of Target}}$$

FORMULAS

Slope Firing

Horizontal range is used in elevation adjustments

$$\text{Slope Range} \times \text{COS of Angle} = \text{Horiz. Range}$$

Angle Reading	10	20	30	40	50	60	70	80	90
COS of Angle	.98	.94	.85	.75	.65	.5	.35	.2	0

Slope Range is used for windage adjustments

Moving Target Engagements

Lead in Mils From Center Mass

$$\text{Flight Time (sec)} \times \text{Target Speed (fps)} = \text{Lead in feet}$$

$$\frac{\text{Lead in feet} \times 12}{\text{Mil Value of Est. Range}} = \text{MilDot Lead}$$

Mil Value of Est. Range = MilDot Lead



Target Speeds

- Slow walk 2mph = 3fps
- Trail walk 3mph = 4.4fps
- Fast walk 4mph = 6fps
- Slow jog 6mph = 8.8fps

these are approx.

NOTE : Before engaging Moving Targets - range to target, target speed, and flight time of round must be known

Windage Quick Reference





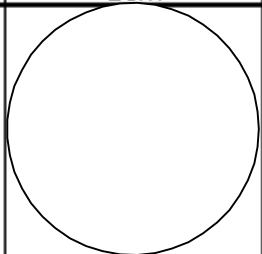
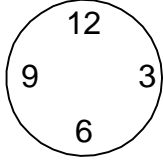
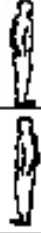
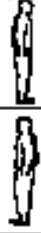
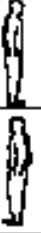







Range	Wind Value	3mph	5mph	7mph	10mph	12mph	15mph	18mph	20mph
Meters		MOA	MOA	MOA	MOA	MOA	MOA	MOA	MOA
200	Half	1/4	1/4	2/4	3/4	3/4	1	1 1/4	1 1/4
	Full	2/4	3/4	1	1 1/4	1 2/4	2	2 2/4	2 3/4
300	Half	1/4	2/4	3/4	1	1 1/4	1 2/4	1 3/4	2
	Full	2/4	1	1 2/4	2	2 2/4	3	3 2/4	4
400	Half	2/4	3/4	1	1 1/4	1 2/4	2	2 2/4	2 3/4
	Full	3/4	1 1/4	1 3/4	2 3/4	3 1/4	4	4 3/4	5 1/4
500	Half	2/4	3/4	1 1/4	1 3/4	2	2 2/4	3	3 1/4
	Full	1	1 3/4	2 1/4	3 1/4	4	5	6	6 3/4
600	Half	3/4	1	1 2/4	2 1/4	2 2/4	3 1/4	3 3/4	4 1/4
	Full	1 1/4	2 1/4	3	4 1/4	5 1/4	6 2/4	7 3/4	8 2/4
700	Half	3/4	1 1/4	2	2 3/4	3 1/4	4	4 3/4	5 2/4
	Full	1 2/4	2 3/4	3 3/4	5 2/4	6 2/4	8	9 3/4	10 3/4
800	Half	1	1 2/4	2 1/4	3	3 3/4	4 2/4	5 2/4	6 1/4
	Full	1 3/4	3	4 1/4	6 1/4	7 2/4	9 1/4	11	12 1/4
900	Half	1 1/4	2	2 3/4	3 3/4	4 2/4	5 3/4	6 3/4	7 2/4
	Full	2 1/4	3 3/4	5 1/4	7 2/4	9	11 1/4	13 2/4	15
1000	Half	1 1/4	2 1/4	3 1/4	4 2/4	5 2/4	6 3/4	8 1/4	9
	Full	2 3/4	4 2/4	6 1/4	9	11	13 3/4	16 1/4	18 1/4





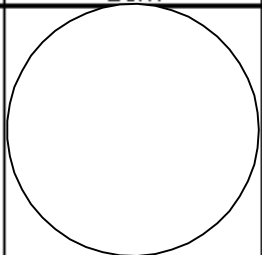
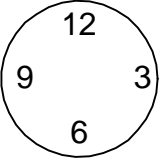
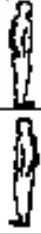
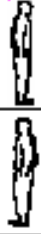
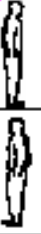







700m=1.0 sec 1000m=1.8 sec

Windage Quick Reference

Range	Wind Value	3mph	5mph	7mph	10mph	12mph	15mph	18mph	20mph
Meters		MOA	MOA	MOA	MOA	MOA	MOA	MOA	MOA
200	Half	1/4	1/4	2/4	3/4	3/4	1	1 1/4	1 1/4
	Full	2/4	3/4	1	1 1/4	1 2/4	2	2 2/4	2 3/4
300	Half	1/4	2/4	3/4	1	1 1/4	1 2/4	1 3/4	2
	Full	2/4	1	1 2/4	2	2 2/4	3	3 2/4	4
400	Half	2/4	3/4	1	1 1/4	1 2/4	2	2 2/4	2 3/4
	Full	3/4	1 1/4	1 3/4	2 3/4	3 1/4	4	4 3/4	5 1/4
500	Half	2/4	3/4	1 1/4	1 3/4	2	2 2/4	3	3 1/4
	Full	1	1 3/4	2 1/4	3 1/4	4	5	6	6 3/4
600	Half	3/4	1	1 2/4	2 1/4	2 2/4	3 1/4	3 3/4	4 1/4
	Full	1 1/4	2 1/4	3	4 1/4	5 1/4	6 2/4	7 3/4	8 2/4
700	Half	3/4	1 1/4	2	2 3/4	3 1/4	4	4 3/4	5 2/4
	Full	1 2/4	2 3/4	3 3/4	5 2/4	6 2/4	8	9 3/4	10 3/4
800	Half	1	1 2/4	2 1/4	3	3 3/4	4 2/4	5 2/4	6 1/4
	Full	1 3/4	3	4 1/4	6 1/4	7 2/4	9 1/4	11	12 1/4
900	Half	1 1/4	2	2 3/4	3 3/4	4 2/4	5 3/4	6 3/4	7 2/4
	Full	2 1/4	3 3/4	5 1/4	7 2/4	9	11 1/4	13 2/4	15
1000	Half	1 1/4	2 1/4	3 1/4	4 2/4	5 2/4	6 3/4	8 1/4	9
	Full	2 3/4	4 2/4	6 1/4	9	11	13 3/4	16 1/4	18 1/4

700m=1.0 sec 1000m=1.8 sec

MOVING TARGET								
RANGE	DATE	TIME	RIFLE AND SCOPE		HOLD		CORRECT ELEVATION	CORRECT WINDAGE
							LEFT MIL LEAD	RIGHT MIL LEAD
AMMO	LOT #	TBMP	HUMIDITY	ALTITUDE				
WIND			LIGHT					
SPEED	DIRECTION							
								
MIRAGE								
SHOT	1	2	3	4	5	REMARKS		
ELEV								
WIND								
MIL LEAD								
CALL								
								

MOVING TARGET								
RANGE	DATE	TIME	RIFLE AND SCOPE		HOLD		CORRECT ELEVATION	CORRECT WINDAGE
							LEFT MIL LEAD	RIGHT MIL LEAD
AMMO	LOT #	TBMP	HUMIDITY	ALTITUDE				
WIND			LIGHT					
SPEED	DIRECTION							
								
MIRAGE								
SHOT	1	2	3	4	5	REMARKS		
ELEV								
WIND								
MIL LEAD								
CALL								
								

LOAD DEVELOPMENT - 5" Shoot-N-C

Range		Date	Time	Equip		Ammunition		Weather	Light	Wind	Altitude
				Rifle		Bullet Wt.	Type	Precip	Direction 	Direction 	
				Scope		Powder	Charge	Humid			
Slope		Location				Primer	Case	Temp	Intensity	MPH _____	Mirage <small>LIGHT MEDIUM HEAVY</small>
Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
fps											
Call	+	+	+	+	+	+	+	+	+	+	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
fps											
Call	+	+	+	+	+	+	+	+	+	+	
Avg											
SD											

LOAD DEVELOPMENT - 5" Shoot-N-C

Range		Date	Time	Equip		Ammunition		Weather	Light	Wind	Altitude
				Rifle		Bullet Wt.	Type	Precip	Direction 	Direction 	
				Scope		Powder	Charge	Humid			
Slope		Location				Primer	Case	Temp	Intensity	MPH _____	Mirage <small>LIGHT MEDIUM HEAVY</small>
Shot	1	2	3	4	5	6	7	8	9	10	
Elev											
Wind											
fps											
Call	+	+	+	+	+	+	+	+	+	+	
Shot	11	12	13	14	15	16	17	18	19	20	
Elev											
Wind											
fps											
Call	+	+	+	+	+	+	+	+	+	+	
Avg											
SD											

