12-N-1

FIRING TABLES

FOR

12 INCH GUN, MODELS OF 1895 AND 1895MI

MOUNTED ON

12 INCH BARBETTE CARRIAGE, MODEL OF 1917

FIRING

700 LB. C. S. SHELL, MK. VI AND MK. X

PREPARED BY THE
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FIRING TABLES FOR 12 INCH S. C. GUN, MODELS OF 1895 and 1895 MI

FIRING 700 LB. C. S. SHELL

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GENERAL INFORMATION

These tables are based on firings conducted at Aberdeen Proving Ground, Maryland, during Dec. 1929, Feb. 1930, May and July 1931, under Ordnance Program No. 4996.

12 INCH S. C. GUNS		Mod. 1895	Mod. 1895 Relined	Mod. 1895 MI
Diameter of the bore between lands,	inches	12	12	12
Diameter of the bore between grooves,	inches	12.12	12.14	12.2
Total length of gun,	inches	442.6	442.6	442.6
Length of rifled portion,	inches	337.91	337.91	335.96
Travel of 700 lb. C.S. Shell Mk VI,	inches	344.62	344.62	343.50
Length of powder chamber,	inches	75.24	75.24	75.24
Diameter of powder chamber,	inches	14.2	14.2	14.2
Capacity of powder chamber,	cubic inches	11922	11922	11922
Travel of 700 lb. C.S. Shell Mk X,	inches	346.67	346.67	345.55
Length of powder chamber,	inches	73.19	73.19	73.19
Diameter of powder chamber,	inches	14.2	14.2	14.2
Capacity of powder chamber,	cubic inches	11810	11810	11810
Number of grooves,		72	108	120
Character of rifling,		Increasing	Uniform	Uniform
Twist, direction		Right hand	Right hand	Right hand
Final twist of rifling,		1 in 25 calibers		
Maximum pressure	lbs./sq.in.	38000	38000	38000

12 INCH CARRIAGES	Batignolles Model 1918	Barbette Model 1917	Disappearing Model 1897	Disappearing Model 1901
Total traverse,	177.8 ⌀ = 10°	6400 ⌀ =360°	3022.2 ⌀= 170°	3022.2 ⌀= 170°
Minimum elevation,	-88.9 ⌀*= -5°*	0 ⌀ = 0°	0 ⌀= 0°	0 ⌀= 0°
Maximum elevation,	675.6 ⌀ = 38°	622.2 ⌀ = 35°	266.7 ⌀= 15°	266.7 ⌀= 15°
Traverse for one turn)f	24.8 ⌀ =1.395	44.8 ⌀ =2.52°	38.9 ⌀= 2.19°	38.8 ⌀= 2.18°
of traversing crank)s	4.9 ⌀ =0.28°	1.3 ⌀ =0.07°	21.7 ⌀= 1.22°	21.5 ⌀= 1.21°
Change in elevation for)f	10.3 ⌀ =0.58°	28.1 ⌀ =1.58°	6.8 ⌀= 0.38°	0.9 ⌀= 0.05°
one turn of crank)s		5.9 ⌀ =0.33°		

*Minimum firing elevation with Batignolles Carriage, 266.7 ⌀ = 15°
f Fast Motion
s Slow Motion

PROJECTILES

700 lb. C. S. Shell Mark VI
700 lb. C. S. Shell Mark X

FUZES

Base Detonating Fuze Mark V
Point Detonating Fuze Mark III

NOTE. These tables may be used for the 1895 Models on other mounts, and for the 1888 Models mounted on 1901 disappearing carriage; provided suitable corrections are made for difference in jump.

12 INCH S. C. GUN, MODEL OF 1895

NOTE: When standard Coast Artillery fire control instruments are available for preparing data for firing on moving or fixed targets, the battery commander will have little need for these firing tables. They become useful only for reference, since mechanical devices apply the necessary corrections for the various effects on range and deflection. Standard panoramic sights for Coast Artillery are designed to utilize azimuths in laying for direction.

EXPLANATION OF THE TABLES

This firing table has been divided into two parts. Part 1 comprises data applicable to any possible combination of projectile, fuze and powder charge, and will serve equally well for all firing tables. It is printed on white paper. Part 2 consists of a number of sections each of which gives data pertaining to a particular combination of projectile, fuze and powder charge. Each of these sections is readily distinguished from the adjacent ones by a difference in the color of the paper upon which it is printed.

Throughout the tables, certain conditions are assumed as standard. Mention may be made of the following:

Wind, none.
Muzzle velocity, as listed in table.
Air density at battery, (59° F., and 29.53 in. of mercury)
525.9 grains per cubic foot.
Temperature of air at battery (for elasticity effect) 59° F.
Temperature of powder 70° F.
Weight of projectile, as listed in table.

In addition to the standard air conditions at the battery, a standard atmospheric structure aloft has been assumed. The observed ranges, obtained from test firings, upon which these tables are based, were corrected on the basis of a comparison of observed muzzle velocity, weight of projectile, air conditions at all altitudes with the assumed standard and for rotation of the earth.

In connection with Part 1, it is to be noted that the azimuth of a wind is indicated by reference to the direction from which it blows. Since the meteorological message gives the azimuth of the wind as measured clockwise from the true north, it is necessary to find the equivalent tabular direction before proceeding with the use of the wind component chart. This tabular azimuth or chart direction of the wind is therefore measured in mils (6400 to the circle) clockwise from the plane of fire, that is, from the direction toward which the gun is fired. The choice of signs for cross wind effects accords with the deflection graduations upon the standard panoramic sight. For example, a wind from the left, when the target is viewed from the position of the gun, will carry the projectile to the right. To correct for this, it is necessary to traverse the gun to the left, and this corresponds to an increased deflection setting on the sight. The effect of such a wind, being opposite in sign to the correction, is thus seen to be negative.

Although the maximum wind speed noted on this chart is only ten miles per hour, it is not to be understood that this figure is in any way intended as a restricting limit on the use of the data of the chart itself. Thus, to obtain the components of a 12 m/h wind, the components of a 10 m/h wind can be added to the corresponding components of a 2 m/h wind.

The other tables, formulae and charts of Part 1 require no individual discussion. The principal use of the information contained in Part 1 is in the conversion of the data of the meteorological message into a form that is directly applicable to a particular battery.

12 INCH S. C. GUN, MODEL OF 1895

Table A of Part 2 gives the range elevation relation, maximum ordinate, ballistic coefficient and the characteristics of the trajectory at the point of fall or at the point of burst. The ranges listed in column (1) and throughout the table are "curved" ranges; that is, they are regarded as measured along the surface of the sphere concentric with the earth and passing through the gun. Such measurements are understood to be made from the gun to the points where the trajectories pierce this spherical surface; or in case of the correction tables for the height of target, to points on this surface directly above or below the target. These points are all at the same height above sea level as the gun, and hence may be called "level points". It should be emphasized that no correction for curvature of the earth should be applied to these ranges. Whenever the level points concerned are at the target or directly above or below it, it is evident that these ranges are equal to the geographical distance from muzzle to target such as would be read from an accurate map, and they will later be referred to as "map ranges". Such ranges are sensibly equal to the rectilinear distances between gun and level point, though the straight line joining these points would not be exactly horizontal at the gun. In connection with range settings in general, and with especial reference to cases where gun and target are at different levels, the term "range" is sometimes used less exactly to refer to distance from gun to level points not related to the target.

The tabulated elevations, given in columns (2) and (3), are strictly exact only when the gun and target are at the same level. In this case, the elevation coincides with the quadrant elevation. For other cases, see tables B and C. The word "change" in the headings (4) and (5), (6) and (7) is employed because in each of these columns there are tabulated mean values to be used for decreases as well as increases. In case of ballistic air temperature other than 59° F. Table H is to be used. The deflection due to drift, columns (13) and (14) of Table A, includes the effect of lateral jump. In the case of gun designed with trunnion axis not level with respect to the carriage, the effect on deflection of the "permanent cant" is included in the tabular drift. Thus, with no cross wind, and in the absence of accidental disturbance, these columns give the total deviation of the projectile from the plane of fire (the vertical plane containing the axis of the piece when laid for firing). The signs used are in accord with the deflection graduations upon the standard panoramic sight. The negative sign indicates that the projectile is carried to the right and the positive sign indicates that the combination of the effect of drift and lateral jump has resulted in a deviation of the projectile to the left of the plane of fire.

It is to be noted that in this case and throughout the tabulation of differential variations, the signs given are those of the effects and not of the corrections. For example, the effect is given as positive if the trajectory is so altered that the projectile is caused to fall beyond its normal objective point. The probable errors in range and deflection are given in columns (16) and (17). These, as noted at the bottom of each page, are Proving Ground Probable Errors.

The characteristics of the trajectory at the point of fall are given in columns (9), (10), (11) and (12). The ballistic coefficient, column (15), is the so-called "normal" or "short arc" C. Its value is such that, when it is used with the standard muzzle velocity and angle of departure for the computation of the trajectory by the method of numerical integration, the resulting range will be that tabulated.

12 INCH S. C. GUN, MODEL OF 1895

The effect of the earth's rotation on range and deflection is a function of the latitude of the gun and of the azimuth of the plane of fire. It cannot, therefore, be incorporated in the elevation and drift columns. This effect becomes quite appreciable in the case of long range guns. The effect of rotation of the earth on range is given in Table E, and the effect on deflection is given in Table K. It is to be noted that the azimuth is measured from the true North.

Tables B and C are for use when the target is below or above the level of the gun. For example, in the table for target below gun (Table B) for any given map range and height of target, the quantity appearing as the "range effect" is the distance by which the map range for the given target exceeds the "range to level points", when the latter range is determined for that standard trajectory whose continuation passes through the target. These effects, then, are given positive signs so that the correction may be made by subtracting them from the map range. The resulting corrected range is that range whose corresponding angle of elevation (as listed in the table) is to be used as the elevation required to strike the target, (provided we assume for the moment that there are no other variations from standard).

Tables D to J inclusive give the various differential effects; thus Table F gives the range effects corresponding to increase or decrease in muzzle velocity 10, 20, 30, 40, 50, 60, 70, 80, 90 up to 150 feet per second.

Table K gives the deflection effects in mils due to rotation of the earth for varying latitudes and azimuths.

Although cant of the carriage axle, by changing the angle of departure, has some effect upon the range, that effect is here disregarded; for, at low elevations, a fairly large cant will produce only a very small change in the angle of departure, and at high elevations, where a large cant will produce a somewhat larger change in angle of departure than at low elevations, it requires a quite large change in departure to produce a small change in range.

Among the symbols and abbreviations used are the following:

ω (read: "omega"), meaning the quadrant angle of fall for gun and target at the same level.

P. E. the probable error.

in. inches.

ft. feet.

y. or yds. yards.

f/s feet per second.

F. Fahrenheit.

m.d.p. meteorological datum plane.

% percent

12 INCH S. C. GUN, MODEL OF 1895

$\not{m}$ mils

M.V. muzzle velocity

$V-V_o$ velocity adjustment

THE METEOROLOGICAL MESSAGE

The Meteorological Message consists of groups of symbols arranged in codified form. The message starts with the repetition of the so-called "address of the sending station", consisting of three letters, the first of which is always M and the other two serve to identify the station. All the groups subsequent to the first group, which plays a special role, are similar in type and significance; they differ only in that they refer to different altitudes. They consist of seven digits.

With reference to the first group, the first digit is the digit 3, to indicate that the message which follows is for the "terrestrial" artillery. A different digit in this place will indicate that the message is designed for a different purpose, such as for the airplane service or anti-aircraft batteries. The second and third digits of this first group give, in hundreds of feet, the altitude of the meteorological datum plane (m.d.p.) above sea level. The position of the m.d.p. is chosen by the Meteorological Service of the Army and should be little, if any, higher than the lowest battery to be served by the message. The fourth and fifth digits of this group give the temperature at the m.d.p. in degrees Fahrenheit.

The groups subsequent to the first have digits assigned to them as symbols, beginning with zero, and refer to altitudes as follows:

0	The level of the m.d.p.		
1	An altitude of	600 feet	(200 yards) above m.d.p.
2	" " "	1500 "	(500 ") " "
3	" " "	3000 "	(1000 ") " "
4	" " "	4500 "	(1500 ") " "
5	" " "	6000 "	(2000 ") " "
6	" " "	9000 "	(3000 ") " "
7	" " "	12000 "	(4000 ") " "
8	" " "	15000 "	(5000 ") " "
9	" " "	18000 "	(6000 ") " "
0	" " "	24000 "	(8000 ") " "
1	" " "	30000 "	(10000 ") " "
2	" " "	36000 "	(12000 ") " "

Each further increase by unity in the symbol of the altitude zone corresponds to an increase of 6000 feet in altitude above the m.d.p. It is evident that no confusion can arise from using for 10, 11, 12, etc. the symbols 0, 1, 2 etc., in order to preserve the 7 digit character of the group. The first digit of each of these groups is the group symbol mentioned above and designates the altitude zone to which the group refers. The second and third indicate the direction from which the ballistic wind blows. For this purpose the angular deviation is measured clockwise from the true north in hundreds of mils (64 points to the circle). The fourth and fifth digits in each of these groups constitute a two figure symbol for

the speed of the wind in miles per hour. The sixth and seventh digits serve to designate the ballistic density in percent of normal.

The particular group of the meteorological message appropriate for use with the particular trajectory is that group of which the altitude is nearest to, but not less than, the maximum ordinate. When extreme accuracy is necessary and the meteorological data justify the procedure, it is possible to interpolate between groups of the meteorological message, making use of the exact maximum ordinate.

The above mentioned is a special case of the general method dealing with the meteorological data for battery and m.d.p. at any levels. The meteorological message is designed primarily for battery in or near the m.d.p. When serious differences in level occur, the data of the meteorological message must be corrected to the level of the battery. Maximum ordinates will be measured from the battery level, for all purposes. Such corrections as are made utilize that 7 digit group of the message which corresponds to the maximum ordinate so defined. The wind at a given altitude above the battery is assumed to be identical with that at an equal altitude above the m.d.p., but the temperature and ballistic density need seperate consideration. The temperature at the battery is obtained either by direct observation or by correcting to the level of the battery the temperature given in the first group of the meteorological message. This correction is made by means of the Thermometric Formula, Part 1B.

The ballistic density depends upon the maximum ordinate considered. Any one of the 7 figure groups of the message gives the ballistic density for a certain maximum ordinate measured from the m.d.p. This density, when corrected by means of the Density Formula, Part 1B, becomes the ballistic density for that maximum ordinate measured from the battery.

When standard Coast Artillery instruments are not available, it is necessary to prepare firing data by computation, using the firing tables as explained hereafter.

USE OF THE TABLES

For convenience in reference, the differential variations and the corresponding corrections will be considered in three groups. The designation of the groups of corrections, in the order in which they will be treated, are:

(a) Position corrections,
(b) Materiel corrections, and
(c) Weather corrections.

This grouping corresponds in a general way to the order in which the data for the corrections are obtained. When the corrections refer to changes in deflection or in height of burst, they are so indicated. Otherwise they refer to changes in range. When all the variations from standard are numerically small, and hence comparable in magnitude, it is known that a slight increase in formal accuracy is secured by making these corrections successively; that is, by correcting the map range to account for the first variation considered, and using the resulting first corrected range as a basis for determining the magnitude of the second variations, and so forth. In most cases which will occur in practice, this increase in formal accuracy is meaningless, since the data themselves are seldom known with sufficient refinement to warrant the slight apparent gain in accuracy. Consequently, for general use with this table, all corrections may be calculated on the

basis of the same fundamental quantity, namely, the map range. At the same time, should it prove more convenient, there is no objection to imposing the corrections successively, except where some one of the corrections is much larger than the others. The only case which occurs frequently enough to warrant particular consideration is that of a large correction due to height of target. For this situation it has been verified that greater accuracy is secured by imposing simultaneously the velocity and height of site corrections than by imposing these corrections successively in either order.

(a) Position Corrections are determinable as soon as the relative location of gun and target is known. For land firing, their geographical location would determine both the map range and the difference in altitude; for seacoast batteries, the height of the tide may also be required. Position corrections consist of those for difference in altitude or gun and target. Corrections for rotation of the earth may be regarded as position corrections. The drift may be regarded as necessitating a position correction in deflection. The cant effect due to the carriage not being level also necessitates a position correction in deflection since it is determinable from a knowledge of the map range. Tables B and C giving "position effects", may be entered with "Map Range" as one argument and "Height of Target" as the other argument. The position effect must be algebraically subtracted from the map range to determine the geographical distance to the level point on that trajectory, or its continuation, which, under standard conditions, passes through the target.

(b) Materiel Corrections are determinable, for a given range, when the weight and the markings of the projectile and the relatively permanent characteristics of the particular piece and powder lot are known. These corrections consist of those for (1) variations from normal in weight of projectile, (2) estimated change in muzzle velocity, $(V - V_0)$, due to the conditions of the piece or of the powder when the powder is at standard powder temperature (70° F.). The correction on account of variation in weight of projectile is usually obtained from Table D, Part 2, for any given marking. The estimated change in muzzle velocity is called the velocity adjustment, $V - V_0$, and is made by reference to the record of performance of the particular piece and powder lot, or other empirical methods. Usually the results of observation of previous firings are available. The necessary correction is then found by the use of the effects tabulated in Part 2, Table F.

(c) Weather Corrections are determinable only upon receipt of the regular meteorological message or other reports of observation made at or near the time of firing. These corrections consist of those for (1) air density, (2) air temperature (elasticity effect), (3) range wind, (4) variation of the powder temperature from standard. The deflection effect of the cross wind may be regarded as leading to weather corrections. The air density, air temperature, range wind and cross wind, to be used in any case are, respectively, the ballistic density, temperature at the battery, ballistic range wind and ballistic cross wind, all as given in or obtained from the meteorological message. In the absence of such information it will ordinarily be necessary to utilize such observation of air conditions as can be made at the battery. The maximum ordinate corresponding to the map range for use with the Meteorological Message is found in Part 2, Table A, column (8).

The ballistic wind, given in speed and direction, is resolved into components along and across the line of fire by means of the chart of Part 1A. The range component is the ballistic range wind to be used with Part 2, Table I. The cross component is the ballistic cross wind, and the resulting deflection effects are found by reference to Part 2, Table J. The effect of the variations of the powder temperature from the standard powder temperature is found as the effect of an equivalent change in muzzle velocity. This muzzle velocity change may be read from Part 1, I.

The algebraic sum of all of the range effects hitherto mentioned, namely, of those due to position variations, materiel variations, weather variations, are added together algebraically and this algebraic sum subtracted from the map range. This amounts to changing the signs of the effects, thus converting them into the corrections desired, and then adding the corrections to the map range. When these calculations are made previous to a series of firings, the result is known as the initial range, being the range at which firing is begun. With it, entry is made in Part 2, Table A, and the corresponding angle of elevation is read from either column (2) or (3). The deflection effects, when added algebraically give the total deflection effect, and a change of sign gives the deflection corrections to be used with the panoramic sight.

When observations of fire are possible, the center of impact for succeeding rounds is adjusted to the center of target on the basis of rounds already observed, and the range corresponding to the resulting setting is called the adjusted range. The difference between the adjusted range and the initial range as defined above is assumed to be due to a variation which necessitates a correction to be applied upon $V - V_o$. The value of $V - V_o$ thus continually revised, is called the velocity adjustment and requires reference to Part 2, Table F. It is used in the next firing or in firing at a different range, and is then considered as a materiel correction.

The following example illustrates the use of the tables:

Given: 12" Gun, Model of 1895, Tabular Muzzle Velocity = 2600 f/s
700 lb. C. S. Shell Mk VI.

Data as to Position

Altitude of battery = 450 ft. above sea level
Map range to target = 16500 yards
Height of target = -312 ft. (312 ft. below gun)
Azimuth of target (measured clockwise from the North) = 437 mils (24°6)
Latitude of the gun = 42° North

Data as to Materiel

Weight of projectile = 693 lb. (1.0% below normal)
Preliminary Velocity Adjustment ($V - V_o$) = -18 f/s (18 f/s below tabular velocity)

Weather Data

Temperature of Powder = 62° F.
Meteorological Message MSL MSL 30162 06#0799 16#0898 2591096
3591196 4600994

Required Quadrant Elevation and Deflection Setting

Solution The tables Parts 1 and 2 are used throughout

(a) Position Corrections for Range

Entering Table B, for target below gun, we find corresponding to a map range of 16,500 yards and a height of target of -312 ft. a range effect of 285 yds.

Entering Table E, for effects on range due to rotation of the earth, we find, corresponding to a latitude of 42° and an azimuth of 24#6 a range effect of 27 yds.

(b) Materiel Corrections for Range

Entering Table D, we find the effect on range for 1.0% decrease in weight of projectile to be -12 yds.

In a similar manner, from Fb, we find the effect on range for an estimated decrease of 18 f/s in muzzle velocity to be -155 yds.

(c) Weather Corrections for Range

The actual or estimated temperature of the powder at the time of firing being 62° F., instead of the standard temperature for powder of 70° F., a correction must be introduced. The effect on muzzle velocity is obtained from Part 1, I and is -17 f/s. The effect on range thus occasioned is found in the same manner as above from Table Fb, to be -147 yds.

To obtain the effects of the remaining variations, the meteorological message must be deciphered and such information as is applicable to the particular trajectory considered must be utilized.

From column (8) of Table A, the maximum ordinate is found to be 3506 ft., so that in addition to the introductory information obtained in the meteorological message, only that group of the message numbered 4 and which gives data for a maximum ordinate of 4500 ft. will be used. Interpolation in the message between groups 3 and 4 for the exact maximum ordinate may be used, should the data justify it.

From the meteorological message the following information is obtained.

Altitude of the m.d.p. above mean sea level	100 ft.
Temperature at the m.d.p.	62° F.
Azimuth of the ballistic wind (for group "4")	6000 mils
Velocity of the ballistic wind (for group "4")	9 mi/hr
Ballistic Density (for group "4")	94%

To obtain the components of the ballistic wind, it is necessary to secure from the recorded azimuths of target and ballistic wind, the chart direction of the wind for which the line of fire is the reference direction. Subtracting 437 mils from 6000 mils, we have for the chart direction from which the wind is blowing 5563 mils

Using the Wind Component Chart, Part 1A, with 9 mi/hr as the wind velocity, we have, corresponding to 5563 mils, a range component W_x, of -6.1 mi/hr
and a cross component, W_y, of -6.6 mi/hr

Entering Table I, we find the effect on range for -6.1 mi/hr range wind (the negative sign here indicates a head wind) to be -44 yds.

The temperature at the m.d.p. given in the Meteorological Message cannot be used directly since the battery is not situated in the m.d.p. but is seen to be above the m.d.p. 350 ft.

Using the Thermometric Formula, Part 1B, the decrease in temperature for this height is 1° F., so that the temperature for the battery is 61° F.

Entering Table H, we find the temperature (elasticity) effect on range for a temperature of 61° F. (or 2° Fahrenheit above the normal temperature of 59° F.) to be -4 yds.

The ballistic density given in the Meteorological Message for this trajectory cannot be used directly since the battery is 350 ft. above the m.d.p.

Using the density formula, Part 1B, the decrease in density for this height is 1% so that the ballistic density of the battery is 93%

Entering Table Ga, we find the effect on range for the ballistic air density of 93% (or 7% below normal) to be 497 yds.

The total range effect is now obtained by adding the separate range effects algebraically. It has the value of 255+27-12-155-147-44-4+497 = 447 yds.

The total range correction is obtained by merely changing the sign of the total range effect. It is -447 yds.

The corrected range, found by adding algebraically the total correction to the map range (or what is the same thing, subtracting algebraically the total effect) is 16,500 yds. - 447 yds., i.e. 16053 yds.

The elevation corresponding to the corrected range of 16053 yds. is found in either column 2 or 3 of Table A. It is 210.0 mils = 11°49'

The deflection effects are found in a similar manner.

The deflection effect due to a -6.6 mi/hr cross wind (from left to right) is found from Table J to be -2.0 mils = -0.11°

The drift is found from columns (13) or (14) of Table A to be -11 mils = -0.65°

The deflection effect due to rotation of the earth for a latitude of 42° North and an azimuth of 24.6 is found from Table K to be -1.2 mils = -0.07°

The total deflection effect is obtained by adding algebraically the separate deflection effects. It has the value of -2.0 - 11 - 1.2 = -14 mils = -0.8°

The total deflection correction is obtained by merely changing the sign of the total deflection effect. It is +14 mils = +0.8°

The deflection set off at the gun will be +14 mils (14 mils to the left) when the target is used as aiming point. For any other aiming point 14 mils must be added to the deflection of the target. To obtain the azimuth setting it must be recalled that deflections and azimuths are measured in opposite senses. The correction of +14 mils in deflection is the same as a correction of -14 mils in azimuth. The azimuth setting then is 437 mils - 14 mils = 423 mils = 23.8°

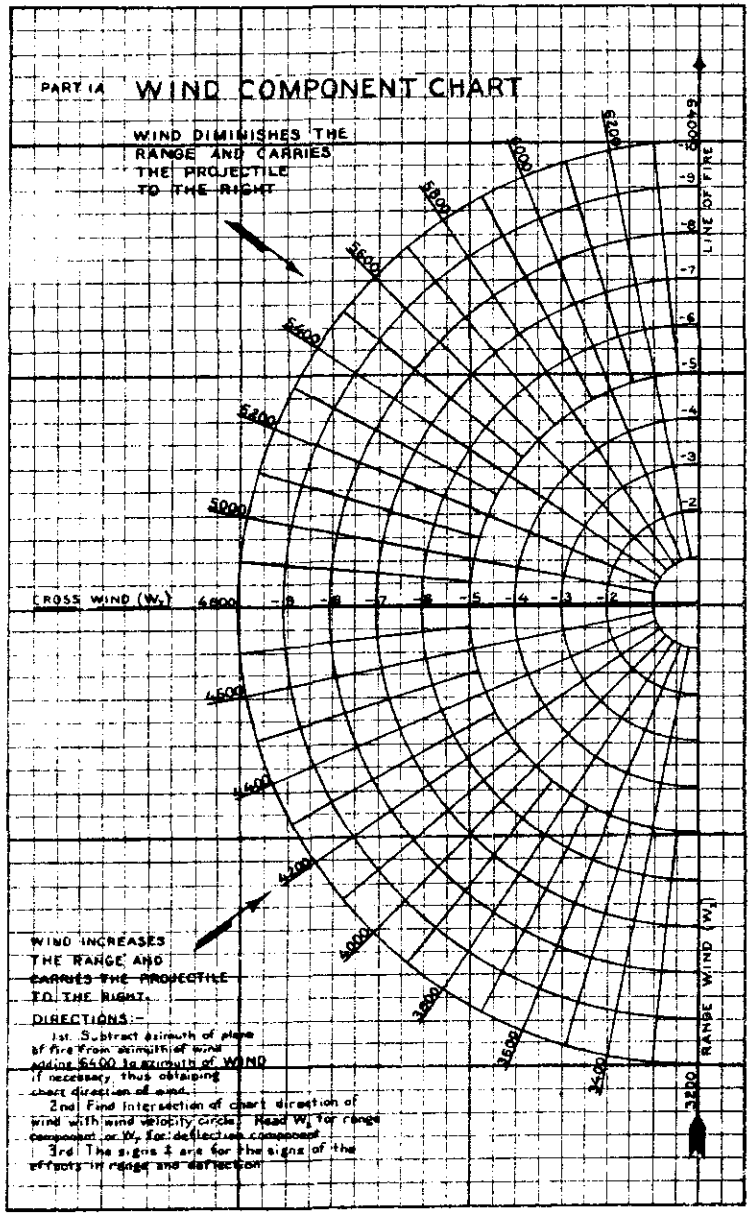
PART 1

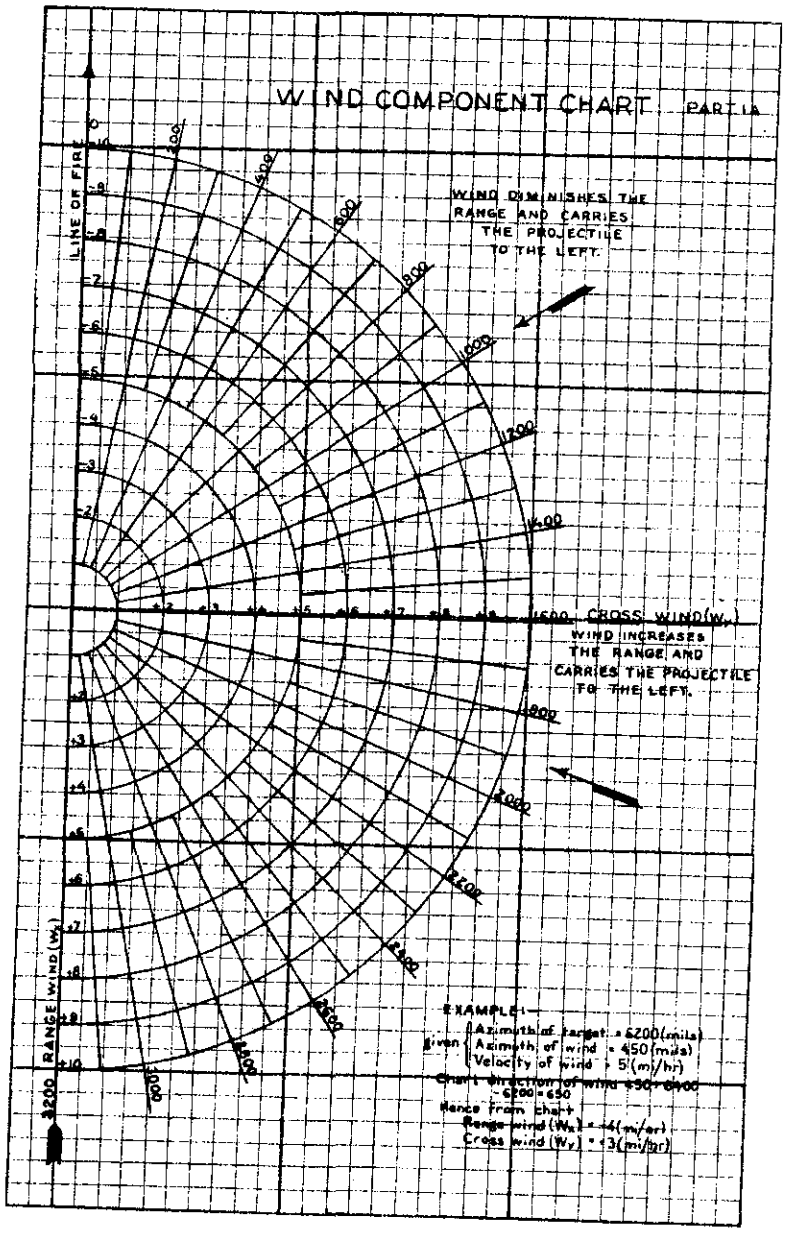
12-INCH S. C. GUN

MODELS OF 1895 AND 1895 MI

FIRING

700 LB. C. S. SHELL


PART 1A WIND COMPONENT CHART
WIND DIMINISHES THE RANGE AND CARRIES THE PROJECTILE TO THE RIGHT
LINE OF FIRE
CROSS WIND (W_y)
RANGE WIND (W_x)
WIND INCREASES THE RANGE AND CARRIES THE PROJECTILE TO THE RIGHT.
DIRECTIONS:-
1st. Subtract azimuth of plane of fire from azimuth of wind adding 6400 to azimuth of WIND if necessary, thus obtaining chart direction of wind.
2nd Find intersection of chart direction of wind with wind velocity circle. Read W_x for range component or W_y for deflection component.
3rd The signs ± are for the signs of the effects in range and deflection


WIND COMPONENT CHART PART 1A
WIND DIMINISHES THE RANGE AND CARRIES THE PROJECTILE TO THE LEFT.
LINE OF FIRE
CROSS WIND (W_y)
WIND INCREASES THE RANGE AND CARRIES THE PROJECTILE TO THE LEFT.
RANGE WIND (W_x)
EXAMPLE:-
given Azimuth of target = 6200 (mils)
Azimuth of wind = 450 (mils)
Velocity of wind = 5 (mi/hr)
Chart direction of wind 450 + 6400 - 6200 = 650
Hence from chart
Range wind (W_x) = +4 (mi/hr)
Cross wind (W_y) = +3 (mi/hr)

PART 1B.

THERMOMETRIC FORMULA

$\frac{5}{9}$ F. = DECREASE IN TEMPERATURE FOR 100 FT. INCREASE IN ALTITUDE

$\frac{5}{9}$ F. = INCREASE IN TEMPERATURE FOR 100 FT. DECREASE IN ALTITUDE

DENSITY FORMULA

0.8% = DECREASE IN AIR DENSITY FOR 100 FT. INCREASE IN ALTITUDE

0.8% = INCREASE IN AIR DENSITY FOR 100 FT. DECREASE IN ALTITUDE

PART 1C. YARDS TO METERS

1 yd = 0.91440183 meters

YARDS	0	10	20	30	40	50	60	70	80	90
0	00	9.14	18.29	27.43	36.58	45.72	54.86	64.01	73.15	82.30
100	91.44	100.58	109.73	118.87	128.02	137.16	146.30	155.45	164.59	173.74
200	182.88	192.02	201.17	210.31	219.46	228.60	237.74	246.89	256.03	265.18
300	274.32	283.46	292.61	301.75	310.90	320.04	329.18	338.33	347.47	356.62
400	365.76	374.90	384.05	393.19	402.34	411.48	420.62	429.77	438.91	448.06
500	457.20	466.34	475.49	484.63	493.78	502.92	512.07	521.21	530.35	539.50
600	548.64	557.79	566.93	576.07	585.22	594.36	603.51	612.65	621.79	630.94
700	640.08	649.23	658.37	667.51	676.66	685.80	694.95	704.09	713.23	722.38
800	731.52	740.67	749.81	758.95	768.10	777.24	786.39	795.53	804.67	813.82
900	822.96	832.11	841.25	850.39	859.54	868.68	877.83	886.97	896.11	905.26
1000	914.40	923.55	932.69	941.83	950.98	960.12	969.27	978.41	987.55	996.70

PART 1D. METERS TO YARDS

1 meter = 1.0936111 yds.

METERS	0	10	20	30	40	50	60	70	80	90
0	0	10.94	21.87	32.81	43.74	54.68	65.62	76.55	87.49	98.42
100	109.36	120.30	131.23	142.17	153.11	164.04	174.98	185.91	196.85	207.79
200	218.72	229.66	240.59	251.53	262.47	273.40	284.34	295.27	306.21	317.15
300	328.08	339.02	349.96	360.89	371.83	382.76	393.70	404.64	415.57	426.51
400	437.44	448.38	459.32	470.25	481.19	492.12	503.06	514.00	524.93	535.87
500	546.81	557.74	568.68	579.61	590.55	601.49	612.42	623.36	634.29	645.23
600	656.18	667.10	678.04	688.97	699.91	710.85	721.78	732.72	743.66	754.59
700	765.53	776.46	787.40	798.34	809.27	820.21	831.14	842.08	853.02	863.95
800	874.89	885.82	896.76	907.70	918.63	929.57	940.51	951.44	962.38	973.31
900	984.25	995.19	1006.12	1017.06	1027.99	1038.93	1049.87	1060.80	1071.74	1082.67
1000	1093.61	1104.55	1115.48	1126.42	1137.36	1148.29	1159.23	1170.16	1181.10	1192.04

PART 1E

Angular Conversion Table - Degrees to mils

Degrees	0	1	2	3	4	5	6	7	8	9
00	0	18	36	53	71	89	107	124	142	160
10	178	196	213	231	249	267	284	302	320	338
20	356	373	391	409	427	444	462	480	498	516
30	533	551	569	587	604	622	640	658	676	693
40	711	729	747	764	782	800	818	836	853	871
50	889	907	924	942	960	978	996	1013	1031	1049
60	1067	1084	1102	1120	1138	1156	1173	1191	1209	1227
70	1244	1262	1280	1298	1316	1333	1351	1369	1387	1404
80	1422	1440	1458	1476	1493	1511	1529	1547	1564	1582
90	1600	(Conversion Factor, 1° = 17.77778 mils)								

PART 1F

Natural Trigonometric Functions

Mils	N.Sin.	N.Cos.	N.Tan.	N.Cot.	Mils	N.Sin.	N.Cos.	N.Tan.	N.Cot.
0	0.0000	1.0000	0.0000	----	800	0.7071	0.7071	1.000	1.0000
50	.0491	.9988	.0491	20.355	850	.7410	.6716	1.103	.9065
100	.0980	.9952	.0985	10.153	900	.7730	.6344	1.219	.8207
150	.1467	.9892	.1483	6.741	950	.8032	.5957	1.348	.7416
200	.1951	.9808	.1989	5.027	1000	.8315	.5556	1.497	.6682
250	.2430	.9700	.2505	3.992	1050	.8577	.5141	1.668	.5994
300	.2903	.9569	.3033	3.297	1100	.8819	.4714	1.871	.5345
350	.3369	.9415	.3578	2.795	1150	.9040	.4276	2.114	.4730
400	.3827	.9239	.4142	2.414	1200	.9239	.3827	2.414	.4142
450	.4276	.9040	.4730	2.114	1250	.9415	.3369	2.795	.3578
500	.4714	.8819	.5345	1.871	1300	.9569	.2903	3.297	.3033
550	.5141	.8577	.5994	1.668	1350	.9700	.2430	3.992	.2505
600	.5556	.8315	.6682	1.497	1400	.9808	.1931	5.027	.1989
650	.5957	.8032	.7416	1.348	1450	.9892	.1467	6.741	.1483
700	.6344	.7730	.8207	1.219	1500	.9952	.0980	10.153	.0985
750	.6716	.7410	.9065	1.103	1550	.9988	.0491	20.355	.0491
800	0.7071	0.7071	1.0000	1.000	1600	1.0000	0.0000	----	0.0000

TABLE OF PROBABILITY FACTORS.

$$\left["Prob" = \frac{2}{\sqrt{\pi}}\int_0^t e^{-t^2}\,dt \text{ where } \frac{t}{.4769\,36\ldots} = \text{Factor}\right]$$

Factor	Prob.	Factor	Prob.	Factor	Prob.	Factor	Prob.
0.00	0.0000	1.00	0.5000	2.00	0.8227	3.00	0.9570
0.05	0.0269	1.05	0.5212	2.05	0.8332	3.05	0.9603
0.10	0.0538	1.10	0.5419	2.10	0.8433	3.10	0.9635
0.15	0.0806	1.15	0.5621	2.15	0.8530	3.15	0.9664
0.20	0.1073	1.20	0.5817	2.20	0.8622	3.20	0.9691
0.25	0.1339	1.25	0.6008	2.25	0.8709	3.25	0.9716
0.30	0.1604	1.30	0.6194	2.30	0.8792	3.30	0.9740
0.35	0.1867	1.35	0.6375	2.35	0.8871	3.35	0.9762
0.40	0.2127	1.40	0.6550	2.40	0.8945	3.40	0.9782
0.45	0.2385	1.45	0.6719	2.45	0.9016	3.50	0.9817
0.50	0.2640	1.50	0.6883	2.50	0.9083	3.60	0.9848
0.55	0.2893	1.55	0.7042	2.55	0.9146	3.70	0.9874
0.60	0.3143	1.60	0.7195	2.60	0.9205	3.80	0.9896
0.65	0.3389	1.65	0.7343	2.65	0.9261	3.90	0.9915
0.70	0.3632	1.70	0.7485	2.70	0.9314	4.00	0.9930
0.75	0.3871	1.75	0.7621	2.75	0.9364	4.20	0.9954
0.80	0.4106	1.80	0.7753	2.80	0.9411	4.40	0.9970
0.85	0.4336	1.85	0.7879	2.85	0.9454	4.60	0.9981
0.90	0.4562	1.90	0.8000	2.90	0.9495	4.80	0.9988
0.95	0.4783	1.95	0.8116	2.95	0.9534	5.00	0.9993

Explanation: "Prob." is the probable proportion of shots falling in an interval of width F times the fifty per cent zone (or 2 F times the probable error) with center of impact in the middle of the interval; F is the "probability factor".

Example:

Given: Zone, normal to line of fire, 40 yds. wide, 60 yds. from center of impact.
Probable Error in Range, 50 yds.

To determine probable proportion of hits in zone.

For (60 + 40) -zone, $F = \frac{2(60+40)}{2(50)} = 2$, hence from table, Prob. = .82;

For (60)-zone, $F = \frac{2(60)}{2(50)} = 1.2$, hence from table, Prob. = .58

Subtracting, Prob. for the two zones which together satisfy the condition, = .82 - .58. Hence, Prob. for either one of the two possible zones defined, is $\frac{1}{2}$ (.82 - .58) = 12%.

A less accurate but frequently more convenient approximation is given by the "Dispersion Ladder":

Center of Impact

4 P.E.	3 P.E.	2 P.E.	1 P.E.		1 P.E.	2 P.E.	3 P.E.	4 P.E.
1%	11%	7%	16%	25%	25%	16%	7%	11%	1%

This gives differences in Prob. for even integral multiples of the probable error.

TABLE OF SLOPE COEFFICIENTS

$\sin\omega / \sin(\omega - n')$.

ω = angle of fall (mils) (measured from line of site).	n, positive (relative forward slope).										-n, positive (relative reverse slope).									
n' =	1	2	3	5	10	15	20	30	40	50	1	2	3	5	10	15	20	30	40	50
	10	20	31	51	102	152	201	297	388	472	10	20	31	51	102	152	201	297	388	472
50	.81	.71	.62	.50	.33	.25	.20	.15	.12	.10	1.26	1.69	2.57							
100	.93	.83	.77	.66	.50	.40	.34	.26	.21	.18	1.11	1.26	1.44	2.05						
150	.94	.88	.83	.75	.60	.50	.43	.35	.29	.26	.15	1.07	1.16	1.25	1.51	2.08				
200	.95	.91	.87	.80	.67	.58	.51	.42	.36	.32	.20	1.05	1.11	1.18	1.34	2.02	4.11			
250	.96	.93	.89	.83	.72	.63	.57	.49	.41	.37	.25	1.04	1.09	1.14	1.25	1.67	2.52	5.06		
300	.97	.94	.91	.86	.76	.68	.61	.52	.46	.42	.30	1.03	1.07	1.11	1.20	1.50	2.00	2.99	94.86	
350	.97	.95	.92	.88	.79	.71	.65	.57	.51	.47	.36	1.03	1.06	1.09	1.16	1.39	1.74	2.31	6.46	
400	.98	.95	.93	.89	.81	.74	.69	.61	.55	.51	.41	1.02	1.05	1.08	1.14	1.32	1.59	1.97	3.78	31.39
500	.98	.96	.95	.92	.85	.79	.74	.67	.62	.58	.53	1.02	1.04	1.06	1.10	1.24	1.41	1.63	2.38	4.33
600	.99	.97	.96	.93	.87	.83	.78	.72	.67	.64	.67	1.02	1.03	1.05	1.08	1.18	1.30	1.46	1.89	2.68
700	.99	.98	.97	.94	.90	.85	.82	.76	.72	.69	.82	1.01	1.03	1.04	1.07	1.14	1.24	1.35	1.65	2.10
800	.99	.98	.97	.95	.91	.88	.85	.80	.77	.75	1.00	1.01	1.02	1.03	1.05	1.12	1.19	1.27	1.49	1.80
900	.99	.98	.98	.96	.93	.90	.88	.84	.81	.79	1.22	1.01	1.02	1.03	1.04	1.09	1.15	1.22	1.39	1.60
1000	.99	.99	.98	.97	.94	.92	.90	.87	.86	.84	1.50	1.01	1.01	1.02	1.04	1.08	1.12	1.18	1.31	1.47
1100	.99	.99	.98	.98	.95	.94	.92	.90	.89	.88	1.87	1.01	1.01	1.02	1.03	1.06	1.10	1.14	1.24	1.37
1200	1.00	.99	.99	.98	.97	.95	.94	.93	.92	.93	2.41	1.00	1.01	1.01	1.02	1.05	1.08	1.11	1.19	1.29

n = slope with respect to line of site (per cent and mils)(n = n' - s + 300).

Directions.-Multiply range probable error (from range table) by coefficient shown above. Here ω denotes the angle of fall (measured to line of site)(for practical purposes equal to the range table angle of fall which is its value for site 300 ₥, i.e. for a level trajectory); n', the quadrant angle of slope, positive for forward slope (ground rising in enemy direction), and negative for reverse slope (ground falling in enemy direction); s - 300, the angle of site, positive for target above gun, negative for target below gun; $n(=n' - s + 300)$, the slope relative to the line of site. NOTE.- The quadrant angle of fall, $\omega' = \omega - s + 300$.

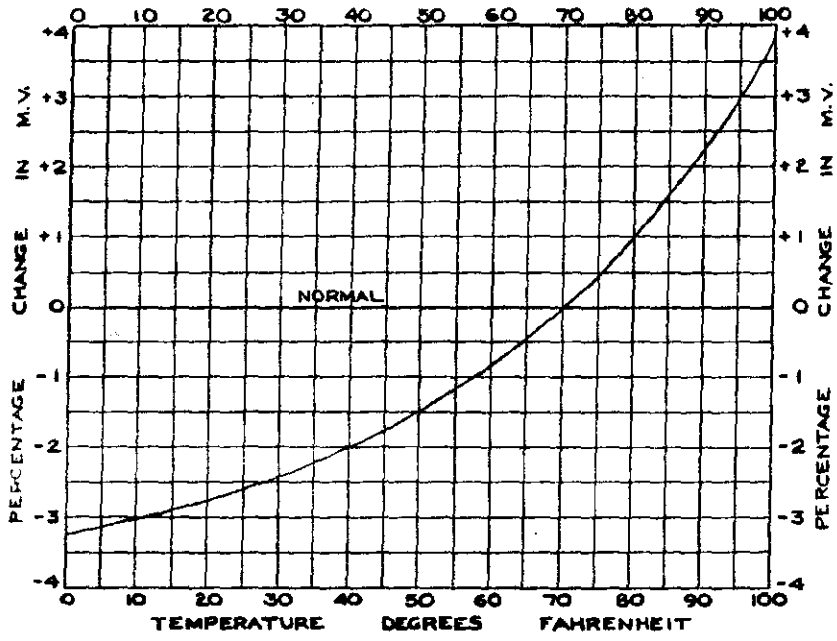
Example: Given target on reverse slope between contour lines 130 ft. and 140 ft.; mean distance between contours = 67 ft., site = -20 mils.(s = 280), angle of fall (calculated) = 250 mils, range probable error (in range table) = 83 yd.

Then, n'(in per cent) = $100\frac{130-140}{67}$ = -15(%) or -152 mils, $n' - s + 300 = -152 - (-20) = -132$ mils. Interpolating between 1.67(for 102 mils)and 2.52(for 152 mils), slope coefficient = 1.67 + $\frac{20}{50}$ x 0.85 = 2.01. Hence, range probable error to be used = 2.01 x 83 yd. = 167 yd.

CHART FOR PERCENTAGE PART II CHANGE IN MUZZLE VELOCITY

FOR TEMPERATURE OF POWDER DIFFERENT FROM NORMAL

$$\left[\frac{\Delta V}{V} = .00867\ (2^{.032t} - 4.73)\right]$$



DIRECTIONS:-

Enter chart with temperature of powder. Follow vertical line to the curve, and from there the horizontal line to either edge of the chart where the percentage change in the muzzle velocity may be read.

EXAMPLE :-

Suppose temperature of powder=59°F., and muzzle velocity (Standard) = 2250 (f/s). Then change in M.V. is,-0.9% = -.009X 2250=-20(f/s) approximately.

Muzzle Velocity to be expected = 2250 - 20 = 2230 (f/s).

PART 2a

12 INCH S. C. GUN MODELS 1895 and 1895 MI

FIRING

700 LB. C. S. SHELL MK VI

FUZE, BASE DETONATING, MK V

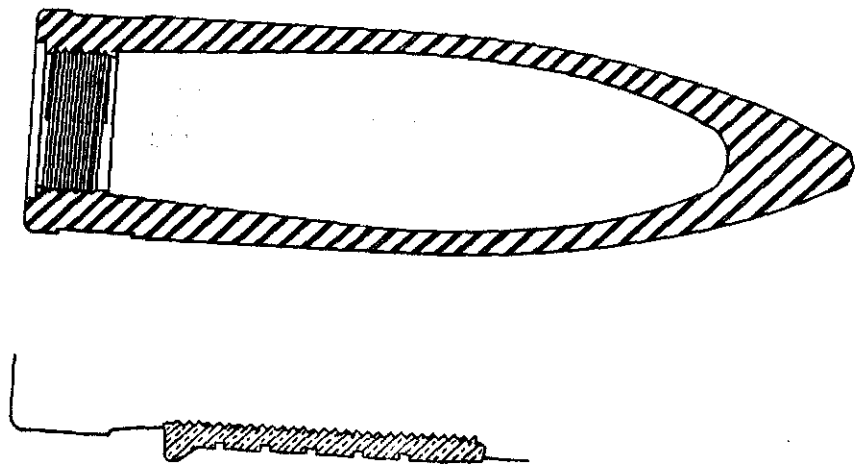
MUZZLE VELOCITY = 2600 f/s (792.48 m/s)

JUMP = +0.2 MILS

TABLES A - K INCLUSIVE

NOTE: Standard Air Temperature for Density and Elasticity is 59° F.
Standard Temperature of Powder is 70° F.

DRAWING OF PROJECTILE USED IN RANGE FIRING



Drawing of Band and Band Seat

Class 75 - Div. 10 Drawing 27

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
0	-0.2	0 00	0.7	2.5	137.2	40.6	0	2600
100	+0.6	0 +02	0.7	2.5	136.4	40.4	0	
200	1.4	0 05	0.7	2.5	135.7	40.2	0	
300	2.2	0 07	0.7	2.5	134.9	40.0	0	
400	2.8	0 10	0.7	2.5	134.2	39.8	0	
500	3.6	0 12	0.7	2.5	133.4	39.5	1	2545
600	4.4	0 15	0.8	2.5	132.6	39.5	1	
700	5.0	0 17	0.8	2.6	131.9	39.1	2	
800	5.8	0 20	0.8	2.6	131.1	38.9	3	
900	6.6	0 22	0.8	2.6	130.4	38.6	4	
1000	7.4	0 25	0.8	2.6	129.6	38.4	5	2491
1100	8.2	0 28	0.8	2.6	128.9	38.2	6	
1200	9.0	0 30	0.8	2.6	128.1	38.0	7	
1300	9.8	0 33	0.8	2.6	127.4	37.7	9	
1400	10.6	0 35	0.8	2.7	126.6	37.5	10	
1500	11.4	0 38	0.8	2.7	125.9	37.3	12	2437
1600	12.0	0 41	0.8	2.7	125.2	37.1	14	
1700	12.8	0 44	0.8	2.7	124.4	36.9	16	
1800	13.8	0 46	0.8	2.7	123.7	36.6	18	
1900	14.4	0 49	0.8	2.7	122.9	36.4	20	
2000	15.4	0 52	0.8	2.8	122.2	36.2	23	2383
2100	16.2	0 54	0.8	2.8	121.5	36.0	25	
2200	17.0	0 57	0.8	2.8	120.7	35.8	28	
2300	17.8	1 00	0.8	2.8	120.0	35.6	31	
2400	18.6	1 03	0.8	2.8	119.2	35.3	34	
2500	19.4	1 06	0.8	2.8	118.5	35.1	37	2329
2600	20.4	1 09	0.9	2.9	117.8	34.9	40	
2700	21.2	1 12	0.9	2.9	117.1	34.7	44	
2800	22.0	1 14	0.9	2.9	116.3	34.5	47	
2900	22.0	1 17	0.9	2.9	115.6	34.2	51	
3000	23.8	1 20	0.9	2.9	114.9	34.0	55	2276

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in Range	*Probable Error in Defl.	Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
0	0 00		0	+0.05	7.87	14	0	0.0	0
1	0 02	1432						0.1	100
1	0 05	702						0.2	200
2	0 07	464						0.4	300
3	0 10	344							
4	0 13	275	0	0.00	7.87	15	0	0.5	400
4	0 15	226						0.6	500
5	0 18	193						0.7	600
6	0 20	168						0.8	700
7	0 23	148						0.9	800
8	0 26	133	0	0.00	7.87	16	0	1.1	900
8	0 29	120						1.2	1000
9	0 31	109						1.3	1100
10	0 34	100						1.4	1200
11	0 37	93						1.6	1300
12	0 40	86	0	0.00	7.87	17	0	1.7	1400
13	0 43	80						1.8	1500
14	0 46	75						1.9	1600
15	0 49	70						2.0	1700
15	0 52	66						2.2	1800
16	0 55	62	0	0.00	7.86	18	0	2.3	1900
17	0 58	59						2.4	2000
18	1 01	56						2.5	2100
19	1 04	53						2.7	2200
20	1 08	51						2.8	2300
21	1 11	48	0	-0.05	7.86	19	0	2.9	2400
22	1 14	46						3.0	2500
23	1 18	44						3.2	2600
24	1 21	42						3.3	2700
25	1 24	41						3.4	2800
26	1 28	39	-1	-0.05	7.86	21	0	3.6	2900
								3.7	3000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range	Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
3000	25.8	1 30	0.9	2.9	114.9	34.0	56	2276
3100	24.6	1 25	0.9	3.0	114.2	33.8	59	
3200	25.6	1 26	0.9	3.0	113.5	33.6	65	
3300	26.4	1 29	0.9	3.0	112.7	33.4	68	
3400	27.2	1 32	0.9	3.0	112.0	33.2	72	
3500	28.2	1 35	0.9	3.0	111.3	33.0	77	2225
3600	29.0	1 38	0.9	3.0	110.6	32.8	82	
3700	30.0	1 41	0.9	3.1	109.9	32.6	87	
3800	31.0	1 44	0.9	3.1	109.2	32.4	92	
3900	31.8	1 47	0.9	3.1	108.5	32.2	97	
4000	32.8	1 50	0.9	3.1	107.8	32.0	103	2171
4100	33.6	1 54	0.9	3.2	107.1	31.8	109	
4200	34.6	1 57	0.9	3.2	106.4	31.5	115	
4300	35.6	2 00	0.9	3.2	105.8	31.3	121	
4400	36.6	2 03	1.0	3.2	105.1	31.1	127	
4500	37.4	2 06	1.0	3.2	104.4	30.9	134	2120
4600	38.4	2 10	1.0	3.2	103.7	30.7	141	
4700	39.4	2 13	1.0	3.3	103.0	30.5	148	
4800	40.4	2 16	1.0	3.3	102.4	30.3	155	
4900	41.4	2 20	1.0	3.3	101.7	30.1	162	
5000	42.4	2 23	1.0	3.3	101.0	29.9	169	2069
5100	43.4	2 26	1.0	3.4	100.3	29.7	177	
5200	44.4	2 30	1.0	3.4	99.7	29.6	185	
5300	45.4	2 33	1.0	3.4	99.0	29.4	193	
5400	46.4	2 36	1.0	3.4	98.4	29.2	201	
5500	47.4	2 40	1.0	3.4	97.7	29.0	209	2019
5600	48.4	2 43	1.0	3.5	97.1	28.8	218	
5700	49.4	2 47	1.0	3.5	96.4	28.6	227	
5800	50.4	2 50	1.0	3.5	95.8	28.4	236	
5900	51.4	2 54	1.1	3.6	95.1	28.2	245	
6000	52.6	2 57	1.1	3.6	94.5	28.0	255	1971

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yds.
26	1 28	39	-1	-0.05	7.86	21	0	3.7	3000
27	1 31	38						3.8	3100
28	1 35	36						4.0	3200
29	1 38	35						4.1	3300
30	1 42	34						4.2	3400
31	1 46	32	-1	-0.05	7.86	22	0	4.4	3500
32	1 50	31						4.5	3600
34	1 53	30						4.6	3700
35	1 57	29						4.8	3800
36	2 01	28						4.9	3900
37	2 05	28	-1	-0.05	7.86	24	0	5.1	4000
38	2 09	27						5.2	4100
39	2 13	26						5.3	4200
40	2 17	25						5.5	4300
42	2 21	24						5.6	4400
43	2 25	24	-2	-0.10	7.85	25	0	5.8	4500
44	2 29	23						5.9	4600
45	2 34	22						6.0	4700
47	2 38	22						6.2	4800
48	2 42	21						6.3	4900
49	2 47	21	-2	-0.10	7.86	26	1	6.5	5000
51	2 51	20						6.6	5100
52	2 56	20						6.8	5200
53	3 00	19						6.9	5300
55	3 05	19						7.1	5400
56	3 10	18	-2	-0.10	7.85	27	1	7.2	5500
58	3 14	18						7.4	5600
59	3 19	17						7.5	5700
60	3 24	17						7.7	5800
62	3 29	16						7.8	5900
63	3 34	16	-2	-0.15	7.84	29	1	8.0	6000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.	1 min change in Elev.	Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
6000	52.6	2 57	1.1	3.6	94.5	28.0	255	1971
6100	53.6	3 01	1.1	3.6	93.9	27.8	265	
6200	54.6	3 04	1.1	3.6	93.2	27.6	275	
6300	55.8	3 08	1.1	3.6	92.6	27.4	285	
6400	56.8	3 12	1.1	3.7	91.9	27.2	296	
6500	57.8	3 15	1.1	3.7	91.3	27.1	307	1984
6600	59.0	3 19	1.1	3.7	90.7	26.9	318	
6700	60.0	3 23	1.1	3.8	90.1	26.7	329	
6800	61.2	3 27	1.1	3.8	89.4	26.5	341	
6900	62.4	3 30	1.1	3.8	88.8	26.3	353	
7000	63.4	3 34	1.1	3.8	88.2	26.1	365	1877
7100	64.6	3 38	1.1	3.9	87.6	26.0	377	
7200	65.8	3 42	1.2	3.9	87.0	25.8	390	
7300	67.0	3 46	1.2	3.9	86.4	25.6	403	
7400	68.0	3 50	1.2	3.9	85.8	25.4	416	
7500	69.2	3 54	1.2	4.0	85.2	25.2	430	1832
7600	70.4	3 58	1.2	4.0	84.6	25.0	444	
7700	71.6	4 02	1.2	4.0	84.0	24.9	458	
7800	72.8	4 06	1.2	4.0	83.4	24.7	472	
7900	74.0	4 10	1.2	4.1	82.8	24.5	487	
8000	75.2	4 14	1.2	4.1	82.2	24.4	502	1788
8100	76.4	4 18	1.2	4.1	81.6	24.2	517	
8200	77.6	4 22	1.2	4.2	81.0	24.0	533	
8300	78.8	4 26	1.2	4.2	80.5	23.8	549	
8400	80.2	4 30	1.3	4.2	79.9	23.7	565	
8500	81.4	4 35	1.3	4.3	79.3	23.5	582	1745
8600	82.6	4 39	1.3	4.3	78.7	23.3	599	
8700	84.0	4 43	1.3	4.3	78.2	23.2	616	
8800	85.2	4 48	1.3	4.3	77.6	23.0	634	
8900	86.4	4 52	1.3	4.4	77.1	22.8	652	
9000	87.8	4 56	1.3	4.4	76.5	22.7	671	1705

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in Range	*Probable Error in Defl.	Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
63	3 34	16	-2	-0.15	7.84	29	1	8.0	6000
65	3 39	16						8.1	6100
66	3 44	15						8.3	6200
68	3 49	15						8.4	6300
69	3 54	15							
71	3 59	14	-3	-0.15	7.84	30	1	8.6	6400
72	4 05	14						8.7	6500
								8.9	6600
74	4 10	14							
76	4 16	13						9.1	6700
77	4 21	13						9.2	6800
								9.4	6900
79	4 27	13	-3	-0.15	7.84	32	1	9.5	7000
81	4 32	13							
82	4 38	12						9.7	7100
84	4 44	12						9.9	7200
								10.0	7300
86	4 50	12							
88	4 56	12	-3	-0.20	7.84	33	1	10.2	7400
89	5 02	11						10.4	7500
								10.5	7600
91	5 08	11							
93	5 14	11						10.7	7700
95	5 20	11						10.9	7800
								11.0	7900
97	5 26	10	-4	-0.20	7.83	35	1	11.2	8000
99	5 33	10						11.4	8100
101	5 39	10						11.5	8200
103	5 46	9.9						11.7	8300
105	5 52	9.7							
107	5 59	9.5	-4	-0.20	7.83	37	1	11.9	8400
108	6 06	9.4						12.0	8500
								12.2	8600
110	6 12	9.2							
112	6 19	9.0						12.4	8700
114	6 25	8.9						12.6	8800
								12.7	8900
117	6 34	8.7	-4	-0.25	7.82	39	1	12.9	9000

*This is the Proving Ground Probable Error.

"12-N-1"

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
9000	87.8	4 56	1.3	4.4	76.8	22.7	671	1703
9100	89.0	5 01	1.3	4.4	76.0	22.5	690	
9200	90.4	5 05	1.3	4.5	75.4	22.4	709	
9300	91.8	5 10	1.3	4.5	74.9	22.2	729	
9400	93.0	5 14	1.3	4.5	74.3	22.0	749	
9500	94.4	5 19	1.4	4.6	73.8	21.9	769	1662
9600	95.8	5 23	1.4	4.6	73.3	21.7	789	
9700	97.2	5 28	1.4	4.6	72.8	21.6	810	
9800	98.6	5 33	1.4	4.7	72.2	21.4	831	
9900	100.0	5 37	1.4	4.7	71.7	21.3	852	
10000	101.4	5 42	1.4	4.7	71.2	21.1	875	1625
10100	102.8	5 47	1.4	4.8	70.7	21.0	897	
10200	104.2	5 52	1.4	4.8	70.2	20.8	920	
10300	105.6	5 56	1.4	4.8	69.7	20.6	943	
10400	107.0	6 01	1.4	4.9	69.2	20.5	967	
10500	108.6	6 06	1.5	4.9	68.7	20.3	991	1586
10600	110.0	6 11	1.5	5.0	68.2	20.2	1016	
10700	111.4	6 16	1.5	5.0	67.7	20.0	1041	
10800	112.8	6 21	1.5	5.0	67.2	19.9	1067	
10900	114.4	6 26	1.5	5.1	66.7	19.8	1093	
11000	116.0	6 31	1.5	5.1	66.2	19.6	1119	1548
11100	117.4	6 36	1.5	5.1	65.7	19.4	1146	
11200	119.0	6 42	1.5	5.2	65.2	19.3	1173	
11300	120.6	6 47	1.5	5.2	64.7	19.2	1201	
11400	122.0	6 52	1.6	5.3	64.2	19.0	1229	
11500	123.6	6 57	1.6	5.3	63.7	18.9	1258	1515
11600	125.2	7 02	1.6	5.3	63.2	18.7	1287	
11700	126.8	7 08	1.6	5.4	62.7	18.6	1317	
11800	128.4	7 13	1.6	5.4	62.3	18.4	1347	
11900	130.0	7 19	1.6	5.5	61.8	18.3	1378	
12000	131.6	7 24	1.6	5.5	61.3	18.2	1410	1479

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in Range	*Probable Error in Defl.	Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
117	6 34	8.7	-4	-0.25	7.82	39	1	12.9	9000
119	6 41	8.5						13.1	9100
121	6 48	8.4						13.3	9200
123	6 55	8.2						13.5	9300
125	7 03	8.1						13.6	9400
128	7 10	8.0	-5	-0.25	7.82	40	1	13.8	9500
130	7 18	7.8						14.0	9600
132	7 25	7.7						14.2	9700
134	7 33	7.5						14.4	9800
137	7 41	7.4						14.6	9900
139	7 49	7.3	-5	-0.30	7.81	42	1	14.8	10000
141	7 57	7.2						14.9	10100
144	8 05	7.0						15.1	10200
146	8 13	6.9						15.3	10300
148	8 21	6.8						15.5	10400
151	8 30	6.7	-5	-0.30	7.81	44	2	15.7	10500
154	8 38	6.6						15.9	10600
156	8 47	6.5						16.1	10700
159	8 55	6.4						16.3	10800
161	9 04	6.3						16.5	10900
164	9 13	6.2	-6	-0.35	7.80	46	2	16.7	11000
167	9 22	6.1						16.9	11100
169	9 31	6.0						17.1	11200
172	9 40	5.9						17.3	11300
175	9 49	5.8						17.5	11400
178	9 59	5.7	-6	-0.35	7.79	48	2	17.7	11500
180	10 08	5.6						17.9	11600
183	10 18	5.5						18.1	11700
186	10 27	5.4						18.3	11800
189	10 37	5.3						18.5	11900
192	10 47	5.2	-7	-0.35	7.78	50	2	18.7	12000

*This is the Proving Ground Probable Error.

"12-N-1"

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.	1 min change in Elev.	Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
12000	131.6	7 24	1.6	5.5	61.5	18.2	1410	1479
12100	133.2	7 30	1.6	5.6	60.8	18.0	1442	
12200	135.0	7 35	1.7	5.6	60.3	17.9	1474	
12300	136.6	7 41	1.7	5.6	59.8	17.7	1507	
12400	138.2	7 47	1.7	5.7	59.4	17.6	1541	
12500	140.0	7 52	1.7	5.7	58.9	17.4	1575	1446
12600	141.6	7 58	1.7	5.8	58.4	17.3	1610	
12700	143.4	8 04	1.7	5.8	58.0	17.2	1645	
12800	145.0	8 10	1.7	5.9	57.5	17.0	1681	
12900	146.8	8 16	1.8	5.9	57.1	16.9	1717	
13000	148.6	8 22	1.8	6.0	56.6	16.8	1754	1416
13100	150.4	8 28	1.8	6.0	56.1	16.6	1792	
13200	152.2	8 34	1.8	6.1	55.7	16.5	1830	
13300	154.0	8 40	1.8	6.1	55.2	16.4	1869	
13400	155.8	8 46	1.8	6.2	54.8	16.2	1909	
13500	157.6	8 52	1.8	6.2	54.3	16.1	1949	1385
13600	159.4	8 58	1.9	6.3	53.9	16.0	1990	
13700	161.4	9 04	1.9	6.3	53.4	15.8	2032	
13800	163.2	9 11	1.9	6.4	53.0	15.7	2074	
13900	165.0	9 17	1.9	6.4	52.5	15.6	2117	
14000	167.0	9 24	1.9	6.5	52.1	15.4	2160	1357
14100	169.0	9 30	1.9	6.5	51.7	15.3	2204	
14200	170.8	9 37	2.0	6.6	51.2	15.2	2249	
14300	172.8	9 43	2.0	6.6	50.8	15.1	2295	
14400	174.8	9 50	2.0	6.7	50.3	14.9	2342	
14500	176.8	9 57	2.0	6.8	49.9	14.8	2389	1330
14600	178.8	10 03	2.0	6.8	49.5	14.7	2437	
14700	180.8	10 10	2.0	6.9	49.1	14.6	2486	
14800	182.8	10 17	2.1	6.9	48.6	14.4	2535	
14900	185.0	10 24	2.1	7.0	48.2	14.3	2585	
15000	187.0	10 31	2.1	7.0	47.8	14.2	2636	1308

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
192	10 47	5.2	-7	-0.35	7.78	50	2	18.7	12000
195	10 57	5.2						18.9	12100
198	11 07	5.1						19.1	12200
201	11 17	5.0						19.3	12300
204	11 27	4.9						19.6	12400
207	11 38	4.9	-7	-0.40	7.77	52	2	19.8	12500
210	11 48	4.8						20.0	12600
213	11 59	4.7						20.2	12700
216	12 09	4.6						20.4	12800
219	12 20	4.6						20.6	12900
223	12 31	4.5	-8	-0.40	7.76	55	2	20.8	13000
226	12 42	4.4						21.1	13100
229	12 54	4.4						21.3	13200
232	13 05	4.3						21.5	13300
236	13 16	4.2						21.7	13400
240	13 28	4.2	-8	-0.45	7.75	57	2	22.0	13500
243	13 39	4.1						22.2	13600
246	13 51	4.1						22.4	13700
250	14 03	4.0						22.6	13800
253	14 15	4.0						22.9	13900
257	14 27	3.9	-8	-0.50	7.74	59	3	23.1	14000
260	14 40	3.8						23.3	14100
264	14 52	3.8						23.6	14200
268	15 04	3.7						23.8	14300
272	15 17	3.7						24.0	14400
275	15 30	3.6	-9	-0.50	7.73	61	3	24.3	14500
279	15 43	3.6						24.5	14600
283	15 56	3.5						24.8	14700
287	16 09	3.4						25.0	14800
291	16 22	3.4						25.2	14900
295	16 36	3.4	-10	-0.55	7.71	64	3	25.5	15000

*This is the Proving Ground Probable Error.

"12-N-1"

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 8a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
15000	187.0	10 31	2.1	7.0	47.8	14.2	2636	1305
15100	189.0	10 38	2.1	7.1	47.4	14.1	2688	
15200	191.2	10 45	2.1	7.2	47.0	13.9	2741	
15300	193.4	10 52	2.1	7.2	46.6	13.8	2795	
15400	195.4	11 00	2.2	7.3	46.2	13.7	2849	
15500	197.6	11 07	2.2	7.4	45.8	13.6	2904	1298
15600	199.8	11 14	2.2	7.4	45.4	13.5	2960	
15700	202.0	11 22	2.2	7.5	45.0	13.3	3016	
15800	204.2	11 30	2.2	7.6	44.6	13.2	3074	
15900	206.6	11 37	2.3	7.6	44.2	13.1	3133	
16000	208.8	11 45	2.3	7.7	43.8	13.0	3193	1290
16100	211.0	11 52	2.3	7.8	45.4	12.9	3254	
16200	213.4	12 00	2.3	7.8	45.0	12.8	3316	
16300	215.8	12 08	2.3	7.9	48.7	12.6	3379	
16400	218.0	12 16	2.4	8.0	48.3	12.5	3442	
16500	220.4	12 24	2.4	8.1	41.9	12.4	3506	1280
16600	222.8	12 32	2.4	8.1	41.5	12.3	3571	
16700	225.2	12 40	2.4	8.2	41.2	12.2	3637	
16800	227.6	12 48	2.5	8.3	40.8	12.1	3704	
16900	230.2	12 57	2.5	8.4	40.5	12.0	3773	
17000	232.6	13 05	2.5	8.4	40.1	11.9	3843	1272
17100	235.2	13 14	2.5	8.5	39.8	11.8	3913	
17200	237.6	13 22	2.5	8.6	39.4	11.7	3985	
17300	240.2	13 31	2.6	8.6	39.1	11.6	4058	
17400	242.8	13 39	2.6	8.7	38.7	11.5	4132	
17500	245.4	13 48	2.6	8.8	38.4	11.4	4207	1256
17600	248.0	13 57	2.6	8.9	38.1	11.3	4283	
17700	250.6	14 06	2.7	9.0	37.8	11.2	4360	
17800	253.2	14 15	2.7	9.0	37.4	11.1	4439	
17900	256.0	14 24	2.7	9.1	37.1	11.0	4519	
18000	258.6	14 33	2.7	9.2	36.8	10.9	4600	1191

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 8a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
295	16 36	3.4	-10	-0.55	7.71	64	3	25.6	15000
299	16 49	3.3						25.7	15100
303	17 03	3.3						26.0	15200
307	17 17	3.2						26.2	15300
311	17 31	3.2						26.5	15400
316	17 45	3.1	-10	-0.55	7.69	66	3	26.7	15500
320	17 59	3.1						27.0	15600
324	18 13	3.0						27.2	15700
328	18 28	3.0						27.5	15800
332	18 42	3.0						27.8	15900
337	18 57	2.9	-11	-0.60	7.67	68	3	28.0	16000
341	19 12	2.9						28.3	16100
346	19 26	2.8						28.5	16200
350	19 42	2.8						28.8	16300
354	19 57	2.8						29.1	16400
359	20 12	2.7	-11	-0.65	7.65	70	3	29.3	16500
364	20 27	2.7						29.6	16600
368	20 42	2.6						29.9	16700
373	20 58	2.6						30.1	16800
377	21 14	2.6						30.4	16900
382	21 30	2.5	-12	-0.70	7.62	75	3	30.7	17000
387	21 46	2.6						31.0	17100
392	22 02	2.5						31.2	17200
396	22 18	2.4						31.5	17300
401	22 34	2.4						31.8	17400
406	22 50	2.4	-13	-0.70	7.59	76	4	32.1	17500
411	23 06	2.3						32.4	17600
416	23 23	2.3						32.7	17700
421	23 40	2.3						33.0	17800
426	23 56	2.2						33.3	17900
431	24 13	2.2	-14	-0.75	7.56	79	4	33.5	18000

*This is the Proving Ground Probable Error.

"12-N-1"

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil / 1 min change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
18000	258.6	14 35	2.7	9.2	36.8	10.9	4600	1191
18100	261.4	14 43	2.7	9.3	36.5	10.8	4682	
18200	264.2	14 52	2.8	9.4	36.2	10.7	4765	
18300	267.0	15 01	2.8	9.4	35.9	10.6	4850	
18400	269.8	15 10	2.8	9.5	35.6	10.5	4936	
18500	272.6	15 20	2.8	9.6	35.3	10.4	5025	1178
18600	275.4	15 30	2.9	9.7	35.0	10.3	5110	
18700	278.2	15 39	2.9	9.8	34.7	10.3	5200	
18800	281.2	15 49	2.9	9.8	34.4	10.2	5295	
18900	284.2	15 59	2.9	9.9	34.1	10.1	5385	
19000	287.0	16 09	3.0	10.0	33.8	10.0	5480	1168
19100	290.0	16 19	3.0	10.1	33.5	9.9	5575	
19200	293.0	16 29	3.0	10.2	33.3	9.8	5675	
19300	296.0	16 39	3.0	10.2	33.0	9.8	5770	
19400	299.0	16 50	3.1	10.3	32.8	9.7	5870	
19500	302.0	17 00	3.1	10.4	32.5	9.6	5970	1160
19600	305.2	17 10	3.1	10.5	32.3	9.5	6075	
19700	308.4	17 21	3.1	10.6	32.0	9.5	6175	
19800	311.6	17 31	3.2	10.6	31.8	9.4	6280	
19900	314.6	17 42	3.2	10.7	31.5	9.3	6390	
20000	317.8	17 53	3.2	10.8	31.3	9.3	6495	1153
20100	321.2	18 04	3.2	10.9	31.1	9.2	6605	
20200	324.4	18 15	3.2	11.0	30.9	9.1	6715	
20300	327.6	18 26	3.3	11.0	30.6	9.1	6830	
20400	331.0	18 37	3.3	11.1	30.4	9.0	6940	
20500	334.2	18 48	3.3	11.2	30.2	8.9	7055	1148
20600	337.6	18 59	3.3	11.3	30.0	8.9	7170	
20700	341.0	19 11	3.4	11.3	29.8	8.8	7290	
20800	344.4	19 22	3.4	11.4	29.6	8.8	7410	
20900	347.6	19 34	3.4	11.5	29.4	8.7	7530	
21000	351.0	19 45	3.4	11.6	29.2	8.6	7650	1145

700 LB. C.S. SHELL MK X M.V. - 2600 F/S FUZE, POINT DET.MK III

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in Range	*Probable Error in Defl.	Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
451	24 13	2.2	-14	-0.75	7.56	79	4	35.5	18000
436	24 20	2.2						33.8	18100
440	24 47	2.2						34.1	18200
445	25 04	2.1						34.4	18300
451	25 21	2.1						34.7	18400
456	25 38	2.1	-14	-0.80	7.52	81	4	35.0	18500
461	25 55	2.0						35.3	18600
466	26 13	2.0						35.6	18700
471	26 30	2.0						35.9	18800
476	26 48	2.0						36.2	18900
482	27 05	2.0	-15	-0.85	7.48	84	4	36.5	19000
487	27 23	1.9						36.8	19100
492	27 41	1.9						37.2	19200
497	27 58	1.9						37.5	19300
503	28 16	1.8						37.8	19400
508	28 34	1.8	-16	-0.90	7.44	86	4	38.1	19500
513	28 52	1.8						38.4	19600
518	29 10	1.8						38.7	19700
524	29 28	1.8						39.0	19800
529	29 46	1.7						39.4	19900
534	30 04	1.7	-17	-0.95	7.41	89	5	39.7	20000
540	30 22	1.7						40.0	20100
545	30 40	1.7						40.3	20200
550	30 58	1.7						40.7	20300
556	31 16	1.6						41.0	20400
561	31 34	1.6	-18	-1.00	-7.38	91	5	41.3	20500
566	31 52	1.6						41.6	20600
572	32 10	1.6						42.0	20700
577	32 27	1.6						42.3	20800
582	32 45	1.6						42.6	20900
587	33 03	1.5	-19	-1.05	7.35	94	6	43.0	21000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
21000	351.0	19 45	3.4	11.6	29.2	8.6	7650	1145
21100	354.6	19 57	3.4	11.6	29.0	8.6	7775	
21200	358.0	20 08	3.5	11.7	28.8	8.5	7900	
21300	361.4	20 20	3.5	11.8	28.7	8.5	8030	
21400	365.0	20 32	3.5	11.9	28.5	8.4	8155	
21500	368.4	20 44	3.5	11.9	28.3	8.4	8285	1145
21600	372.0	20 56	3.6	12.0	28.1	8.3	8415	
21700	375.6	21 08	3.6	12.1	27.9	8.3	8550	
21800	379.2	21 20	3.6	12.2	27.8	8.2	8685	
21900	382.8	21 32	3.6	12.2	27.6	8.2	8830	
22000	386.4	21 44	3.6	12.3	27.4	8.1	8955	1145
22100	390.2	21 57	3.7	12.4	27.2	8.1	9095	
22200	393.8	22 09	3.7	12.5	27.0	8.0	9235	
22300	397.6	22 22	3.7	12.6	26.9	8.0	9375	
22400	401.2	22 34	3.7	12.6	26.7	7.9	9520	
22500	405.0	22 47	3.8	12.7	26.5	7.9	9665	1144
22600	408.8	23 00	3.8	12.8	26.3	7.8	9810	
22700	412.6	23 12	3.8	12.9	26.1	7.8	9960	
22800	416.4	23 25	3.8	13.0	26.0	7.7	10110	
22900	420.2	23 38	3.9	13.1	25.8	7.6	10260	
23000	424.2	23 51	3.9	13.2	25.6	7.6	10410	1146
23100	428.0	24 05	3.9	13.3	25.4	7.5	10570	
23200	432.0	24 18	4.0	13.4	25.2	7.5	10730	
23300	436.0	24 31	4.0	13.5	25.0	7.4	10890	
23400	440.0	24 45	4.0	13.6	24.8	7.4	11050	
23500	444.0	24 58	4.1	13.7	24.6	7.3	11220	1150
23600	448.0	25 12	4.1	13.8	24.4	7.2	11360	
23700	452.2	25 26	4.1	13.9	24.2	7.2	11550	
23800	456.4	25 40	4.2	14.0	23.9	7.1	11720	
23900	460.6	25 54	4.2	14.2	23.7	7.0	11900	
24000	464.8	26 08	4.3	14.3	23.5	7.0	12070	1154

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
598	33 03	1.5	-19	-1.05	7.35	94	6	43.0	21000
593	33 21	1.5						43.3	21100
588	33 39	1.5						43.7	21200
603	33 57	1.5						44.0	21300
609	34 15	1.5						44.4	21400
614	34 32	1.4	-20	-1.10	7.33	96	6	44.7	21500
619	34 50	1.4						45.0	21600
625	35 08	1.4						45.4	21700
630	35 26	1.4						45.7	21800
635	35 44	1.4						46.1	21900
640	36 01	1.4	-20	-1.15	7.31	99	7	46.4	22000
645	36 19	1.4						46.8	22100
651	36 37	1.3						47.1	22200
656	36 54	1.3						47.5	22300
661	37 12	1.3						47.8	22400
666	37 29	1.3	-22	-1.20	7.29	101	8	48.2	22500
672	37 47	1.3						48.6	22600
677	38 05	1.3						48.9	22700
682	38 22	1.3						49.3	22800
687	38 40	1.3						49.6	22900
692	38 57	1.2	-23	-1.25	7.27	103	9	50.0	23000
698	39 15	1.2						50.4	23100
703	39 33	1.2						50.8	23200
708	39 50	1.2						51.1	23300
713	40 08	1.2						51.6	23400
718	40 25	1.2	-24	-1.35	7.26	105	10	51.9	23500
724	40 43	1.2						52.3	23600
729	41 00	1.2						52.6	23700
734	41 18	1.1						53.0	23800
739	41 36	1.1						53.4	23900
744	41 53	1.1	-25	-1.40	7.24	107	11	53.8	24000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.	1 min change in Elev.	Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
24000	464.8	26 08	4.3	14.3	23.5	7.0	12070	1154
24100	469.0	26 23	4.3	14.5	23.3	6.9	18250	
24200	473.4	26 37	4.4	14.6	23.0	6.8	12430	
24300	477.6	26 52	4.4	14.8	22.8	6.8	12610	
24400	482.0	27 07	4.4	14.9	22.5	6.7	12800	
24500	486.6	27 22	4.5	15.1	22.3	6.6	12990	1159
24600	491.0	27 37	4.5	15.3	22.0	6.5	13180	
24700	495.6	27 53	4.6	15.5	21.8	6.4	13380	
24800	500.2	28 08	4.6	15.7	21.5	6.4	13580	
24900	504.8	28 24	4.7	15.9	21.3	6.3	13780	
25000	509.6	28 40	4.8	16.1	21.0	6.2	13990	1165
25100	514.4	28 56	4.8	16.3	20.7	6.1	14200	
25200	519.4	29 13	4.9	16.6	20.4	6.0	14410	
25300	524.2	29 29	5.0	16.8	20.1	5.9	14630	
25400	529.2	29 46	5.1	17.1	19.8	5.8	14850	
25500	534.4	30 04	5.1	17.4	19.5	5.8	15080	1172
25600	539.6	30 21	5.2	17.6	19.2	5.7	15310	
25700	544.8	30 39	5.3	17.9	18.8	5.6	15540	
25800	550.2	30 57	5.4	18.2	18.5	5.5	15780	
25900	555.6	31 15	5.5	18.6	18.1	5.4	16020	
26000	561.2	31 34	5.6	18.9	17.8	5.3	16270	1180
26100	566.8	31 53	5.7	19.3	17.4	5.2	16520	
26200	572.6	32 12	5.8	19.7	17.0	5.0	16780	
26300	578.4	32 32	6.0	20.1	16.7	4.9	17050	
26400	584.4	32 52	6.1	20.6	16.3	4.8	17330	
26500	590.6	33 13	6.3	21.1	15.9	4.7	17610	1189
26600	597.0	33 35	6.4	21.6	15.5	4.6	17900	
26700	603.6	33 57	6.6	22.3	15.0	4.5	18200	
26800	610.8	34 19	6.8	23.0	14.6	4.3	18510	
26900	617.0	34 43	7.0	23.7	14.2	4.2	18830	
27000	624.0	35 07	7.3	24.5	13.7	4.1	19160	1199

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
744	41 53	1.1	-25	-1.40	7.24	107	11	53.8	24000
750	42 11	1.1						54.2	24100
755	42 28	1.1						54.6	24200
760	42 46	1.1						55.0	24300
765	43 04	1.1						55.4	24400
771	43 21	1.0	-26	-1.45	7.22	109	12	55.8	24500
776	43 39	1.0						56.2	24600
781	43 57	1.0						56.6	24700
787	44 15	1.0						57.0	24800
792	44 32	1.0						57.5	24900
797	44 50	1.0	-27	-1.55	7.20	111	14	57.9	25000
802	45 08	1.0						58.3	25100
808	45 27	0.98						58.8	25200
813	45 45	0.97						59.2	25300
819	46 03	0.96						59.6	25400
824	46 21	0.95	-28	-1.60	7.18	113	16	60.1	25500
829	46 40	0.94						60.6	25600
835	46 58	0.93						61.0	25700
840	47 16	0.92						61.5	25800
846	47 35	0.91						62.0	25900
852	47 54	0.90	-30	-1.70	7.15	115	19	62.4	26000
857	48 13	0.89						62.9	26100
863	48 32	0.88						63.4	26200
868	48 51	0.87						64.0	26300
874	49 11	0.86						64.5	26400
880	49 30	0.85	-32	-1.80	7.11	117	22	65.0	26500
886	49 50	0.84						65.6	26600
892	50 11	0.83						66.1	26700
898	50 32	0.82						66.7	26800
904	50 53	0.81						67.3	26900
911	51 14	0.80	-34	-1.90	7.07	120	26	67.9	27000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
27000	624.0	35 07	7.3	24.5	13.7	4.1	19160	1199
27100	631.4	35 32	7.6	25.5	13.1	3.9	19510	
27200	639.2	35 58	7.9	26.6	12.5	3.8	19870	
27300	647.2	36 25	8.2	27.8	12.0	3.6	20250	
27400	655.8	36 53	8.6	29.2	11.5	3.4	20650	
27500	664.8	37 23	9.1	30.9	10.9	3.2	21075	1211
27600	674.2	37 55	9.7	32.9	10.3	3.0	21525	
27700	684.2	38 29	10.5	35.5	9.5	2.8	22000	1216

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
911	51 14	0.80	-34	-1.90	7.07	120	26	67.9	27000
917	51 36	0.79							
924	51 59	0.78						68.5	27100
931	52 22	0.77						69.2	27200
								69.8	27300
938	52 46	0.76							
946	53 11	0.75	-36	-2.00	7.01	122	30	70.5	27400
953	53 37	0.74						71.3	27500
								72.0	27600
961	54 04	0.72	-37	-2.05	6.98	123	32	72.8	27700

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target feet	Map Range - yards 1000	1500	2000	2500	3000	3500	4000
-10	446	288	208	162	131	109	92
-20	904	581	420	325	262	218	185
-30		879	635	490	395	328	278
-40		1182	853	657	529	439	372
-50		1490	1074	825	663	550	466
-60			1297	995	799	662	561
-70			1522	1167	936	775	657
-80			1749	1341	1073	888	752
-90			1979	1517	1212	1002	848
-100				1694	1352	1117	945
-110				1873	1493	1232	1042
-120				2054	1635	1349	1140
-130				2238	1779	1467	1239
-140				2425	1924	1586	1339
-150					2070	1705	1438
-160					2218	1825	1538
-170					2367	1947	1639
-180					2518	2069	1741
-190					2670	2192	1843
-200					2823	2316	1946
-220						2567	2154
-240						2822	2364
-260						3081	2577
-280						3345	2792
-300							3011
-320							3233
-340							3458
-360							3686
-380							3917
-400							
-420							
-440							
-460							
-480							
-500							

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Map Range - yards 4500	5000	5500	6000	6500	7000	7500	Height of Target feet
79	69	61	54	48	43	39	-10
159	139	122	108	96	86	77	-20
240	209	183	162	144	129	116	-30
320	279	245	216	192	172	155	-40
401	349	306	270	240	215	194	-50
483	420	368	325	288	258	233	-60
565	491	430	379	337	302	272	-70
647	562	492	434	386	345	311	-80
729	633	555	490	435	389	350	-90
812	705	618	545	484	433	390	-100
895	777	681	601	533	477	430	-110
979	850	745	657	583	521	469	-120
1063	923	809	713	633	566	509	-130
1148	996	873	770	683	610	549	-140
1233	1070	937	828	733	655	589	-150
1318	1144	1002	883	783	699	629	-160
1404	1218	1066	940	834	744	669	-170
1491	1293	1131	997	885	790	710	-180
1578	1368	1196	1054	935	835	750	-190
1665	1443	1262	1112	986	880	791	-200
1841	1595	1394	1228	1089	972	874	-220
2019	1748	1528	1345	1192	1064	956	-240
2199	1903	1663	1463	1298	1156	1038	-260
2381	2059	1798	1582	1401	1249	1121	-280
2565	2217	1935	1701	1506	1342	1204	-300
2751	2376	2073	1822	1612	1436	1288	-320
2939	2537	2213	1944	1719	1531	1373	-340
3129	2700	2353	2066	1827	1627	1458	-360
3321	2864	2494	2189	1935	1723	1544	-380
3516	3030	2637	2313	2044	1819	1629	-400
3714	3197	2781	2439	2154	1916	1715	-420
3914	3366	2926	2565	2266	2015	1803	-440
4116	3537	3073	2693	2378	2114	1891	-460
4320	3710	3221	2821	2490	2213	1979	-480
	3885	3370	2950	2603	2313	2068	-500

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target feet	Map Range - yards 8000	8500	9000	9500	10000	10500	11000
-10	35	32	29	26	24	22	21
-20	70	64	58	53	48	44	41
-30	105	96	87	79	73	67	62
-40	141	128	116	106	97	89	82
-50	176	160	145	132	121	111	103
-60	211	192	174	159	146	134	124
-70	247	224	204	186	170	156	144
-80	282	256	235	213	195	179	165
-90	317	288	262	239	219	201	185
-100	353	320	291	266	244	224	206
-110	389	353	321	293	269	247	227
-120	424	385	350	320	294	270	248
-130	460	417	380	347	318	292	268
-140	496	450	409	374	343	315	289
-150	533	483	439	401	368	338	310
-160	569	516	469	428	392	360	331
-170	605	549	499	455	417	383	352
-180	642	582	529	483	442	406	373
-190	678	615	559	511	468	429	394
-200	715	648	589	538	493	452	415
-220	789	715	650	593	543	498	458
-240	863	782	711	649	594	544	500
-260	937	849	772	704	644	590	542
-280	1012	917	833	760	695	637	585
-300	1087	985	895	816	748	684	628
-320	1162	1053	957	872	797	731	671
-340	1238	1121	1019	929	849	778	714
-360	1314	1190	1081	985	900	825	758
-380	1391	1259	1144	1042	952	872	801
-400	1468	1329	1207	1099	1003	919	844
-420	1546	1399	1270	1156	1055	966	888
-440	1623	1468	1333	1214	1108	1014	931
-460	1701	1538	1396	1271	1160	1062	975
-480	1780	1609	1460	1329	1213	1111	1020
-500	1859	1680	1525	1388	1266	1159	1064

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Map Range - yards 11500	12000	12500	13000	13500	14000	14500	Height of Target feet
19	18	16	15	14	13	12	-10
38	35	32	30	28	26	24	-20
57	53	49	45	41	38	36	-30
76	70	65	60	55	51	48	-40
95	88	81	75	69	64	60	-50
114	105	97	90	83	77	72	-60
133	123	114	105	97	90	84	-70
152	140	130	120	111	103	96	-80
171	158	146	135	125	116	108	-90
190	175	162	150	139	129	120	-100
209	193	178	165	153	142	132	-110
228	210	194	180	167	155	145	-120
247	228	211	195	181	168	157	-130
266	245	227	210	195	181	169	-140
285	263	243	225	209	194	181	-150
305	281	260	241	223	207	193	-160
324	299	276	256	237	220	205	-170
343	317	293	271	252	234	218	-180
363	335	310	287	266	247	230	-190
382	353	326	302	280	260	242	-200
421	388	359	332	308	286	266	-220
460	424	392	363	337	313	291	-240
499	460	425	393	365	339	316	-260
539	496	458	424	394	366	340	-280
578	533	492	455	422	392	365	-300
617	569	525	486	451	419	390	-320
657	606	559	517	480	446	415	-340
697	642	593	548	508	472	439	-360
737	679	627	580	537	499	464	-380
777	716	661	611	566	526	489	-400
817	753	695	642	595	553	514	-420
857	790	729	674	625	580	539	-440
897	827	763	706	654	607	564	-460
938	864	797	737	683	634	589	-480
978	901	832	769	712	661	570	-500

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a, Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	15000	15500	16000	16500	17000	17500	18000
-10	11	10	10	9	8	8	7
-20	22	21	19	18	17	16	15
-30	34	31	29	27	25	23	22
-40	45	41	38	36	34	31	29
-50	56	52	48	45	42	39	37
-60	67	62	58	54	51	47	44
-70	78	73	68	63	59	55	52
-80	89	83	78	73	68	63	59
-90	101	94	88	82	76	71	67
-100	112	104	97	91	85	79	74
-110	123	115	107	100	93	87	81
-120	135	126	117	109	102	95	89
-130	146	136	127	118	110	103	96
-140	157	146	136	127	119	111	104
-150	169	157	146	136	127	119	111
-160	180	167	156	146	136	127	119
-170	191	178	166	155	145	135	126
-180	203	188	175	163	153	143	134
-190	214	199	185	172	161	151	142
-200	225	209	195	182	170	159	149
-220	248	231	215	200	187	175	164
-240	271	252	235	219	204	191	179
-260	294	274	255	237	221	207	194
-280	317	295	275	256	239	223	209
-300	340	316	294	274	256	239	224
-320	363	338	314	292	273	255	239
-340	386	359	334	311	290	271	254
-360	409	380	353	329	308	288	269
-380	432	401	373	348	325	304	284
-400	455	423	393	366	342	320	299
-420	478	444	413	385	359	336	314
-440	501	466	433	403	376	352	329
-460	524	487	453	422	394	368	344
-480	547	508	473	441	411	384	359
-500	570	530	493	459	428	400	374

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a, Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Map Range - yards							Height of Target
18500	19000	19500	20000	20500	21000	21500	feet
7	6	6	6	5	5	5	-10
14	13	12	11	11	10	10	-20
20	19	18	17	16	15	14	-30
27	26	24	22	21	20	19	-40
34	32	30	28	27	25	24	-50
41	39	36	34	32	30	29	-60
48	45	42	40	38	36	34	-70
55	52	49	46	43	41	39	-80
62	58	55	52	49	46	43	-90
69	65	61	57	54	51	48	-100
76	72	67	63	59	56	53	-110
83	78	73	69	65	61	58	-120
90	85	79	74	70	66	62	-130
97	91	86	80	75	71	67	-140
104	98	92	86	81	76	72	-150
111	104	98	92	86	81	77	-160
118	111	104	98	92	87	82	-170
126	118	110	103	97	92	87	-180
133	124	116	109	103	97	91	-190
140	131	123	115	108	102	96	-200
154	144	135	127	119	112	106	-220
168	157	147	138	130	123	116	-240
182	170	159	149	141	133	126	-260
196	183	171	161	152	143	135	-280
210	196	184	173	163	154	145	-300
224	209	196	185	174	164	155	-320
238	222	208	196	185	175	165	-340
252	236	221	208	196	185	175	-360
266	249	234	220	207	195	184	-380
280	262	246	231	218	206	194	-400
294	275	258	243	229	216	204	-420
308	289	271	255	240	227	214	-440
322	302	283	266	251	237	224	-460
336	315	296	278	262	248	234	-480
350	328	308	290	273	258	244	-500

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target feet	Map Range-yards 22000	22500	23000	23500	24000	24500
-10	5	4	4	4	4	4
-20	9	9	8	8	8	7
-30	14	13	13	12	11	11
-40	18	18	17	16	15	14
-50	23	22	21	20	19	18
-60	28	26	25	24	23	21
-70	32	30	29	28	26	25
-80	37	35	33	31	30	28
-90	41	39	37	35	33	32
-100	46	43	41	39	37	35
-110	50	47	45	43	41	39
-120	54	51	49	47	44	42
-130	59	56	53	50	48	46
-140	64	60	57	54	51	49
-150	68	64	61	58	55	52
-160	72	68	65	62	59	56
-170	77	73	69	66	63	60
-180	82	78	74	70	66	63
-190	86	82	78	74	70	66
-200	91	86	82	78	74	70
-220	100	95	90	86	81	77
-240	110	104	99	94	89	84
-260	119	113	107	101	96	91
-280	128	121	115	109	104	98
-300	137	130	123	117	111	105
-320	147	139	132	125	119	113
-340	156	148	140	133	126	120
-360	165	156	148	141	134	127
-380	174	165	157	149	141	134
-400	183	174	165	157	149	141
-420	193	183	173	164	156	148
-440	202	191	181	172	164	156
-460	211	200	190	180	171	163
-480	221	209	198	188	179	170
-500	230	217	206	196	186	177

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Map Range-yards 25000	25500	26000	26500	27000	27500	Height of Target feet
3	3	3	3	3	2	-10
7	6	6	6	5	5	-20
10	10	9	8	8	7	-30
14	13	12	11	10	10	-40
17	16	15	14	13	12	-50
20	19	18	17	16	14	-60
24	22	21	20	18	17	-70
27	26	24	22	21	19	-80
31	29	27	25	23	22	-90
34	32	30	28	26	24	-100
37	35	33	31	29	26	-110
40	38	36	34	31	29	-120
44	42	39	36	34	31	-130
47	45	42	39	36	34	-140
50	48	45	42	39	36	-150
53	51	48	45	42	39	-160
57	54	51	48	45	41	-170
60	57	54	50	47	44	-180
63	60	57	53	50	46	-190
67	63	60	56	53	49	-200
73	69	66	62	58	54	-220
80	76	72	68	64	59	-240
87	82	78	73	69	64	-260
93	89	84	79	74	69	-280
100	95	90	85	80	74	-300
107	101	96	91	85	79	-320
114	108	102	96	90	84	-340
120	114	108	102	96	89	-360
127	121	114	107	101	94	-380
134	127	120	113	106	99	-400
141	133	126	119	111	104	-420
148	140	132	125	117	109	-440
154	146	138	130	122	114	-460
161	153	145	136	128	119	-480
168	159	151	142	133	124	-500

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	1000	1500	2000	2500	3000	3500	4000
10	-435	-283	-205	-159	-129	-108	-92
20	-859	-561	-408	-318	-257	-215	-183
30		-834	-609	-475	-385	-321	-273
40		-1102	-808	-631	-512	-427	-363
50		-1366	-1004	-785	-638	-532	-453
60			-1198	-938	-762	-636	-542
70			-1390	-1090	-885	-739	-630
80			-1580	-1241	-1008	-842	-718
90			-1768	-1390	-1130	-945	-806
100			-1953	-1537	-1252	-1048	-894
110				-1683	-1372	-1149	-980
120				-1828	-1491	-1249	-1066
130				-1972	-1609	-1349	-1152
140				-2116	-1726	-1448	-1237
150				-2259	-1843	-1546	-1321
160				-2401	-1959	-1644	-1405
170					-2074	-1742	-1488
180					-2188	-1839	-1571
190					-2301	-1935	-1653
200					-2412	-2029	-1735
220					-2631	-2218	-1897
240					-2846	-2405	-2058
260						-2590	-2217
280						-2773	-2374
300						-2953	-2530
320						-3131	-2684
340						-3307	-2836
360						-3482	-2987
380							-3136
400							-3283
420							-3429
440							-3574
460							-3717
480							-3858
500							-3998

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range - yards							Height of Target
4500	5000	5500	6000	6500	7000	7500	feet
-79	-68	-60	-54	-48	-43	-39	10
-138	-117	-120	-107	-95	-85	-77	20
-236	-205	-180	-160	-143	-128	-115	30
-313	-273	-240	-213	-190	-170	-154	40
-391	-340	-299	-265	-236	-212	-192	50
-468	-408	-358	-317	-283	-254	-230	60
-545	-475	-417	-369	-329	-296	-268	70
-621	-541	-475	-421	-376	-338	-306	80
-696	-607	-534	-473	-422	-379	-343	90
-772	-673	-592	-525	-468	-421	-381	100
-847	-739	-650	-576	-514	-462	-418	110
-922	-804	-707	-627	-560	-504	-456	120
-996	-869	-765	-679	-606	-545	-493	130
-1070	-934	-822	-730	-652	-586	-530	140
-1143	-998	-879	-780	-697	-627	-567	150
-1216	-1062	-936	-831	-742	-668	-604	160
-1288	-1126	-992	-881	-788	-709	-641	170
-1360	-1189	-1048	-931	-833	-749	-677	180
-1431	-1252	-1104	-981	-878	-790	-714	190
-1503	-1315	-1160	-1031	-922	-830	-751	200
-1644	-1440	-1271	-1130	-1011	-910	-823	220
-1784	-1563	-1381	-1228	-1099	-990	-896	240
-1923	-1685	-1490	-1326	-1188	-1070	-968	260
-2061	-1807	-1598	-1423	-1276	-1149	-1039	280
-2197	-1928	-1706	-1520	-1363	-1228	-1111	300
-2332	-2048	-1813	-1616	-1449	-1306	-1182	320
-2465	-2166	-1919	-1711	-1535	-1384	-1253	340
-2597	-2283	-2024	-1806	-1621	-1461	-1323	360
-2728	-2400	-2128	-1900	-1706	-1538	-1393	380
-2859	-2516	-2232	-1993	-1790	-1615	-1463	400
-2989	-2631	-2335	-2086	-1874	-1691	-1532	420
-3117	-2745	-2437	-2178	-1957	-1767	-1602	440
-3243	-2859	-2539	-2269	-2039	-1842	-1671	460
-3369	-2972	-2640	-2359	-2121	-1917	-1739	480
-3494	-3083	-2740	-2450	-2203	-1991	-1807	500

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	8000	8500	9000	9500	10000	10500	11000
10	-35	-32	-29	-26	-24	-22	-20
20	-70	-63	-57	-52	-48	-44	-41
30	-104	-94	-86	-79	-72	-66	-61
40	-139	-126	-115	-105	-96	-89	-81
50	-174	-158	-144	-131	-120	-110	-102
60	-208	-189	-172	-157	-144	-132	-122
70	-243	-220	-200	-183	-168	-154	-142
80	-277	-251	-229	-209	-191	-176	-162
90	-311	-282	-257	-235	-215	-198	-183
100	-345	-313	-285	-261	-239	-220	-203
110	-379	-344	-313	-286	-263	-242	-223
120	-413	-375	-341	-312	-287	-264	-242
130	-447	-405	-369	-338	-310	-285	-263
140	-480	-436	-398	-364	-334	-307	-283
150	-514	-467	-426	-390	-358	-329	-303
160	-547	-497	-453	-415	-381	-351	-323
170	-581	-528	-481	-440	-404	-372	-343
180	-614	-558	-509	-466	-428	-394	-363
190	-648	-589	-537	-492	-452	-416	-383
200	-681	-619	-565	-517	-475	-437	-403
220	-747	-680	-621	-568	-521	-480	-443
240	-813	-740	-676	-619	-568	-523	-483
260	-879	-800	-731	-670	-615	-566	-522
280	-944	-860	-786	-720	-661	-608	-561
300	-1009	-919	-840	-770	-707	-651	-601
320	-1074	-978	-894	-820	-753	-693	-640
340	-1138	-1037	-949	-870	-799	-735	-678
360	-1202	-1096	-1003	-919	-844	-777	-717
380	-1266	-1155	-1057	-969	-890	-819	-756
400	-1330	-1213	-1110	-1018	-935	-861	-795
420	-1393	-1271	-1163	-1067	-981	-903	-833
440	-1457	-1329	-1216	-1116	-1026	-945	-872
460	-1520	-1387	-1269	-1164	-1070	-986	-910
480	-1582	-1444	-1322	-1213	-1115	-1027	-948
500	-1645	-1501	-1374	-1261	-1160	-1069	-986

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range - yards							Height of Target
11500	12000	12500	13000	13500	14000	14500	feet
-19	-17	-16	-15	-14	-13	-12	10
-38	-35	-32	-30	-28	-26	-24	20
-56	-52	-48	-44	-41	-38	-35	30
-75	-69	-64	-59	-55	-51	-47	40
-94	-87	-80	-74	-69	-64	-59	50
-113	-104	-96	-89	-83	-77	-71	60
-131	-121	-112	-104	-97	-90	-83	70
-150	-139	-128	-118	-110	-102	-95	80
-169	-156	-144	-133	-124	-115	-107	90
-187	-173	-160	-148	-138	-128	-119	100
-206	-190	-176	-163	-152	-141	-131	110
-224	-207	-192	-178	-165	-154	-143	120
-243	-225	-208	-192	-178	-166	-155	130
-261	-242	-224	-207	-192	-179	-167	140
-280	-259	-240	-222	-206	-192	-179	150
-298	-276	-256	-237	-220	-205	-191	160
-317	-293	-271	-251	-233	-217	-202	170
-335	-310	-287	-266	-247	-230	-214	180
-354	-327	-303	-280	-260	-242	-225	190
-372	-344	-318	-295	-274	-255	-237	200
-409	-378	-350	-324	-301	-280	-261	220
-446	-412	-381	-353	-328	-305	-284	240
-482	-445	-412	-382	-355	-330	-307	260
-518	-479	-443	-411	-382	-355	-331	280
-555	-513	-475	-440	-409	-380	-354	300
-591	-546	-506	-469	-436	-405	-377	320
-627	-580	-537	-498	-463	-430	-400	340
-663	-613	-568	-527	-489	-455	-424	360
-699	-647	-599	-555	-516	-480	-447	380
-735	-680	-630	-584	-543	-505	-470	400
-770	-713	-661	-613	-570	-530	-493	420
-806	-746	-691	-641	-596	-554	-516	440
-841	-779	-722	-670	-623	-579	-539	460
-876	-811	-752	-698	-649	-604	-563	480
-911	-844	-783	-727	-676	-629	-586	500

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	15000	15500	16000	16500	17000	17500	18000
10	-11	-10	-10	-9	-8	-8	-7
20	-22	-20	-19	-18	-17	-16	-15
30	-33	-31	-29	-27	-25	-23	-22
40	-44	-41	-38	-36	-34	-31	-29
50	-55	-51	-48	-45	-42	-39	-37
60	-66	-62	-58	-54	-50	-47	-44
70	-77	-72	-67	-63	-59	-55	-51
80	-88	-82	-77	-72	-67	-62	-58
90	-100	-93	-87	-81	-75	-70	-66
100	-111	-103	-96	-90	-84	-78	-73
110	-122	-113	-105	-98	-92	-86	-80
120	-133	-124	-115	-107	-100	-94	-88
130	-144	-134	-125	-116	-108	-101	-95
140	-155	-144	-134	-125	-117	-109	-102
150	-166	-154	-144	-134	-125	-117	-110
160	-177	-164	-153	-143	-134	-125	-117
170	-188	-175	-163	-152	-142	-133	-125
180	-199	-185	-172	-161	-151	-141	-132
190	-210	-196	-182	-170	-159	-149	-139
200	-221	-206	-192	-179	-167	-156	-146
220	-243	-226	-211	-197	-184	-172	-161
240	-265	-247	-230	-214	-200	-187	-175
260	-286	-267	-249	-232	-217	-203	-190
280	-308	-287	-268	-250	-233	-218	-204
300	-330	-308	-287	-268	-250	-234	-219
320	-352	-328	-306	-286	-267	-250	-234
340	-373	-348	-325	-303	-283	-265	-248
360	-395	-368	-343	-321	-300	-281	-263
380	-416	-388	-362	-338	-316	-296	-277
400	-438	-408	-381	-356	-333	-312	-292
420	-459	-428	-400	-374	-349	-327	-307
440	-481	-449	-419	-391	-365	-342	-321
460	-503	-469	-437	-408	-382	-358	-336
480	-525	-489	-456	-426	-398	-373	-350
500	-546	-509	-475	-444	-415	-388	-364

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range - yards							Height of Target
18500	19000	19500	20000	20500	21000	21500	feet
-7	-6	-6	-6	-5	-5	-5	10
-14	-13	-12	-12	-11	-10	-10	20
-20	-19	-18	-17	-16	-16	-15	30
-27	-26	-24	-23	-22	-21	-19	40
-34	-32	-30	-29	-27	-26	-24	50
-41	-38	-36	-35	-33	-31	-29	60
-48	-45	-42	-40	-38	-36	-34	70
-54	-51	-48	-46	-43	-41	-39	80
-61	-57	-54	-51	-49	-46	-43	90
-68	-64	-60	-57	-54	-51	-48	100
-75	-70	-66	-63	-59	-56	-53	110
-82	-77	-73	-69	-65	-61	-58	120
-89	-84	-79	-74	-70	-67	-63	130
-96	-90	-85	-80	-76	-72	-68	140
-103	-97	-91	-86	-81	-77	-73	150
-110	-103	-97	-91	-86	-82	-78	160
-117	-110	-103	-97	-92	-87	-82	170
-124	-116	-109	-103	-97	-92	-87	180
-130	-122	-115	-109	-103	-97	-92	190
-137	-129	-121	-114	-108	-102	-96	200
-151	-142	-133	-125	-118	-112	-106	220
-164	-154	-145	-137	-129	-122	-115	240
-178	-167	-157	-148	-140	-132	-125	260
-191	-180	-170	-160	-151	-142	-134	280
-205	-193	-182	-171	-161	-152	-144	300
-219	-206	-194	-183	-172	-162	-153	320
-233	-219	-206	-194	-182	-172	-163	340
-246	-231	-217	-205	-193	-182	-172	360
-260	-244	-229	-216	-204	-192	-182	380
-274	-257	-241	-227	-214	-202	-191	400
-288	-270	-253	-238	-224	-212	-201	420
-302	-283	-265	-249	-235	-222	-210	440
-315	-295	-277	-261	-246	-233	-220	460
-328	-308	-289	-272	-257	-243	-229	480
-342	-321	-301	-283	-267	-253	-239	500

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target feet	Map Range-yards 22000	22500	23000	23500	24000	24500
10	-5	-4	-4	-4	-4	-4
20	-9	-9	-8	-8	-8	-7
30	-14	-13	-13	-12	-11	-11
40	-18	-18	-17	-16	-15	-14
50	-23	-22	-21	-20	-19	-18
60	-28	-26	-25	-24	-23	-21
70	-32	-30	-29	-28	-26	-25
80	-37	-35	-33	-31	-30	-28
90	-41	-39	-37	-35	-33	-32
100	-46	-43	-41	-39	-37	-35
110	-50	-47	-45	-43	-41	-39
120	-55	-52	-49	-47	-45	-42
130	-60	-57	-54	-51	-48	-46
140	-64	-61	-58	-55	-52	-49
150	-69	-65	-62	-59	-56	-53
160	-73	-69	-66	-63	-60	-56
170	-78	-74	-70	-67	-63	-60
180	-82	-78	-74	-70	-67	-63
190	-87	-82	-78	-74	-70	-67
200	-91	-86	-82	-78	-74	-70
220	-100	-95	-90	-86	-81	-77
240	-109	-103	-98	-93	-88	-84
260	-118	-112	-106	-101	-96	-91
280	-127	-120	-114	-108	-103	-98
300	-136	-129	-122	-116	-110	-105
320	-145	-138	-131	-124	-118	-112
340	-154	-146	-139	-132	-125	-119
360	-163	-155	-147	-139	-132	-126
380	-172	-163	-155	-147	-140	-133
400	-181	-172	-163	-155	-147	-140
420	-190	-180	-171	-162	-154	-147
440	-199	-189	-179	-170	-162	-154
460	-208	-198	-188	-178	-169	-161
480	-217	-206	-196	-186	-177	-168
500	-226	-215	204	-194	-184	-175

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range-yards 25000	25500	26000	26500	27000	27500	Height of Target feet
-3	-3	-3	-3	-3	-2	10
-7	-6	-6	-6	-5	-5	20
-10	-10	-9	-8	-8	-7	30
-14	-13	-12	-11	-10	-10	40
-17	-16	-15	-14	-13	-12	50
-20	-19	-18	-17	-16	-15	60
-23	-22	-21	-20	-18	-17	70
-27	-26	-24	-22	-21	-20	80
-30	-29	-27	-25	-23	-22	90
-33	-32	-30	-28	-26	-25	100
-37	-35	-33	-31	-29	-27	110
-40	-38	-36	-34	-32	-30	120
-43	-41	-39	-36	-34	-32	130
-47	-44	-42	-39	-37	-35	140
-50	-47	-45	-42	-40	-37	150
-53	-50	-48	-45	-42	-39	160
-57	-54	-51	-48	-45	-42	170
-60	-57	-54	-50	-47	-44	180
-64	-60	-57	-53	-50	-47	190
-67	-63	-60	-56	-53	-49	200
-74	-70	-66	-62	-58	-54	220
-80	-76	-72	-68	-64	-59	240
-87	-82	-78	-73	-69	-64	260
-93	-89	-84	-79	-74	-69	280
-100	-95	-90	-85	-80	-74	300
-107	-101	-96	-91	-85	-79	320
-113	-107	-102	-96	-90	-84	340
-120	-114	-108	-102	-96	-89	360
-126	-120	-113	-107	-101	-94	380
-133	-126	-119	-113	-106	-99	400
-140	-132	-125	-118	-111	-104	420
-146	-138	-131	-124	-116	-109	440
-153	-145	-137	-129	-121	-113	460
-159	-151	-143	-135	-127	-118	480
-166	-157	-149	-140	-132	-123	500

"12-N-1"

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table D.

WEIGHT OF PROJECTILE, EFFECTS IN YARDS OF RANGE DUE TO VARIATIONS IN

Range	Variations in Weight of Projectile - per cent										
yards	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
1000	24	19	14	9	4	0	-5	-9	-14	-19	-24
2000	43	34	25	16	8	0	-9	-17	-26	-34	-43
3000	57	46	34	22	11	0	-12	-23	-35	-46	-58
4000	67	54	41	27	13	0	-14	-27	-41	-55	-69
5000	74	59	45	30	15	0	-15	-30	-45	-61	-77
6000	77	62	47	31	16	0	-16	-32	-48	-64	-81
7000	77	62	47	31	16	0	-16	-32	-49	-65	-82
8000	73	59	45	30	15	0	-15	-31	-48	-64	-81
9000	66	54	41	28	14	0	-14	-29	-45	-60	-76
10000	56	46	35	24	12	0	-13	-26	-40	-54	-68
11000	43	35	27	19	10	0	-10	-21	-33	-45	-56
12000	28	23	18	13	7	0	-7	-15	-24	-33	-42
13000	10	9	8	6	3	0	-4	-8	-13	-19	-25
14000	-10	-7	-4	-2	-1	0	0	0	-1	-3	-5
15000	-32	-25	-18	-11	-5	0	+5	+9	+12	+15	+17
16000	-56	-44	-32	-21	-10	0	9	18	26	34	41
17000	-82	-64	-47	-31	-15	0	14	28	42	55	67
18000	-108	-85	-63	-41	-20	0	20	39	58	76	93
19000	-135	-107	-79	-52	-26	0	25	50	74	97	120
20000	-162	-128	-95	-63	-31	0	30	60	89	118	146
21000	-188	-149	-111	-73	-36	0	35	70	104	138	171
22000	-213	-169	-126	-85	-41	0	40	79	118	157	195
23000	-236	-187	-139	-92	-45	0	44	88	132	175	217
24000	-257	-204	-152	-101	-50	0	49	97	145	192	238
25000	-276	-220	-164	-109	-54	0	53	105	157	208	259
26000	-294	-235	-175	-116	-58	0	57	114	170	225	280
27000	-312	-249	-186	-123	-61	0	61	122	182	242	301
27700	-325	-259	-194	-129	-64	0	64	128	191	254	317

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table E.

***ROTATION OF THE EARTH, EFFECTS IN YARDS OF RANGE DUE TO**

Latitude 0°

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+5-	+11-	+15-	+18-	+21-	+22-
4000	0	+10-	+20-	+28-	+34-	+38-	+40-
6000	0	+14-	+27-	+38-	+47-	+52-	+55-
8000	0	+17-	+33-	+46-	+57-	+63-	+66-
10000	0	+19-	+37-	+52-	+64-	+71-	+74-
12000	0	+21-	+40-	+56-	+69-	+77-	+80-
14000	0	+22-	+42-	+59-	+72-	+81-	+84-
16000	0	+22-	+43-	+61-	+74-	+83-	+86-
18000	0	+22-	+43-	+62-	+75-	+84-	+87-
20000	0	+23-	+44-	+62-	+76-	+85-	+88-
22000	0	+23-	+45-	+63-	+78-	+87-	+90-
24000	0	+24-	+46-	+64-	+79-	+88-	+91-
26000	0	+23-	+45-	+63-	+77-	+86-	+89-
27700	0	+21-	+40-	+57-	+69-	+77-	+80-
	180	195	210	225	240	255	270
	360	345	330	315	300	285	270
	Azimuth of Target - degrees						

Latitude 10° (North or South)

Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
0	+5-	+11-	+15-	+19-	+21-	+21-	2000
0	+10-	+20-	+28-	+34-	+38-	+39-	4000
0	+14-	+27-	+38-	+46-	+52-	+54-	6000
0	+17-	+32-	+46-	+56-	+63-	+65-	8000
0	+19-	+36-	+52-	+63-	+71-	+73-	10000
0	+20-	+39-	+56-	+68-	+76-	+79-	12000
0	+21-	+41-	+58-	+72-	+80-	+83-	14000
0	+22-	+42-	+60-	+75-	+82-	+85-	16000
0	+22-	+43-	+61-	+74-	+83-	+86-	18000
0	+22-	+43-	+61-	+75-	+84-	+87-	20000
0	+23-	+44-	+62-	+76-	+85-	+88-	22000
0	+23-	+45-	+63-	+77-	+86-	+89-	24000
0	+23-	+44-	+62-	+76-	+85-	+88-	26000
0	+20-	+39-	+56-	+68-	+76-	+79-	27700
180	195	210	225	240	255	270	
360	345	330	315	300	285	270	
Azimuth of Target - degrees							

Latitude 20° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+5-	+10-	+14-	+18-	+20-	+20-
4000	0	+9-	+19-	+26-	+32-	+36-	+37-
6000	0	+13-	+26-	+36-	+44-	+49-	+51-
8000	0	+16-	+31-	+44-	+53-	+59-	+62-
10000	0	+18-	+35-	+49-	+60-	+67-	+70-
12000	0	+19-	+38-	+53-	+65-	+73-	+75-
14000	0	+20-	+40-	+56-	+68-	+76-	+79-
16000	0	+21-	+41-	+57-	+70-	+78-	+81-
18000	0	+21-	+41-	+58-	+71-	+79-	+82-
20000	0	+21-	+41-	+59-	+72-	+80-	+83-
22000	0	+22-	+42-	+60-	+73-	+81-	+84-
24000	0	+22-	+43-	+61-	+74-	+82-	+85-
26000	0	+21-	+42-	+59-	+73-	+81-	+84-
27700	0	+19-	+38-	+53-	+65-	+73-	+75-
	180	195	210	225	240	255	270
	360	345	330	315	300	285	270
	Azimuth of Target - degrees						

Latitude 30° (North or South)

Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
0	+5-	+9-	+13-	+16-	+18-	+18-	2000
0	+9-	+17-	+24-	+30-	+33-	+34-	4000
0	+18-	+23-	+33-	+41-	+45-	+47-	6000
0	+15-	+28-	+40-	+50-	+55-	+57-	8000
0	+17-	+32-	+45-	+56-	+62-	+64-	10000
0	+18-	+35-	+49-	+60-	+67-	+69-	12000
0	+19-	+36-	+50-	+65-	+70-	+72-	14000
0	+19-	+37-	+53-	+65-	+72-	+74-	16000
0	+19-	+38-	+53-	+65-	+73-	+75-	18000
0	+20-	+38-	+54-	+66-	+74-	+76-	20000
0	+20-	+39-	+55-	+67-	+75-	+77-	22000
0	+20-	+39-	+56-	+68-	+76-	+78-	24000
0	+20-	+39-	+55-	+67-	+75-	+77-	26000
0	+18-	+35-	+49-	+60-	+67-	+69-	27700
180	195	210	225	240	255	270	
360	345	330	315	300	285	270	
Azimuth of Target - degrees							

*For argument at top of tables use the sign that is before the number.
*For argument at bottom of tables use the sign that follows the number.
*Azimuth measured clockwise from the North.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table E.

***ROTATION OF THE EARTH, EFFECTS IN YARDS OF RANGE DUE TO**

Latitude 40° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+4-	+8-	+12-	+14-	+16-	+17-
4000	0	+8-	+15-	+22-	+26-	+29-	+31-
6000	0	+11-	+21-	+30-	+36-	+40-	+42-
8000	0	+13-	+25-	+36-	+44-	+49-	+51-
10000	0	+15-	+28-	+40-	+49-	+55-	+57-
12000	0	+16-	+30-	+43-	+53-	+59-	+61-
14000	0	+17-	+32-	+46-	+56-	+62-	+64-
16000	0	+17-	+33-	+47-	+57-	+64-	+66-
18000	0	+17-	+33-	+47-	+58-	+64-	+67-
20000	0	+17-	+34-	+48-	+58-	+65-	+68-
22000	0	+18-	+34-	+49-	+59-	+66-	+69-
24000	0	+18-	+34-	+49-	+60-	+67-	+70-
26000	0	+17-	+33-	+48-	+59-	+66-	+68-
27700	0	+16-	+31-	+43-	+53-	+59-	+61-
	180	195	210	225	240	255	270
	360	345	330	315	300	285	270
	Azimuth of Target - degrees						

Latitude 50° (North or South)

Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
0	+4-	+7-	+10-	+12-	+14-	+14-	2000
0	+7-	+13-	+18-	+22-	+25-	+26-	4000
0	+9-	+17-	+25-	+30-	+34-	+35-	6000
0	+11-	+21-	+30-	+36-	+41-	+42-	8000
0	+12-	+24-	+34-	+41-	+46-	+48-	10000
0	+13-	+26-	+36-	+45-	+50-	+52-	12000
0	+14-	+27-	+38-	+47-	+52-	+54-	14000
0	+14-	+28-	+39-	+48-	+53-	+55-	16000
0	+14-	+28-	+39-	+48-	+54-	+56-	18000
0	+15-	+28-	+40-	+49-	+55-	+57-	20000
0	+15-	+29-	+41-	+50-	+56-	+58-	22000
0	+15-	+29-	+41-	+51-	+57-	+59-	24000
0	+15-	+29-	+40-	+50-	+55-	+57-	26000
0	+13-	+26-	+36-	+45-	+50-	+51-	27700
180	195	210	225	240	255	270	
360	345	330	315	300	285	270	
Azimuth of Target - degrees							

Latitude 60° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+3-	+5-	+8-	+9-	+10-	+11-
4000	0	+5-	+10-	+14-	+17-	+19-	+20-
6000	0	+7-	+14-	+19-	+23-	+26-	+27-
8000	0	+9-	+16-	+23-	+28-	+32-	+33-
10000	0	+10-	+18-	+26-	+32-	+36-	+37-
12000	0	+10-	+20-	+28-	+35-	+39-	+40-
14000	0	+11-	+21-	+29-	+36-	+41-	+42-
16000	0	+11-	+22-	+30-	+37-	+42-	+43-
18000	0	+11-	+22-	+31-	+38-	+42-	+43-
20000	0	+11-	+22-	+31-	+38-	+42-	+44-
22000	0	+12-	+22-	+32-	+39-	+43-	+45-
24000	0	+12-	+23-	+32-	+39-	+44-	+46-
26000	0	+11-	+22-	+31-	+38-	+43-	+45-
27700	0	+10-	+20-	+28-	+35-	+39-	+40-
	180	195	210	225	240	255	270
	360	345	330	315	300	285	270
	Azimuth of Target - degrees						

Latitude 70° (North or South)

Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
0	+2-	+4-	+5-	+6-	+7-	+7-	2000
0	+4-	+7-	+9-	+12-	+13-	+13-	4000
0	+5-	+9-	+13-	+16-	+18-	+18-	6000
0	+6-	+11-	+16-	+19-	+22-	+22-	8000
0	+7-	+13-	+18-	+22-	+25-	+25-	10000
0	+7-	+14-	+19-	+24-	+27-	+27-	12000
0	+7-	+14-	+20-	+25-	+28-	+29-	14000
0	+8-	+15-	+21-	+25-	+28-	+30-	16000
0	+8-	+15-	+21-	+26-	+29-	+30-	18000
0	+8-	+15-	+21-	+26-	+29-	+30-	20000
0	+8-	+15-	+22-	+27-	+30-	+31-	22000
0	+8-	+15-	+22-	+27-	+30-	+31-	24000
0	+8-	+15-	+21-	+26-	+29-	+30-	26000
0	+7-	+14-	+19-	+24-	+26-	+27-	27700
180	195	210	225	240	255	270	
360	345	330	315	300	285	270	
Azimuth of Target - degrees							

*For argument at top of tables use the sign that is before the number.
*For argument at bottom of tables use the sign that follows the number.
*Azimuth measured clockwise from the North.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table Fa.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN

Range	Increase in Muzzle Velocity - feet per second							
yards	10	20	30	40	50	60	70	80
1000	7	15	22	29	37	44	51	58
2000	14	29	43	57	72	86	100	115
3000	21	42	63	84	105	126	147	169
4000	28	55	82	110	137	165	193	221
5000	34	68	101	135	169	203	237	271
6000	40	80	120	159	199	239	279	319
7000	46	91	137	182	228	273	319	365
8000	51	102	153	204	255	306	357	409
9000	56	112	168	225	281	337	393	450
10000	61	122	183	244	305	366	427	489
11000	65	131	197	262	328	394	459	525
12000	70	140	210	280	350	420	490	560
13000	74	148	222	296	370	444	519	593
14000	78	156	234	311	389	467	546	624
15000	81	163	245	326	407	489	572	654
16000	85	170	255	340	425	510	596	682
17000	88	177	265	354	442	531	620	709
18000	92	183	275	367	459	551	643	736
19000	95	190	285	381	477	572	667	763
20000	99	197	296	395	494	593	692	791
21000	102	204	307	409	512	615	717	820
22000	106	212	318	424	530	637	743	850
23000	110	219	329	439	549	659	769	880
24000	113	227	340	454	568	682	796	911
25000	117	235	352	470	588	706	825	944
26000	121	243	365	487	610	733	856	980
27000	126	252	379	506	634	762	891	1021
27700	130	260	391	523	656	790	924	1059

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table Fa.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN

Range	Increase in Muzzle Velocity - feet per second						
yards	90	100	110	120	130	140	150
1000	66	73	81	88	95	103	110
2000	129	143	158	172	187	201	216
3000	190	211	232	253	275	296	317
4000	248	276	304	332	360	388	415
5000	305	339	373	408	442	476	510
6000	360	400	440	480	520	561	601
7000	412	458	503	549	595	642	688
8000	461	512	563	615	666	718	770
9000	507	563	620	677	733	790	847
10000	550	612	674	735	796	858	920
11000	591	658	724	790	856	922	989
12000	630	701	772	842	913	983	1054
13000	667	742	817	892	967	1041	1116
14000	702	781	860	939	1017	1096	1175
15000	736	818	901	983	1065	1148	1230
16000	768	853	939	1025	1111	1197	1283
17000	798	887	976	1066	1155	1244	1334
18000	828	921	1013	1106	1198	1291	1384
19000	859	955	1050	1146	1242	1339	1435
20000	890	990	1089	1188	1288	1388	1488
21000	923	1026	1129	1232	1335	1439	1542
22000	957	1063	1170	1277	1384	1491	1598
23000	991	1101	1212	1323	1434	1545	1656
24000	1026	1141	1255	1370	1485	1601	1716
25000	1063	1182	1301	1420	1540	1660	1780
26000	1103	1227	1352	1477	1602	1728	1854
27000	1152	1283	1415	1547	1680	1814	1948
27700	1195	1332	1470	1608	1747	1887	2028

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table Fb.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN

Range	Decrease in Muzzle Velocity - feet per second							
yards	10	20	30	40	50	60	70	80
1000	-7	-15	-22	-29	-36	-43	-51	-58
2000	-14	-29	-43	-57	-71	-85	-100	-114
3000	-21	-42	-63	-84	-105	-126	-147	-168
4000	-28	-55	-82	-110	-137	-165	-192	-220
5000	-34	-67	-101	-135	-168	-202	-236	-270
6000	-40	-79	-119	-159	-198	-238	-278	-317
7000	-46	-91	-136	-182	-227	-272	-317	-362
8000	-51	-102	-153	-204	-254	-304	-355	-405
9000	-56	-112	-168	-224	-279	-335	-391	-446
10000	-61	-122	-182	-243	-303	-364	-425	-485
11000	-66	-131	-196	-261	-326	-391	-457	-522
12000	-70	-139	-209	-278	-348	-417	-487	-556
13000	-74	-147	-221	-294	-368	-442	-515	-588
14000	-78	-155	-233	-310	-387	-465	-542	-619
15000	-81	-162	-244	-325	-406	-487	-567	-648
16000	-85	-169	-254	-339	-424	-508	-592	-676
17000	-88	-176	-264	-353	-441	-528	-616	-703
18000	-91	-183	-274	-366	-457	-548	-639	-730
19000	-94	-189	-284	-379	-474	-568	-663	-757
20000	-98	-196	-295	-393	-491	-589	-687	-785
21000	-102	-204	-306	-407	-509	-610	-712	-813
22000	-106	-211	-317	-422	-527	-632	-737	-842
23000	-109	-219	-328	-437	-546	-655	-763	-872
24000	-113	-226	-339	-452	-565	-677	-789	-901
25000	-117	-234	-350	-467	-583	-699	-814	-930
26000	-121	-241	-361	-481	-601	-720	-839	-957
27000	-125	-249	-373	-496	-619	-741	-862	-983
27700	-129	-257	-384	-510	-636	-761	-885	-1008

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table Fb.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN

Range	Decrease in Muzzle Velocity - feet per second						
yards	90	100	110	120	130	140	150
1000	-65	-72	-79	-86	-94	-101	-108
2000	-128	-142	-156	-170	-184	-198	-212
3000	-189	-209	-230	-251	-271	-292	-313
4000	-247	-274	-301	-328	-355	-383	-410
5000	-303	-336	-369	-402	-436	-470	-503
6000	-356	-396	-435	-474	-513	-553	-592
7000	-407	-453	-498	-543	-587	-632	-677
8000	-456	-506	-557	-607	-657	-707	-757
9000	-502	-557	-613	-668	-723	-778	-833
10000	-545	-605	-666	-726	-785	-845	-905
11000	-586	-651	-716	-780	-844	-909	-973
12000	-625	-694	-763	-832	-900	-969	-1038
13000	-662	-735	-808	-881	-953	-1026	-1099
14000	-696	-773	-850	-927	-1003	-1080	-1156
15000	-728	-809	-890	-971	-1051	-1131	-1210
16000	-760	-844	-929	-1013	-1096	-1180	-1263
17000	-791	-878	-966	-1053	-1140	-1227	-1314
18000	-821	-912	-1003	-1093	-1183	-1274	-1364
19000	-851	-946	-1040	-1134	-1227	-1321	-1415
20000	-882	-980	-1077	-1175	-1272	-1369	-1466
21000	-914	-1015	-1116	-1217	-1318	-1418	-1519
22000	-947	-1051	-1156	-1261	-1365	-1469	-1573
23000	-980	-1088	-1197	-1305	-1413	-1520	-1628
24000	-1013	-1125	-1237	-1348	-1460	-1571	-1682
25000	-1045	-1160	-1275	-1389	-1504	-1619	-1733
26000	-1075	-1193	-1310	-1426	-1543	-1660	-1777
27000	-1103	-1222	-1341	-1459	-1577	-1694	-1810
27700	-1130	-1252	-1373	-1493	-1612	-1730	-1848

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table 6a.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN (59° F. and 29.5 + in.)

Range yards	Decrease in Air Density - per cent							
	1	2	3	4	5	6	7	8
1000	0	0	0	0	0	1	1	1
2000	1	2	3	3	4	5	6	7
3000	2	5	7	9	11	13	16	18
4000	4	9	13	17	21	25	30	34
5000	7	14	21	27	34	41	48	54
6000	10	20	30	40	50	60	70	79
7000	14	27	41	55	68	81	95	108
8000	18	35	53	71	89	106	124	142
9000	22	44	67	89	112	134	156	179
10000	27	54	82	109	137	164	192	220
11000	33	65	98	131	164	197	231	264
12000	39	77	116	155	194	233	273	312
13000	45	90	135	180	226	272	318	364
14000	51	103	155	207	260	313	366	420
15000	58	117	176	235	295	355	416	478
16000	65	131	198	265	332	400	469	539
17000	73	146	220	295	371	447	524	602
18000	80	161	243	326	410	495	581	668
19000	88	177	267	358	450	543	638	734
20000	96	193	291	390	490	592	695	799
21000	103	208	314	421	529	639	750	862
22000	110	222	336	451	567	684	803	923
23000	117	236	357	479	602	727	854	982
24000	124	250	377	506	636	769	903	1038
25000	130	263	397	532	670	810	951	1094
26000	137	276	417	560	705	852	1000	1151
27000	144	290	438	589	742	897	1054	1213
27700	150	302	456	612	771	932	1095	1261

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table 6a.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN (59° F. and 29.5 + in.)

Range yards	Decrease in Air Density - per cent							
	9	10	11	12	13	14	15	16
1000	1	1	1	1	1	2	2	2
2000	8	9	10	10	11	12	13	14
3000	20	23	25	27	29	31	34	36
4000	38	43	47	51	55	59	64	68
5000	61	68	75	82	88	95	102	109
6000	89	99	109	119	129	139	149	159
7000	122	135	149	163	177	190	204	217
8000	159	177	195	213	231	248	266	284
9000	201	224	246	269	291	313	336	359
10000	247	275	302	330	358	386	414	442
11000	297	331	364	398	432	466	500	534
12000	352	392	432	473	513	553	594	635
13000	411	458	505	555	600	648	696	745
14000	474	529	583	638	694	750	806	863
15000	540	603	666	729	793	857	922	988
16000	609	680	752	824	896	970	1044	1119
17000	681	761	841	922	1004	1087	1171	1255
18000	755	844	935	1023	1115	1207	1300	1394
19000	830	927	1025	1125	1226	1328	1430	1534
20000	904	1010	1117	1226	1336	1447	1559	1672
21000	976	1091	1207	1324	1443	1563	1684	1807
22000	1045	1168	1293	1419	1546	1675	1806	1937
23000	1111	1242	1375	1509	1645	1782	1922	2062
24000	1175	1314	1455	1597	1741	1887	2034	2183
25000	1239	1386	1534	1684	1836	1990	2146	2303
26000	1304	1459	1615	1775	1934	2097	2261	2427
27000	1375	1539	1704	1871	2041	2215	2387	2563
27700	1429	1599	1772	1947	2124	2303	2485	2669

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE. BASE DET. MK V

Part 2a. Table Gb.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN (59° F. and 29.5 + in.)

Range yards	Increase in Air Density - per cent							
	1	2	3	4	5	6	7	8
1000	0	0	0	0	0	-1	-1	-1
2000	-1	-2	-3	-3	-4	-5	-6	-7
3000	-2	-5	-7	-9	-11	-13	-16	-18
4000	-4	-9	-13	-17	-21	-25	-30	-34
5000	-7	-14	-21	-27	-34	-41	-48	-54
6000	-10	-20	-30	-40	-50	-60	-70	-79
7000	-14	-27	-41	-54	-68	-82	-95	-108
8000	-18	-35	-53	-70	-88	-106	-123	-141
9000	-22	-44	-66	-88	-110	-133	-155	-177
10000	-27	-54	-81	-108	-135	-162	-189	-216
11000	-33	-65	-97	-129	-162	-194	-226	-258
12000	-38	-76	-114	-152	-190	-228	-265	-302
13000	-44	-88	-132	-176	-219	-263	-306	-348
14000	-51	-101	-151	-201	-250	-299	-348	-396
15000	-58	-115	-171	-227	-282	-337	-392	-446
16000	-65	-129	-192	-254	-316	-377	-438	-498
17000	-72	-144	-214	-283	-351	-419	-486	-552
18000	-79	-158	-236	-312	-387	-462	-536	-609
19000	-87	-173	-258	-342	-424	-506	-587	-667
20000	-95	-188	-280	-371	-461	-550	-638	-725
21000	-102	-203	-302	-400	-497	-593	-687	-780
22000	-109	-217	-323	-428	-531	-633	-734	-833
23000	-116	-230	-343	-454	-564	-672	-778	-883
24000	-122	-243	-362	-479	-595	-709	-821	-931
25000	-128	-255	-380	-503	-625	-745	-863	-978
26000	-135	-268	-399	-528	-656	-782	-905	-1028
27000	-142	-282	-420	-556	-690	-821	-950	-1077
27700	-147	-292	-435	-576	-714	-850	-984	-1116

Part 2a. Table Gb.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN (59° F. and 29.5 + in.)

Range yards	Increase in Air Density - per cent							
	9	10	11	12	13	14	15	16
1000	-1	-1	-1	-1	-1	-2	-2	-2
2000	-8	-9	-10	-10	-11	-12	-13	-14
3000	-20	-23	-25	-27	-29	-31	-34	-36
4000	-38	-43	-47	-51	-55	-59	-64	-68
5000	-61	-68	-75	-82	-89	-95	-102	-109
6000	-89	-99	-109	-119	-129	-139	-149	-159
7000	-122	-135	-149	-162	-176	-190	-203	-217
8000	-159	-176	-194	-211	-229	-247	-264	-282
9000	-199	-221	-243	-265	-287	-309	-331	-353
10000	-243	-270	-296	-323	-350	-376	-403	-429
11000	-290	-322	-353	-385	-416	-447	-479	-510
12000	-339	-376	-412	-449	-485	-521	-558	-594
13000	-390	-432	-474	-516	-557	-598	-639	-680
14000	-443	-491	-538	-585	-631	-677	-723	-768
15000	-499	-552	-605	-657	-708	-758	-809	-859
16000	-557	-616	-674	-731	-787	-843	-899	-954
17000	-617	-682	-746	-809	-871	-933	-994	-1054
18000	-681	-752	-822	-891	-960	-1027	-1093	-1159
19000	-746	-824	-900	-975	-1049	-1123	-1196	-1267
20000	-810	-894	-977	-1058	-1138	-1218	-1297	-1374
21000	-872	-962	-1051	-1138	-1224	-1310	-1394	-1477
22000	-931	-1027	-1122	-1215	-1307	-1398	-1487	-1575
23000	-987	-1089	-1189	-1288	-1385	-1481	-1575	-1668
24000	-1040	-1147	-1253	-1357	-1459	-1560	-1659	-1756
25000	-1092	-1204	-1315	-1424	-1531	-1636	-1739	-1841
26000	-1145	-1262	-1378	-1492	-1604	-1713	-1821	-1927
27000	-1202	-1325	-1446	-1565	-1682	-1796	-1908	-2018
27700	-1245	-1372	-1497	-1619	-1739	-1857	-1972	-2085

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table H.

TEMPERATURE (ELASTICITY), EFFECTS IN YARDS OF RANGE (59° F.)

Range	Temperature of Air - degrees Fahrenheit											
yards	0	10	20	30	40	50	59	60	70	80	90	100
1000	-7	-6	-5	-3	-2	-1	0	0	+1	+2	+4	+5
2000	-9	-7	-6	-4	-3	-1	0	0	1	3	5	6
3000	-7	-5	-4	-3	-2	-1	0	0	1	2	3	4
4000	-1	0	0	0	0	0	0	0	0	0	0	0
5000	+8	+7	+6	+4	+3	+1	0	0	-1	-3	-4	-5
6000	18	15	12	9	6	3	0	0	-3	-6	-9	-12
7000	29	24	19	14	9	4	0	0	-5	-10	-15	-20
8000	41	34	27	20	13	6	0	-1	-8	-14	-21	-28
9000	53	44	35	26	17	8	0	-1	-10	-19	-28	-37
10000	65	54	43	32	21	10	0	-1	-12	-23	-34	-46
11000	78	64	51	38	25	12	0	-1	-14	-28	-41	-54
12000	90	74	59	44	29	14	0	-2	-17	-32	-47	-62
13000	101	84	67	50	32	15	0	-2	-19	-36	-53	-70
14000	112	93	74	55	36	17	0	-2	-21	-40	-59	-77
15000	122	101	80	60	39	18	0	-2	-23	-43	-64	-84
16000	130	108	86	64	42	20	0	-2	-24	-46	-68	-90
17000	136	113	90	67	44	21	0	-2	-25	-48	-71	-95
18000	140	117	93	69	45	22	0	-2	-26	-50	-74	-98
19000	142	118	94	70	46	22	0	-2	-26	-51	-75	-99
20000	139	115	92	69	45	21	0	-2	-26	-50	-74	-97
21000	130	108	86	64	42	20	0	-2	-24	-47	-69	-91
22000	114	95	75	56	37	18	0	-2	-21	-41	-60	-80
23000	90	75	59	44	29	14	0	-2	-17	-32	-47	-63
24000	57	48	38	28	18	9	0	-1	-11	-20	-30	-40
25000	15	13	11	8	5	3	0	0	-3	-5	-8	-11
26000	-36	-29	-23	-17	-11	-5	0	+1	+7	+13	+19	+26
27000	-96	-79	-63	-47	-31	-15	0	+2	+18	+34	+50	+66
27700	-143	-119	-94	-70	-46	-22	0	+2	+27	+51	+75	+99

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table I.

REAR WIND, EFFECT IN YARDS OF RANGE, DUE TO

Range	Rear Wind - miles per hour									
yards	5	10	15	20	25	30	35	40	45	50
1000	0	1	1	1	1	2	2	2	2	3
2000	1	2	2	3	3	4	5	5	6	7
3000	1	3	4	5	6	8	9	10	12	13
4000	2	4	6	8	10	13	15	17	19	21
5000	3	6	9	12	15	19	22	25	28	31
6000	4	9	13	18	22	26	31	35	39	44
7000	6	12	18	24	30	35	41	47	53	59
8000	8	15	23	31	39	46	54	61	69	77
9000	10	19	29	39	49	59	69	78	88	98
10000	12	24	36	48	60	73	85	97	109	121
11000	15	29	44	59	73	88	103	118	132	147
12000	18	35	53	71	88	106	124	142	159	177
13000	21	42	63	84	105	126	147	168	189	210
14000	25	50	74	99	124	148	173	197	222	247
15000	29	58	86	115	144	173	202	230	259	288
16000	33	67	100	133	166	200	233	266	300	333
17000	38	76	115	153	191	229	267	306	344	382
18000	44	87	131	174	218	261	305	349	392	436
19000	50	99	149	198	248	297	346	396	445	495
20000	56	112	168	224	280	336	392	448	504	560
21000	63	126	189	252	315	379	442	505	568	631
22000	71	141	212	282	353	424	495	566	636	707
23000	79	157	236	314	393	472	550	629	707	786
24000	87	174	260	347	434	521	607	694	781	868
25000	95	191	286	381	477	572	667	762	858	953
26000	104	209	313	417	521	625	730	834	938	1042
27000	114	227	341	454	567	681	795	909	1022	1136
27700	121	242	363	484	605	726	847	968	1089	1210

NOTE: The range effects due to a head wind are so nearly identical in numerical value to those for a rear wind that the above table with signs changed should be used for head wind effects.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table J.

CROSS WIND EFFECTS

Range	in mils					in degrees				
	Cross Wind - miles per hour									
yards	10	20	30	40	50	10	20	30	40	50
1000	0.1	0.3	0.4	0.5	0.6	0.01	0.01	0.02	0.03	0.04
2000	0.3	0.5	0.8	1.0	1.3	0.01	0.03	0.04	0.06	0.07
3000	0.4	0.8	1.2	1.6	2.0	0.02	0.05	0.07	0.09	0.11
4000	0.6	1.1	1.6	2.2	2.7	0.03	0.06	0.09	0.12	0.15
5000	0.7	1.4	2.1	2.8	3.5	0.04	0.08	0.12	0.16	0.20
6000	0.9	1.7	2.6	3.5	4.3	0.05	0.10	0.15	0.19	0.24
7000	1.0	2.1	3.1	4.1	5.1	0.06	0.12	0.17	0.23	0.29
8000	1.2	2.4	3.6	4.8	6.0	0.07	0.14	0.20	0.27	0.34
9000	1.4	2.8	4.1	5.5	6.9	0.08	0.16	0.23	0.31	0.39
10000	1.6	3.1	4.7	6.3	7.8	0.09	0.18	0.26	0.35	0.44
11000	1.8	3.5	5.3	7.0	8.8	0.10	0.20	0.30	0.40	0.50
12000	2.0	3.9	5.9	7.8	9.8	0.11	0.22	0.33	0.44	0.55
13000	2.2	4.3	6.5	8.7	10.9	0.12	0.24	0.37	0.49	0.61
14000	2.4	4.8	7.2	9.6	12.0	0.13	0.27	0.40	0.54	0.67
15000	2.6	5.2	7.9	10.5	13.1	0.15	0.29	0.44	0.59	0.74
16000	2.9	5.7	8.6	11.4	14.3	0.16	0.32	0.48	0.64	0.80
17000	3.1	6.2	9.3	12.4	15.5	0.17	0.35	0.52	0.70	0.87
18000	3.3	6.7	10.0	13.4	16.7	0.19	0.38	0.56	0.75	0.94
19000	3.6	7.2	10.8	14.4	18.0	0.20	0.40	0.61	0.81	1.01
20000	3.8	7.7	11.5	15.4	19.2	0.22	0.43	0.65	0.86	1.08
21000	4.1	8.2	12.3	16.3	20.4	0.23	0.46	0.69	0.92	1.15
22000	4.3	8.6	13.0	17.3	21.6	0.24	0.49	0.73	0.97	1.22
23000	4.6	9.1	13.7	18.2	22.8	0.26	0.51	0.77	1.03	1.28
24000	4.8	9.6	14.3	19.1	23.9	0.27	0.54	0.81	1.08	1.34
25000	5.0	10.0	15.0	20.0	25.0	0.28	0.56	0.84	1.13	1.41
26000	5.2	10.5	15.7	21.0	26.2	0.29	0.59	0.88	1.18	1.47
27000	5.5	11.0	16.5	22.0	27.5	0.31	0.62	0.93	1.23	1.54
27700	5.8	11.5	17.3	23.0	28.8	0.32	0.65	0.97	1.29	1.61

Part 2a. Table K.

*ROTATION OF THE EARTH, DEFLECTION EFFECTS IN MILS DUE TO

Latitude 0°

Range yards	Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12000	+0.1-	0.0	0.0	0.0	0.0	0.0	-0.1+
[illegible]	+0.1-	+0.1-	0.0	0.0	0.0	-0.1+	-0.1+
[illegible]	+0.1-	+0.1-	+0.1-	0.0	-0.1+	-0.1+	-0.1+
[illegible]	+0.2-	+0.2-	+0.1-	0.0	-0.1+	-0.2+	-0.2+
[illegible]	+0.3-	+0.2-	+0.1-	0.0	-0.1+	-0.2+	-0.3+
[illegible]	+0.4-	+0.3-	+0.2-	0.0	-0.2+	-0.3+	-0.4+
[illegible]	+0.5-	+0.5-	+0.3-	0.0	-0.3+	-0.5+	-0.5+
[illegible]	+0.8-	+0.7-	+0.4-	0.0	-0.4+	-0.7+	-0.8+
27700	+1.2-	+1.0-	+0.6-	0.0	-0.6+	-1.0+	-1.2+
	180 180	150 210	120 240	90 270	60 300	30 330	0 360

Azimuth of Target - degrees

Latitude 0°

Latitude 10° (North)

Range yards	Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180	Range yards
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2000
4000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	4000
6000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	6000
8000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.2+	-0.2+	8000
10000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	10000
12000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.3+	-0.3+	12000
14000	-0.2+	-0.2+	-0.2+	-0.3+	-0.3+	-0.3+	-0.3+	14000
16000	-0.2+	-0.2+	-0.3+	-0.3+	-0.4+	-0.4+	-0.4+	16000
18000	-0.2+	-0.2+	-0.3+	-0.4+	-0.5+	-0.5+	-0.6+	18000
20000	-0.2+	-0.2+	-0.3+	-0.4+	-0.6+	-0.7+	-0.7+	20000
22000	-0.1+	-0.2+	-0.3+	-0.5+	-0.7+	-0.9+	-0.9+	22000
24000	0.0	-0.1+	-0.3+	-0.6+	-0.9+	-1.1+	-1.1+	24000
26000	+0.2-	0.0	-0.3+	-0.7+	-1.1+	-1.4+	-1.5+	26000
27700	+0.4-	+0.2-	-0.2+	-0.8+	-1.4+	-1.8+	-2.0+	27700
	180 180	150 210	120 240	90 270	60 300	30 330	0 360	

Azimuth of Target - degrees

Latitude 10° (South)

Latitude 20° (North)

Range yards	Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180	Range yards
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	2000
4000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	4000
6000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	6000
8000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	8000
10000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.4+	-0.4+	10000
12000	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.5+	-0.5+	12000
14000	-0.5+	-0.5+	-0.5+	-0.6+	-0.6+	-0.6+	-0.6+	14000
16000	-0.5+	-0.6+	-0.6+	-0.7+	-0.7+	-0.7+	-0.7+	16000
18000	-0.6+	-0.7+	-0.7+	-0.8+	-0.9+	-0.9+	-0.9+	18000
20000	-0.6+	-0.6+	-0.7+	-0.9+	-1.0+	-1.1+	-1.1+	20000
22000	-0.7+	-0.7+	-0.8+	-1.0+	-1.2+	-1.3+	-1.4+	22000
24000	-0.7+	-0.7+	-0.9+	-1.2+	-1.4+	-1.6+	-1.7+	24000
26000	-0.6+	-0.7+	-1.0+	-1.4+	-1.7+	-2.0+	-2.1+	26000
27700	-0.5+	-0.6+	-1.0+	-1.6+	-2.2+	-2.6+	-2.7+	27700
	180 180	150 210	120 240	90 270	60 300	30 330	0 360	

Azimuth of Target - degrees

Latitude 20° (South)

Latitude 30° (North)

Range yards	Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180	Range yards
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	2000
4000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	4000
6000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	6000
8000	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	8000
10000	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	10000
12000	-0.6+	-0.6+	-0.6+	-0.6+	-0.7+	-0.7+	-0.7+	12000
14000	-0.7+	-0.7+	-0.7+	-0.8+	-0.8+	-0.8+	-0.8+	14000
16000	-0.8+	-0.8+	-0.8+	-0.9+	-1.0+	-1.0+	-1.0+	16000
18000	-0.9+	-0.9+	-1.0+	-1.1+	-1.2+	-1.2+	-1.2+	18000
20000	-1.0+	-1.1+	-1.1+	-1.3+	-1.4+	-1.4+	-1.5+	20000
22000	-1.1+	-1.2+	-1.3+	-1.5+	-1.6+	-1.7+	-1.8+	22000
24000	-1.2+	-1.3+	-1.5+	-1.7+	-1.9+	-2.1+	-2.2+	24000
26000	-1.3+	-1.4+	-1.7+	-2.0+	-2.3+	-2.6+	-2.7+	26000
27700	-1.2+	-1.4+	-1.8+	-2.3+	-2.9+	-3.3+	-3.4+	27700
	180 180	150 210	120 240	90 270	60 300	30 330	0 360	

Azimuth of Target - degrees

Latitude 30° (South)

*Negative sign means the effect is to the right. *Positive sign means the effect is to the left. *For argument at top of table use sign that is before the number. *For argument at bottom of table use sign that follows the number. *Azimuth measured clockwise from North.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Table K.

*ROTATION OF THE EARTH, DEFLECTION EFFECTS IN MILS DUE TO

Latitude 40° (North)

Range yards	Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180	Range yards
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	2000
4000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	4000
6000	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	6000
8000	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	8000
10000	-0.6+	-0.6+	-0.6+	-0.6+	-0.7+	-0.7+	-0.7+	10000
12000	-0.8+	-0.8+	-0.8+	-0.8+	-0.8+	-0.8+	-0.9+	12000
14000	-0.9+	-0.9+	-0.9+	-1.0+	-1.0+	-1.0+	-1.1+	14000
16000	-1.1+	-1.1+	-1.1+	-1.2+	-1.2+	-1.3+	-1.3+	16000
18000	-1.2+	-1.3+	-1.3+	-1.4+	-1.4+	-1.5+	-1.5+	18000
20000	-1.4+	-1.5+	-1.5+	-1.6+	-1.7+	-1.8+	-1.8+	20000
22000	-1.6+	-1.7+	-1.8+	-1.9+	-2.0+	-2.1+	-2.2+	22000
24000	-1.8+	-1.8+	-2.0+	-2.2+	-2.4+	-2.5+	-2.6+	24000
26000	-2.0+	-2.0+	-2.2+	-2.6+	-2.9+	-3.1+	-3.2+	26000
27700	-2.1+	-2.2+	-2.5+	-3.0+	-3.5+	-3.8+	-3.9+	27700
	180 180	150 210	120 240	90 270	60 300	30 330	0 360	

Azimuth of Target - degrees

Latitude 40° (South)

Latitude 50° (North)

Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180	Range yards
-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	2000
-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	4000
-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	6000
-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	8000
-0.8+	-0.8+	-0.8+	-0.8+	-0.8+	-0.8+	-0.8+	10000
-0.9+	-0.9+	-0.9+	-1.0+	-1.0+	-1.0+	-1.0+	12000
-1.1+	-1.1+	-1.1+	-1.2+	-1.2+	-1.2+	-1.2+	14000
-1.3+	-1.3+	-1.4+	-1.4+	-1.5+	-1.5+	-1.5+	16000
-1.5+	-1.6+	-1.6+	-1.7+	-1.7+	-1.8+	-1.8+	18000
-1.8+	-1.9+	-1.9+	-2.0+	-2.1+	-2.1+	-2.1+	20000
-2.0+	-2.1+	-2.2+	-2.3+	-2.4+	-2.5+	-2.5+	22000
-2.3+	-2.4+	-2.6+	-2.8+	-2.9+	-3.0+	-3.0+	24000
-2.6+	-2.8+	-3.0+	-3.3+	-3.5+	-3.6+	-3.6+	26000
-2.8+	-2.9+	-3.2+	-3.6+	-4.0+	-4.3+	-4.4+	27700
180 180	150 210	120 240	90 270	60 300	30 330	0 360	

Azimuth of Target - degrees

Latitude 50° (South)

Latitude 60° (North)

Range yards	Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180	Range yards
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	2000
4000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	4000
6000	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	6000
8000	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	8000
10000	-0.9+	-0.9+	-0.9+	-0.9+	-0.9+	-0.9+	-0.9+	10000
12000	-1.1+	-1.1+	-1.1+	-1.1+	-1.1+	-1.1+	-1.1+	12000
14000	-1.3+	-1.3+	-1.3+	-1.3+	-1.4+	-1.4+	-1.4+	14000
16000	-1.5+	-1.5+	-1.5+	-1.6+	-1.6+	-1.6+	-1.6+	16000
18000	-1.8+	-1.8+	-1.8+	-1.9+	-1.9+	-1.9+	-1.9+	18000
20000	-2.1+	-2.1+	-2.1+	-2.2+	-2.2+	-2.3+	-2.3+	20000
22000	-2.4+	-2.4+	-2.5+	-2.6+	-2.6+	-2.7+	-2.7+	22000
24000	-2.7+	-2.8+	-2.9+	-3.0+	-3.1+	-3.2+	-3.2+	24000
26000	-3.1+	-3.1+	-3.3+	-3.5+	-3.7+	-3.8+	-3.8+	26000
27700	-3.4+	-3.5+	-3.7+	-4.0+	-4.3+	-4.6+	-4.6+	27700
	180 180	150 210	120 240	90 270	60 300	30 330	0 360	

Azimuth of Target - degrees

Latitude 60° (South)

Latitude 70° (North)

Azimuth of Target - degrees 0 360	30 330	60 300	90 270	120 240	150 210	180 180	Range yards
-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	2000
-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	4000
-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	6000
-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	8000
-0.9+	-0.9+	-0.9+	-0.9+	-1.0+	-1.0+	-1.0+	10000
-1.2+	-1.2+	-1.2+	-1.2+	-1.2+	-1.2+	-1.2+	12000
-1.4+	-1.4+	-1.4+	-1.4+	-1.5+	-1.5+	-1.5+	14000
-1.7+	-1.7+	-1.7+	-1.7+	-1.7+	-1.8+	-1.8+	16000
-2.0+	-2.0+	-2.0+	-2.0+	-2.0+	-2.1+	-2.1+	18000
-2.3+	-2.3+	-2.3+	-2.4+	-2.4+	-2.5+	-2.5+	20000
-2.6+	-2.7+	-2.7+	-2.8+	-2.8+	-2.9+	-2.9+	22000
-3.0+	-3.1+	-3.1+	-3.2+	-3.3+	-3.4+	-3.4+	24000
-3.5+	-3.5+	-3.6+	-3.7+	-3.9+	-4.0+	-4.0+	26000
-4.0+	-4.0+	-4.2+	-4.4+	-4.6+	-4.7+	-4.8+	27700
180 180	150 210	120 240	90 270	60 300	30 330	0 360	

Azimuth of Target - degrees

Latitude 70° (South)

*Negative sign means the effect is to the right. *Positive sign means the effect is to the left. *For argument at top of table use sign that is before the number. *For argument at bottom of table use sign that follows the number. *Azimuth measured clockwise from North.

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a. Range Elevation Relation for Disappearing Carriage Models 1896,1897 and 1901.

Range	Elevation	
yards	mils	o
0	-1.0	0 -03
100	-0.2	0 -01
200	+0.4	0 +02
300	1.2	0 04
[illegible]	2.0	0 07
500	2.8	0 09
600	3.4	0 12
700	4.2	0 14
800	5.0	0 17
900	5.8	0 20
1000	6.6	0 22
1100	7.4	0 25
1200	8.2	0 27
1300	8.8	0 30
1400	9.6	0 33
1500	10.6	0 35
1600	11.4	0 38
1700	12.2	0 41
1800	13.0	0 44
1900	13.8	0 46
2000	14.6	0 49
[illegible]	15.4	0 52
[illegible]	16.2	0 55
[illegible]	17.0	0 58
2400	17.8	1 00
2500	18.8	1 03
2600	19.6	1 06
2700	20.4	1 09
2800	21.4	1 12
2900	22.2	1 15
3000	23.2	1 18

Range	Elevation	
yards	mils	o
3000	23.2	1 18
3100	24.0	1 21
3200	24.8	1 24
3300	25.8	1 27
3400	26.6	1 30
3500	27.6	1 33
3600	28.4	1 36
3700	29.4	1 39
3800	30.2	1 42
3900	31.2	1 45
4000	32.2	1 48
4100	33.0	1 52
4200	34.0	1 55
4300	35.0	1 58
4400	36.0	2 01
4500	37.0	2 04
4600	37.8	2 08
4700	38.8	2 11
4800	39.8	2 14
4900	40.8	2 18
5000	41.8	2 21
5100	42.8	2 24
5200	43.8	2 28
5300	44.8	2 31
5400	45.8	2 35
5500	46.8	2 38
5600	48.0	2 42
5700	49.0	2 45
5800	50.0	2 49
5900	51.0	2 52
6000	52.2	2 56

Range	Elevation	
yards	mils	o
6000	52.2	2 56
6100	53.2	3 00
6200	54.2	3 03
6300	55.4	3 07
6400	56.4	3 10
6500	57.6	3 14
6600	58.6	3 18
6700	59.8	3 22
6800	60.8	3 26
6900	62.0	3 29
7000	63.2	3 33
7100	64.4	3 37
7200	65.4	3 41
7300	66.6	3 45
7400	67.8	3 49
7500	69.0	3 53
7600	70.2	3 57
7700	71.4	4 01
7800	72.6	4 05
7900	73.8	4 09
8000	75.0	4 13
8100	76.2	4 17
8200	77.6	4 22
8300	78.8	4 26
8400	80.0	4 30
8500	81.2	4 34
8600	82.6	4 39
8700	83.8	4 43
8800	85.2	4 47
8900	86.4	4 52
9000	87.6	4 56

700 LB. C.S. SHELL MK VI M.V.= 2600 F/S FUZE, BASE DET MK V

Part 2a.

Range	Elevation	
yards	mils	o
9000	87.6	4 56
9100	89.0	5 00
9200	90.4	5 05
9300	91.8	5 10
9400	93.0	5 14
9500	94.4	5 19
9600	95.8	5 23
9700	97.2	5 28
9800	98.6	5 33
9900	100.0	5 37
10000	101.4	5 42
10100	102.8	5 47
10200	104.2	5 52
10300	105.6	5 57
10400	107.2	6 02
10500	108.6	6 07
10600	110.2	6 12
10700	111.6	6 17
10800	113.0	6 22
10900	114.6	6 27
11000	116.2	6 32
11100	117.6	6 37
11200	119.2	6 42
11300	120.8	6 48
11400	122.4	6 53
11500	124.0	6 58
11600	125.6	7 04
11700	127.2	7 09
11800	128.8	7 14
11900	130.4	7 20
12000	132.0	7 26

Range	Elevation	
yards	mils	o
12000	132.0	7 26
12100	133.6	7 31
12200	135.4	7 37
12300	137.0	7 42
12400	138.6	7 48
12500	140.4	7 54
12600	142.2	8 00
12700	143.8	8 05
12800	145.6	8 11
12900	147.4	8 17
13000	149.0	8 23
13100	150.8	8 29
13200	152.6	8 35
13300	154.4	8 42
13400	156.2	8 48
13500	158.0	8 54
13600	159.8	9 00
13700	161.8	9 06
13800	163.8	9 13
13900	165.8	9 19
14000	167.6	9 26
14100	169.6	9 32
14200	171.6	9 39
14300	173.6	9 46
14400	175.6	9 52
14500	177.6	9 59
14600	179.6	10 06
14700	181.6	10 13
14800	183.8	10 20
14900	185.8	10 27
15000	187.8	10 34

Range	Elevation	
yards	mils	o
15000	187.8	10 34
15100	190.0	10 41
15200	192.2	10 48
15300	194.4	10 56
15400	196.4	11 03
15500	198.6	11 10
15600	200.8	11 18
15700	203.2	11 26
15800	205.4	11 33
15900	207.6	11 41
16000	209.8	11 48
16100	212.2	11 56
16200	214.6	12 04
16300	217.0	12 12
16400	219.2	12 20
16500	221.6	12 28
16600	224.2	12 36
16700	226.6	12 45
16800	229.0	12 53
16900	231.4	13 01
17000	233.8	13 10
17100	236.4	13 18
17200	239.0	13 27
17300	241.6	13 36
17400	244.2	13 44
17500	246.6	13 53
17600	249.2	14 02
17700	252.0	14 11
17800	254.8	14 20
17900	257.6	14 29
18000	260.2	14 38

700 LB. C.S. SHELL MK VI M.V. = 2600 F/S FUZE, BASE DET. MK V

Part 2a.

Range	Elevation	
yards	mils	o
18000	260.2	14 58
18100	263.0	14 48
18200	265.8	14 57
18300	268.6	15 07
18400	271.4	15 16
18500	274.4	15 26
18600	277.2	15 36
18700	280.2	15 45
18800	283.0	15 55
18900	286.0	16 05
19000	289.0	16 15
19100	292.0	16 25
19200	295.0	16 36
19300	298.0	16 46
19400	301.2	16 56
19500	304.2	17 07
19600	307.4	17 17
19700	310.6	17 28
19800	313.6	17 39
19900	316.8	17 50
20000	320.2	18 00
20100	323.4	18 11
20200	326.6	18 22
20300	330.0	18 34
20400	333.2	18 45
20500	336.6	18 56
20600	340.0	19 07
20700	343.4	19 19
20800	346.8	19 30
20900	350.2	19 42
21000	353.6	19 54
21100	357.0	20 05

PART 2b

12 INCH S. C. GUN MODELS 1895 and 1895 MI

FIRING

700 LB. C. S. SHELL MK X

FUZE, POINT DETONATING MK III

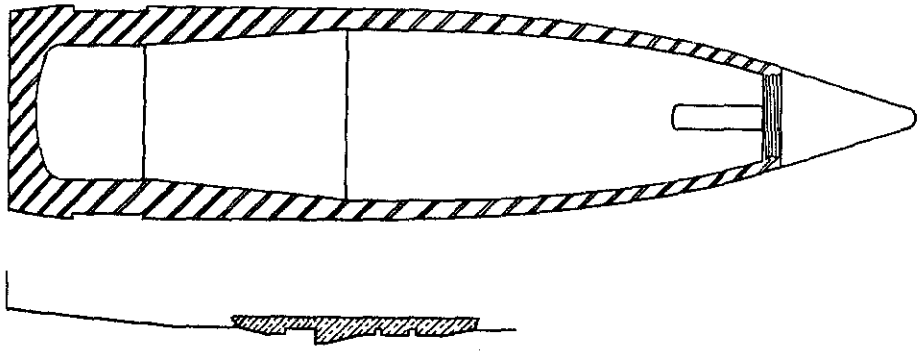
MUZZLE VELOCITY = 2600 f/s (792.48 m/s)

JUMP = +0.2 MILS

TABLES A - K INCLUSIVE

NOTE: Standard Air Temperature for Density and Elasticity is 59° F.
Standard Temperature of Powder is 70° F.

DRAWING OF PROJECTILE USED IN RANGE FIRING



Drawing of Band and Band Seat Class 75 - Div. 10 - Drawing 29

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range (1)	Elevation (2)	(3)	Change in Elev. for 100 yds. change in Range (4)	(5)	Change in Range for 1 mil change in Elev. (6)	1 min (7)	Maximum Ordinate (8)	Terminal Velocity (9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
0	-0.2	0 -00	0.7	2.4	138.9	41.2	0	2600
100	+0.6	0 02	0.7	2.4	138.2	40.9	0	
200	1.4	0 04	0.7	2.5	137.5	40.7	0	
300	2.0	0 07	0.7	2.5	136.7	40.5	0	
400	2.8	0 09	0.7	2.5	136.0	40.3	0	
500	3.6	0 12	0.7	2.5	135.3	40.1	1	2552
600	4.2	0 14	0.7	2.5	134.6	39.9	1	
700	5.0	0 17	0.7	2.5	133.9	39.6	2	
800	5.8	0 20	0.8	2.5	133.1	39.4	3	
900	6.6	0 22	0.8	2.6	132.4	39.2	4	
1000	7.4	0 25	0.8	2.6	131.7	39.0	5	2505
1100	8.0	0 27	0.8	2.6	131.0	38.8	6	
1200	8.8	0 30	0.8	2.6	130.3	38.6	7	
1300	9.6	0 32	0.8	2.6	129.6	38.4	9	
1400	10.4	0 35	0.8	2.6	128.9	38.2	10	
1500	11.2	0 38	0.8	2.6	128.2	38.0	12	2458
1600	12.0	0 40	0.8	2.6	127.5	37.8	14	
1700	12.8	0 43	0.8	2.7	126.8	37.6	16	
1800	13.6	0 46	0.8	2.7	126.1	37.4	18	
1900	14.4	0 48	0.8	2.7	125.4	37.2	20	
2000	15.2	0 51	0.8	2.7	124.7	36.9	23	2411
2100	16.0	0 54	0.8	2.7	124.0	36.7	25	
2200	16.8	0 56	0.8	2.7	123.3	36.5	28	
2300	17.6	0 59	0.8	2.8	122.7	36.3	31	
2400	18.4	1 02	0.8	2.8	122.0	36.1	34	
2500	19.2	1 05	0.8	2.8	121.3	35.9	37	2364
2600	20.0	1 08	0.8	2.8	120.6	35.7	40	
2700	20.8	1 10	0.8	2.8	119.9	35.5	43	
2800	21.6	1 13	0.8	2.8	119.3	35.3	47	
2900	22.5	1 16	0.8	2.8	118.6	35.1	50	
3000	23.4	1 19	0.8	2.9	117.9	34.9	54	2318

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall (10)	(11)	Slope of Fall (12)	Defl. due to Drift (13)	(14)	Ballistic Coefficient (15)	*Probable Error in Range (16)	Defl. (17)	Time of Flight (18)	Range (19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yds.
0	0 00		0	0.05	9.13	14	0	0.0	0
1	0 02	1375						0.1	100
1	0 05	674						0.2	200
2	0 08	446						0.4	300
3	0 10	334							
4	0 13	264	0	0.00	9.13	14	0	0.5	400
5	0 16	219						0.6	500
								0.7	600
5	0 18	187							
6	0 21	163						0.8	700
7	0 24	144						0.9	800
								1.0	900
8	0 27	129	0	0.00	9.12	15	0	1.2	1000
9	0 29	117							
9	0 32	107						1.3	1100
10	0 35	98						1.4	1200
								1.5	1300
11	0 38	91							
12	0 41	84	0	0.00	9.12	16	0	1.6	1400
13	0 44	79						1.8	1500
								1.9	1600
14	0 47	74							
15	0 50	69						2.0	1700
16	0 53	65						2.1	1800
								2.3	1900
17	0 56	62	0	0.00	9.12	17	0	2.4	2000
17	0 59	58							
18	1 02	56						2.5	2100
19	1 05	53						2.6	2200
								2.8	2300
20	1 08	50							
21	1 11	48	0	0.00	9.11	18	0	2.9	2400
22	1 14	46						3.0	2500
								3.2	2600
23	1 18	44							
24	1 21	42						3.3	2700
25	1 24	41						3.4	2800
								3.5	2900
26	1 28	39	0	0.00	9.11	19	0	3.7	3000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.	1 min	Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
3000	23.4	1 19	0.8	2.9	117.9	34.9	54	2318
3100	24.2	1 22	0.9	2.9	117.2	34.7	58	
3200	25.0	1 25	0.9	2.9	116.6	34.6	62	
3300	26.0	1 28	0.9	2.9	115.9	34.4	66	
3400	26.8	1 30	0.9	2.9	115.3	34.2	70	
3500	27.8	1 33	0.9	2.9	114.6	34.0	75	2272
3600	28.6	1 36	0.9	3.0	113.9	33.8	80	
3700	29.4	1 39	0.9	3.0	113.3	33.6	85	
3800	30.2	1 42	0.9	3.0	112.6	33.4	90	
3900	31.2	1 45	0.9	3.0	112.0	33.2	95	
4000	32.2	1 48	0.9	3.0	111.3	33.0	100	2227
4100	33.0	1 51	0.9	3.0	110.7	32.8	105	
4200	33.8	1 54	0.9	3.1	110.0	32.6	111	
4300	34.8	1 57	0.9	3.1	109.4	32.4	117	
4400	35.8	2 00	0.9	3.1	108.7	32.2	123	
4500	36.8	2 04	0.9	3.1	108.1	32.0	129	2183
4600	37.6	2 07	0.9	3.1	107.5	31.9	135	
4700	38.4	2 10	0.9	3.2	106.7	31.7	142	
4800	39.4	2 13	0.9	3.2	106.2	31.5	149	
4900	40.4	2 16	0.9	3.2	105.6	31.3	156	
5000	41.4	2 19	1.0	3.2	105.0	31.1	163	2139
5100	42.2	2 23	1.0	3.2	104.4	30.9	170	
5200	43.2	2 26	1.0	3.2	103.8	30.8	178	
5300	44.2	2 29	1.0	3.3	103.2	30.6	186	
5400	45.2	2 32	1.0	3.3	102.6	30.4	194	
5500	46.2	2 36	1.0	3.3	102.0	30.2	202	2096
5600	47.2	2 39	1.0	3.3	101.4	30.0	210	
5700	48.2	2 42	1.0	3.4	100.8	29.8	219	
5800	49.2	2 46	1.0	3.4	100.2	29.7	228	
5900	50.2	2 49	1.0	3.4	99.6	29.5	236	
6000	51.2	2 52	1.0	3.4	99.0	29.3	245	2054

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in Range	*Probable Error in Defl.	Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
26	1 28	39	0	0.00	9.11	19	0	3.7	3000
27	1 31	38						3.8	3100
28	1 34	36						3.9	3200
29	1 38	35						4.0	3300
30	1 41	34						4.2	3400
31	1 45	33	-1	-0.05	9.10	19	1	4.3	3500
32	1 48	32						4.4	3600
33	1 52	31						4.6	3700
34	1 56	30						4.7	3800
35	1 59	29						4.8	3900
36	2 03	28	-1	-0.05	9.10	20	1	5.0	4000
37	2 06	27						5.1	4100
39	2 10	26						5.2	4200
40	2 14	26						5.4	4300
41	2 18	25						5.5	4400
42	2 22	24	-1	-0.05	9.09	21	1	5.7	4500
43	2 26	24						5.8	4600
44	2 30	23						5.9	4700
45	2 34	22						6.1	4800
47	2 38	22						6.2	4900
48	2 42	21	-1	-0.05	9.09	22	1	6.4	5000
49	2 46	21						6.5	5100
50	2 50	20						6.6	5200
52	2 54	20						6.8	5300
53	2 59	19						6.9	5400
54	3 03	19	-1	-0.05	9.08	23	1	7.1	5500
55	3 07	18						7.2	5600
57	3 12	18						7.4	5700
58	3 16	18						7.5	5800
59	3 21	17						7.6	5900
61	3 25	17	-2	-0.10	9.08	24	1	7.8	6000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range	Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
9000	84.4	4 44	1.2	4.1	82.7	24.5	631	1812
9100	85.6	4 49	1.2	4.1	82.2	24.4	648	
9200	86.8	4 53	1.2	4.1	81.7	24.2	665	
9300	88.0	4 57	1.2	4.2	81.3	24.1	683	
9400	89.2	5 01	1.2	4.2	80.8	23.9	701	
9500	90.4	5 05	1.2	4.2	80.3	23.8	719	1774
9600	91.6	5 09	1.3	4.2	79.8	23.6	738	
9700	93.0	5 14	1.3	4.2	79.3	23.5	757	
9800	94.2	5 18	1.3	4.3	78.9	23.4	776	
9900	95.4	5 22	1.3	4.3	78.4	23.2	796	
10000	96.8	5 26	1.3	4.3	77.9	23.1	816	1737
10100	98.0	5 31	1.3	4.4	77.4	22.9	836	
10200	99.4	5 35	1.3	4.4	77.0	22.8	857	
10300	100.6	5 40	1.3	4.4	76.5	22.7	878	
10400	102.0	5 44	1.3	4.4	76.1	22.5	899	
10500	103.4	5 48	1.3	4.5	75.6	22.4	921	1701
10600	104.6	5 53	1.3	4.5	75.1	22.3	943	
10700	105.8	5 57	1.3	4.5	74.7	22.1	965	
10800	107.2	6 02	1.3	4.5	74.2	22.0	988	
10900	108.6	6 06	1.4	4.6	73.8	21.8	1011	
11000	110.0	6 11	1.4	4.6	73.3	21.7	1035	1665
11100	111.4	6 16	1.4	4.6	72.8	21.6	1059	
11200	112.8	6 20	1.4	4.7	72.4	21.5	1083	
11300	114.2	6 25	1.4	4.7	71.9	21.3	1108	
11400	115.4	6 30	1.4	4.7	71.5	21.2	1133	
11500	116.8	6 34	1.4	4.8	71.0	21.1	1158	1630
11600	118.4	6 39	1.4	4.8	70.6	20.9	1184	
11700	119.8	6 44	1.4	4.8	70.1	20.8	1210	
11800	121.2	6 49	1.4	4.8	69.7	20.7	1237	
11900	122.6	6 54	1.4	4.9	69.2	20.5	1264	
12000	124.0	6 59	1.5	4.9	68.8	20.4	1292	1597

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
109	6 06	9.4	-3	-0.15	9.04	30	1	12.5	9000
110	6 12	9.2						12.7	9100
112	6 18	9.0						12.9	9200
114	6 24	8.9						13.0	9300
116	6 31	8.8						13.2	9400
118	6 37	8.6	-3	-0.15	9.03	31	2	13.4	9500
120	6 44	8.5						13.5	9600
122	6 50	8.3						13.7	9700
124	6 57	8.2						13.9	9800
126	7 04	8.0						14.1	9900
128	7 11	7.9	-3	-0.20	9.03	33	2	14.2	10000
130	7 18	7.8						14.4	10100
132	7 25	7.7						14.6	10200
134	7 32	7.6						14.8	10300
136	7 39	7.4						14.9	10400
138	7 46	7.3	-4	-0.20	9.02	34	2	15.1	10500
140	7 53	7.2						15.3	10600
142	8 00	7.1						15.5	10700
145	8 08	7.0						15.7	10800
147	8 15	6.9						15.8	10900
149	8 23	6.8	-4	-0.20	9.01	35	2	16.0	11000
151	8 30	6.7						16.2	11100
153	8 38	6.6						16.4	11200
156	8 46	6.5						16.6	11300
158	8 54	6.4						16.8	11400
160	9 02	6.3	-4	-0.25	9.00	36	2	17.0	11500
163	9 10	6.2						17.2	11600
165	9 18	6.1						17.3	11700
168	9 26	6.0						17.5	11800
170	9 34	5.9						17.7	11900
172	9 42	5.8	-4	-0.25	8.99	37	2	17.9	12000

*This is the Proving Ground Probable Error.

"12-N-1"

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.	1 min change in Elev.	Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
12000	124.0	6 59	1.5	4.9	68.8	20.4	1292	1597
12100	125.4	7 04	1.5	4.9	68.4	20.3	1320	
12200	127.0	7 08	1.5	5.0	67.9	20.2	1348	
12300	128.4	7 13	1.5	5.0	67.5	20.0	1377	
12400	129.8	7 18	1.5	5.0	67.0	19.9	1406	
12500	131.4	7 24	1.5	5.1	66.6	19.8	1436	1565
12600	133.0	7 29	1.5	5.1	66.2	19.6	1466	
12700	134.4	7 34	1.5	5.1	65.8	19.5	1497	
12800	136.0	7 39	1.5	5.2	65.3	19.4	1528	
12900	137.4	7 44	1.5	5.2	64.9	19.2	1560	
13000	139.0	7 49	1.5	5.2	64.5	19.1	1592	1535
13100	140.6	7 54	1.6	5.3	64.1	19.0	1624	
13200	142.2	8 00	1.6	5.3	63.7	18.9	1657	
13300	143.6	8 05	1.6	5.3	63.2	18.7	1691	
13400	145.2	8 10	1.6	5.4	62.8	18.6	1725	
13500	146.8	8 16	1.6	5.4	62.4	18.5	1760	1506
13600	148.4	8 21	1.6	5.4	62.0	18.4	1795	
13700	150.2	8 27	1.6	5.5	61.6	18.2	1831	
13800	151.8	8 32	1.6	5.5	61.1	18.1	1867	
13900	153.4	8 38	1.6	5.6	60.7	18.0	1904	
14000	155.0	8 43	1.7	5.6	60.3	17.9	1941	1477
14100	156.8	8 49	1.7	5.6	59.9	17.7	1979	
14200	158.4	8 55	1.7	5.7	59.5	17.6	2017	
14300	160.0	9 00	1.7	5.7	59.0	17.5	2056	
14400	161.8	9 06	1.7	5.8	58.6	17.4	2096	
14500	163.4	9 12	1.7	5.8	58.2	17.2	2136	1450
14600	165.2	9 18	1.7	5.8	57.8	17.1	2177	
14700	167.0	9 24	1.7	5.9	57.4	17.0	2218	
14800	168.8	9 29	1.8	5.9	57.0	16.9	2260	
14900	170.4	9 35	1.8	6.0	56.6	16.8	2302	
15000	172.2	9 41	1.8	6.0	56.2	16.6	2345	1424

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall			Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in Range	*Probable Error in Defl.	Time of Flight	Range
(10)	(11)		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
mils	o	'	1 on -	mils	o		yds.	yds.	sec.	yards
172	9	42	5.8	-4	-0.25	8.99	37	2	17.9	12000
175	9	51	5.8						18.1	12100
177	9	59	5.7						18.3	12200
180	10	08	5.6						18.5	12300
183	10	16	5.5						18.7	12400
185	10	25	5.4	-5	-0.25	8.98	38	2	18.9	12500
188	10	34	5.4						19.1	12600
190	10	43	5.3						19.3	12700
193	10	52	5.2						19.5	12800
196	11	01	5.1						19.7	12900
198	11	10	5.1	-5	-0.30	8.97	40	2	19.9	13000
201	11	19	5.0						20.1	13100
204	11	28	4.9						20.3	13200
207	11	38	4.9						20.5	13300
210	11	47	4.8						20.7	13400
212	11	57	4.7	-5	-0.30	8.96	41	2	20.9	13500
215	12	06	4.7						21.1	13600
218	12	16	4.6						21.3	13700
221	12	26	4.5						21.5	13800
224	12	36	4.5						21.7	13900
227	12	46	4.4	-6	-0.35	8.94	43	2	21.9	14000
230	12	56	4.4						22.2	14100
233	13	06	4.3						22.4	14200
236	13	16	4.2						22.6	14300
239	13	27	4.2						22.8	14400
242	13	37	4.1	-6	-0.35	8.93	44	2	23.0	14500
245	13	48	4.1						23.2	14600
248	13	58	4.0						23.4	14700
252	14	09	4.0						23.7	14800
255	14	20	3.9						23.9	14900
258	14	31	3.9	-6	-0.35	8.91	45	3	24.1	15000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil / 1 min change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
15000	172.2	9 41	1.8	6.0	56.2	16.6	2345	1424
15100	174.0	9 47	1.8	6.0	55.8	16.5	2389	
15200	175.8	9 53	1.8	6.1	55.4	16.4	2433	
15300	177.6	10 00	1.8	6.1	55.0	16.3	2478	
15400	179.4	10 06	1.8	6.2	54.6	16.2	2524	
15500	181.4	10 12	1.8	6.2	54.2	16.0	2570	1399
15600	183.2	10 18	1.9	6.3	53.8	15.9	2617	
15700	185.0	10 24	1.9	6.3	53.4	15.8	2665	
15800	187.0	10 31	1.9	6.4	53.1	15.7	2713	
15900	188.8	10 37	1.9	6.4	52.7	15.6	2762	
16000	190.8	10 44	1.9	6.5	52.3	15.5	2812	1375
16100	192.6	10 50	1.9	6.5	51.9	15.4	2862	
16200	194.6	10 57	1.9	6.6	51.5	15.3	2913	
16300	196.6	11 03	2.0	6.6	51.2	15.2	2965	
16400	198.6	11 10	2.0	6.6	50.8	15.0	3018	
16500	200.6	11 16	2.0	6.7	50.4	14.9	3071	1352
16600	202.4	11 23	2.0	6.8	50.0	14.8	3125	
16700	204.4	11 30	2.0	6.8	49.7	14.7	3180	
16800	206.4	11 37	2.0	6.8	49.3	14.6	3236	
16900	208.4	11 44	2.0	6.9	49.0	14.5	3292	
17000	210.6	11 50	2.1	6.9	48.6	14.4	3349	1331
17100	212.6	11 57	2.1	7.0	48.3	14.3	3407	
17200	214.6	12 04	2.1	7.0	47.9	14.2	3466	
17300	216.8	12 12	2.1	7.1	47.6	14.1	3525	
17400	218.8	12 19	2.1	7.1	47.2	14.0	3585	
17500	221.0	12 26	2.1	7.2	46.9	13.9	3646	1311
17600	223.2	12 33	2.1	7.2	46.6	13.8	3708	
17700	225.2	12 40	2.2	7.3	46.2	13.7	3771	
17800	227.4	12 48	2.2	7.4	45.9	13.6	3834	
17900	229.6	12 55	2.2	7.4	45.5	13.5	3898	
18000	231.8	13 02	2.2	7.4	45.2	13.4	3963	1293

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
258	14 31	3.9	-6	-0.35	8.91	45	3	24.1	15000
261	14 42	3.8						24.3	15100
264	14 53	3.8						24.6	15200
268	15 04	3.7						24.8	15300
271	15 15	3.7						25.0	15400
275	15 26	3.6	-7	-0.40	8.90	46	3	25.2	15500
278	15 38	3.6						25.4	15600
281	15 50	3.5						25.7	15700
285	16 01	3.5						25.9	15800
288	16 13	3.4						26.1	15900
292	16 25	3.4	-7	-0.40	8.88	48	3	26.4	16000
295	16 36	3.4						26.6	16100
299	16 48	3.3						26.8	16200
302	17 01	3.3						27.1	16300
306	17 13	3.2						27.3	16400
310	17 25	3.2	-8	-0.45	8.86	49	3	27.6	16500
313	17 37	3.1						27.8	16600
317	17 50	3.1						28.0	16700
321	18 02	3.1						28.3	16800
324	18 15	3.0						28.5	16900
328	18 28	3.0	-8	-0.45	8.84	51	3	28.8	17000
332	18 40	2.96						29.0	17100
336	18 53	2.92						29.2	17200
340	19 06	2.89						29.5	17300
343	19 19	2.85						29.7	17400
347	19 32	2.82	-8	-0.50	8.82	52	3	30.0	17500
351	19 46	2.78						30.2	17600
355	19 59	2.75						30.5	17700
359	20 12	2.72						30.7	17800
363	20 26	2.68						31.0	17900
367	20 39	2.65	-9	-0.50	8.80	54	3	31.2	18000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
18000	231.8	13 02	2.2	7.4	45.2	13.4	3963	1295
18100	234.0	13 10	2.2	7.5	44.9	13.3	4029	
18200	236.2	13 17	2.2	7.6	44.6	13.2	4096	
18300	238.4	13 25	2.3	7.6	44.2	13.1	4164	
18400	240.8	13 32	2.3	7.7	43.9	13.0	4232	
18500	243.0	13 40	2.3	7.7	43.6	13.0	4302	1277
18600	245.2	13 48	2.3	7.8	43.3	12.9	4373	
18700	247.6	13 56	2.3	7.8	43.0	12.8	4445	
18800	250.0	14 04	2.3	7.9	42.7	12.7	4517	
18900	252.2	14 11	2.4	7.9	42.4	12.6	4590	
19000	254.6	14 19	2.4	8.0	42.1	12.5	4664	1262
19100	257.0	14 27	2.4	8.1	41.8	12.4	4739	
19200	259.4	14 36	2.4	8.1	41.5	12.3	4815	
19300	261.8	14 44	2.4	8.2	41.2	12.2	4892	
19400	264.2	14 52	2.4	8.2	40.9	12.2	4970	
19500	266.6	15 00	2.5	8.3	40.6	12.1	5050	1249
19600	269.2	15 08	2.5	8.4	40.3	12.0	5130	
19700	271.6	15 17	2.5	8.4	40.0	11.9	5210	
19800	274.2	15 25	2.5	8.5	39.8	11.8	5295	
19900	276.6	15 34	2.5	8.5	39.5	11.7	5375	
20000	279.2	15 42	2.5	8.6	39.2	11.6	5460	1237
20100	281.8	15 51	2.6	8.7	38.9	11.6	5545	
20200	284.4	16 00	2.6	8.7	38.6	11.5	5635	
20300	287.0	16 08	2.6	8.8	38.4	11.4	5720	
20400	289.6	16 17	2.6	8.9	38.1	11.3	5810	
20500	292.2	16 26	2.6	8.9	37.8	11.2	5900	1227
20600	294.8	16 35	2.7	9.0	37.5	11.1	5990	
20700	297.4	16 44	2.7	9.0	37.3	11.1	6085	
20800	300.2	16 53	2.7	9.1	37.0	11.0	6175	
20900	302.8	17 02	2.7	9.2	36.8	10.9	6270	
21000	305.6	17 11	2.7	9.2	36.5	10.8	6370	1218

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall			Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)		(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o	'	1 on -	mils	o		yds.	yds.	sec.	yards
367	20	39	2.65	-9	-0.50	8.80	54	3	31.2	18000
371	20	53	2.62						31.5	18100
375	21	06	2.59						31.8	18200
379	21	20	2.56						32.0	18300
383	21	34	2.52						32.3	18400
388	21	48	2.50	-10	-0.55	8.78	56	4	32.5	18500
392	22	02	2.47						32.8	18600
396	22	16	2.44						33.1	18700
400	22	30	2.41						33.3	18800
404	22	44	2.38						33.6	18900
409	22	59	2.36	-10	-0.55	8.75	58	4	33.8	19000
413	23	13	2.33						34.1	19100
417	23	29	2.30						34.4	19200
421	23	42	2.28						34.7	19300
426	23	57	2.25						34.9	19400
430	24	11	2.23	-10	-0.60	8.75	59	4	35.2	19500
434	24	26	2.20						35.5	19600
439	24	41	2.18						35.8	19700
443	24	56	2.15						36.0	19800
448	25	10	2.13						36.3	19900
452	25	26	2.10	-11	-0.60	8.70	61	4	36.6	20000
456	25	41	2.08						36.9	20100
461	25	56	2.06						37.2	20200
465	26	11	2.03						37.4	20300
470	26	26	2.01						37.7	20400
474	26	41	1.99	-12	-0.65	8.68	62	4	38.0	20500
479	26	56	1.97						38.3	20600
484	27	12	1.94						38.6	20700
488	27	27	1.92						38.9	20800
493	27	43	1.90						39.2	20900
497	27	58	1.88	-12	-0.70	8.65	64	5	39.5	21000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range	Elevation			Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil / 1 min change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)		(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o	'	mils	min.	yards	yards	feet	f/s
21000	305.6	17	11	2.7	9.2	36.5	10.8	6370	1218
21100	306.4	17	21	2.8	9.3	36.2	10.7	6465	
21200	311.2	17	30	2.8	9.4	36.0	10.7	6565	
21300	314.0	17	39	2.8	9.4	35.7	10.6	6660	
21400	316.8	17	49	2.8	9.5	35.5	10.5	6760	
21500	319.6	17	58	2.8	9.6	35.2	10.4	6865	1211
21600	322.4	18	08	2.9	9.6	35.0	10.4	6965	
21700	325.2	18	18	2.9	9.7	34.7	10.3	7070	
21800	328.2	18	27	2.9	9.8	34.5	10.2	7175	
21900	331.0	18	37	2.9	9.8	34.2	10.2	7280	
22000	334.0	18	47	2.9	9.9	34.0	10.1	7390	1205
22100	337.0	18	57	3.0	10.0	33.8	10.0	7500	
22200	339.8	19	07	3.0	10.1	33.5	9.9	7610	
22300	342.8	19	17	3.0	10.1	33.3	9.9	7725	
22400	346.0	19	27	3.0	10.2	33.0	9.8	7835	
22500	349.0	19	38	3.0	10.3	32.8	9.7	7950	1200
22600	352.0	19	48	3.1	10.4	32.6	9.7	8070	
22700	355.0	19	58	3.1	10.4	32.4	9.6	8185	
22800	358.2	20	09	3.1	10.5	32.1	9.5	8305	
22900	361.2	20	19	3.1	10.6	31.9	9.5	8425	
23000	364.4	20	30	3.2	10.6	31.7	9.4	8545	1197
[illegible]	367.6	20	40	3.2	10.7	31.5	9.3	8670	
[illegible]	370.8	20	51	3.2	10.8	31.3	9.3	8795	
[illegible]	374.0	21	02	3.2	10.9	31.0	9.2	8920	
23400	377.2	21	13	3.2	10.9	30.8	9.1	9050	
23500	380.4	21	24	3.3	11.0	30.6	9.1	9180	1195
23600	383.8	21	35	3.3	11.1	30.4	9.0	9310	
23700	387.0	21	46	3.3	11.2	30.2	9.0	9445	
23800	390.4	21	57	3.3	11.3	29.9	8.9	9580	
23900	393.6	22	09	3.4	11.3	29.7	8.8	9715	
24000	397.0	22	30	3.4	11.4	29.5	8.8	9855	1194

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall			Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in Range	*Probable Error in Defl.	Time of Flight	Range
(10)	(11)		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
mils	o	'	1 on -	mils	o		yds.	yds.	sec.	yards
497	27	58	1.88	-12	-0.70	8.65	64	5	39.5	21000
502	28	14	1.86						39.8	21100
506	28	30	1.84						40.1	21200
511	28	45	1.82						40.4	21300
516	29	01	1.80						40.6	21400
520	29	17	1.78	-13	-0.70	8.62	65	5	41.0	21500
525	29	32	1.76						41.2	21600
530	29	48	1.74						41.6	21700
534	30	04	1.73						41.9	21800
539	30	20	1.71						42.2	21900
544	30	36	1.69	-14	-0.75	8.59	67	5	42.5	22000
549	30	52	1.67						42.8	22100
553	31	08	1.66						43.1	22200
558	31	24	1.64						43.4	22300
563	31	40	1.62						43.7	22400
568	31	56	1.60	-14	-0.80	8.57	68	6	44.0	22500
572	32	12	1.59						44.4	22600
577	32	28	1.57						44.7	22700
582	32	45	1.56						45.0	22800
587	33	01	1.54						45.3	22900
592	33	17	1.52	-15	-0.85	8.54	70	6	45.6	23000
596	33	33	1.51						45.9	23100
601	33	50	1.49						46.3	23200
606	34	06	1.48						46.6	23300
611	34	22	1.46						46.9	23400
616	34	39	1.45	-16	-0.90	8.52	71	7	47.2	23500
621	34	55	1.43						47.6	23600
626	35	12	1.42						47.9	23700
630	35	28	1.40						48.2	23800
635	35	44	1.39						48.6	23900
640	36	01	1.38	-17	-0.95	8.49	73	7	48.9	24000

*This is the Proving Ground Probable Error.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, BASE DET. MK III

Part 2b. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range	Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	° '	mils	min.	yards	yards	feet	f/s
24000	397.0	22 20	3.4	11.4	29.5	8.8	9855	1194
24100	400.4	22 32	3.4	11.5	29.3	8.7	9995	
24200	403.8	22 43	3.4	11.6	29.1	8.6	10140	
24300	407.4	22 55	3.5	11.7	28.8	8.6	10280	
24400	410.8	23 06	3.5	11.8	28.6	8.5	10420	1194
24500	414.2	23 18	3.5	11.8	28.4	8.4	10570	
24600	417.8	23 30	3.5	11.9	28.2	8.4	10720	
[illegible]	421.4	23 42	3.6	12.0	28.0	8.3	10870	
[illegible]	425.0	23 54	3.6	12.1	27.8	8.2	11020	
[illegible]	428.6	24 06	3.6	12.2	27.6	8.2	11170	
25000	432.2	24 18	3.6	12.3	27.4	8.1	11330	1196
25100	435.8	24 31	3.7	12.4	27.2	8.1	11485	
25200	439.4	24 43	3.7	12.5	27.0	8.0	11645	
25300	443.2	24 56	3.7	12.6	26.8	7.9	11805	
25400	447.0	25 08	3.8	12.7	26.6	7.9	11965	1199
25500	450.8	25 21	3.8	12.8	26.4	7.8	12130	
25600	454.6	25 34	3.8	12.9	26.2	7.8	12300	
25700	458.4	25 47	3.9	13.0	26.0	7.7	12470	
25800	462.2	26 00	3.9	13.1	25.7	7.6	12640	
25900	466.2	26 13	3.9	13.2	25.5	7.6	12810	
26000	470.2	26 27	4.0	13.3	25.3	7.5	12990	1202
26100	474.0	26 40	4.0	13.4	25.1	7.4	13170	
26200	478.0	26 54	4.0	13.6	24.9	7.4	13350	
26300	482.2	27 07	4.1	13.7	24.6	7.3	13530	
[illegible]	486.2	27 21	4.1	13.8	24.4	7.2	13710	1206
[illegible]	490.4	27 35	4.1	13.9	24.2	7.2	13900	
[illegible]	494.4	27 49	4.2	14.1	24.0	7.1	14090	
[illegible]	498.6	28 03	4.2	14.2	23.8	7.0	14280	
[illegible]	503.0	28 17	4.2	14.3	23.5	7.0	14480	
26900	507.2	28 32	4.3	14.5	23.3	6.9	14680	
27000	511.6	28 46	4.3	14.6	23.1	6.8	14880	1212

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700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall			Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)		(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	° '		1 on -	mils	°		yds.	yds.	sec.	yards
640	36	01	1.38	-17	-0.95	8.49	73	7	48.9	24000
645	36	17	1.36						49.3	24100
650	36	34	1.35						49.6	24200
655	36	50	1.35						50.0	24300
660	37	07	1.32						50.3	24400
665	37	23	1.31	-18	-1.00	8.47	74	8	50.6	24500
670	37	40	1.30						51.0	24600
674	37	56	1.28						51.4	24700
679	38	13	1.27						51.7	24800
684	38	29	1.26						52.0	24900
689	38	46	1.24	-18	-1.05	8.44	76	9	52.4	25000
694	39	02	1.23						52.8	25100
699	39	19	1.22						53.1	25200
704	39	35	1.21						53.5	25300
709	39	52	1.20						53.8	25400
714	40	08	1.18	-19	-1.10	8.42	77	10	54.2	25500
719	40	25	1.17						54.6	25600
723	40	42	1.16						55.0	25700
728	40	58	1.15						55.3	25800
733	41	15	1.14						55.7	25900
738	41	31	1.13	-20	-1.15	8.40	78	11	56.1	26000
743	41	48	1.12						56.5	26100
748	42	04	1.11						56.8	26200
753	42	21	1.10						57.2	26300
758	42	38	1.09						57.6	26400
763	42	54	1.08	-22	-1.20	8.38	79	12	58.0	26500
767	43	11	1.06						58.4	26600
772	43	27	1.06						58.8	26700
777	43	44	1.04						59.2	26800
782	44	00	1.04						59.6	26900
787	44	17	1.02	-23	-1.30	8.35	81	14	60.0	27000

*This is the Proving Ground Probable Error.

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700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Range	Elevation		Change in Elev. for 100 yds. change in Range		Change in Range for 1 mil change in Elev.		Maximum Ordinate	Terminal Velocity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
yards	mils	o '	mils	min.	yards	yards	feet	f/s
27000	511.6	28 46	4.3	14.6	23.1	6.8	14880	1212
27100	515.8	29 01	4.4	14.8	22.9	6.8	15080	
27200	520.2	29 16	4.4	14.9	22.6	6.7	15290	
27300	524.8	29 31	4.5	15.1	22.4	6.6	15500	
27400	529.2	29 46	4.5	15.3	22.1	6.6	15710	
27500	533.8	30 02	4.6	15.4	21.9	6.5	15930	1219
27600	538.4	30 17	4.6	15.6	21.6	6.4	16150	
27700	543.0	30 33	4.7	15.8	21.4	6.3	16370	
27800	547.8	30 49	4.7	16.0	21.1	6.2	16600	
27900	552.6	31 05	4.8	16.2	20.9	6.2	16830	
[illegible]	557.4	31 21	4.9	16.4	20.6	6.1	17070	1226
[illegible]	562.2	31 38	4.9	16.6	20.3	6.0	17310	
[illegible]	567.2	31 54	5.0	16.9	20.0	5.9	17550	
[illegible]	572.4	32 12	5.1	17.1	19.8	5.8	17800	
28400	577.4	32 29	5.1	17.4	19.5	5.8	18050	
28500	582.6	32 46	5.2	17.6	19.2	5.7	18310	1234
28600	587.8	33 04	5.3	17.9	18.9	5.6	18570	
28700	593.2	33 22	5.4	18.2	18.5	5.5	18830	
28800	598.6	33 40	5.5	18.6	18.2	5.4	19100	
28900	604.2	33 59	5.6	18.9	17.8	5.3	19380	
29000	610.0	34 18	5.7	19.3	17.5	5.2	19670	1244
29100	615.6	34 38	5.8	19.7	17.1	5.1	19960	
29200	621.8	34 58	6.0	20.1	16.7	5.0	20260	
29300	627.8	35 18	6.1	20.6	16.4	4.8	20560	
29400	634.0	35 39	6.2	21.1	16.0	4.7	20880	
29500	640.4	36 01	6.4	21.6	15.6	4.6	21220	1255
29600	647.0	36 23	6.6	22.2	15.2	4.5	21560	
[illegible]	653.6	36 45	6.8	22.8	14.7	4.4	21900	
[illegible]	660.4	37 09	7.0	23.5	14.3	4.2	22260	
[illegible]	667.4	37 33	7.2	24.3	13.8	4.1	22640	
30000	674.8	37 57	7.4	25.1	13.4	4.0	23020	1267

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table A.

Angle of Fall		Slope of Fall	Defl. due to Drift		Ballistic Coefficient	*Probable Error in		Time of Flight	Range
(10)	(11)	(12)	(13)	(14)	(15)	Range (16)	Defl. (17)	(18)	(19)
mils	o '	1 on -	mils	o		yds.	yds.	sec.	yards
787	44 17	1.02	-23	-1.30	8.35	81	14	60.0	27000
792	44 33	1.02						60.4	27100
797	44 50	1.01						60.8	27200
802	45 06	1.00						61.3	27300
807	45 23	0.99						61.7	27400
812	45 40	0.98	-24	-1.35	8.33	82	16	62.1	27500
817	45 56	0.97						62.6	27600
822	46 13	0.96						63.0	27700
826	46 30	0.95						63.4	27800
831	46 46	0.94						63.9	27900
836	47 03	0.93	-26	-1.45	8.31	84	18	64.3	28000
841	47 20	0.92						64.8	28100
846	47 37	0.91						65.2	28200
851	47 54	0.90						65.7	28300
856	48 11	0.89						66.2	28400
861	48 28	0.88	-27	-1.55	8.29	85	20	66.6	28500
867	48 45	0.88						67.1	28600
872	49 02	0.87						67.6	28700
877	49 20	0.86						68.1	28800
882	49 38	0.85						68.6	28900
887	49 55	0.84	-29	-1.65	8.26	87	23	69.1	29000
893	50 13	0.83						69.6	29100
898	50 32	0.82						70.1	29200
904	50 50	0.81						70.6	29300
909	51 09	0.80						71.2	29400
915	51 28	0.80	-31	-1.75	8.23	88	25	71.8	29500
921	51 47	0.79						72.3	29600
927	52 07	0.78						72.9	29700
932	52 27	0.77						73.5	29800
938	52 47	0.76						74.2	29900
944	53 08	0.75	-34	-1.90	8.20	90	28	74.8	30000

*This is the Proving Ground Probable Error.

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LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target feet	Map Range - yards 1000	1500	2000	2500	3000	3500	4000
-10	451	292	213	166	134	112	95
-20	912	588	428	333	269	224	191
-30		889	646	501	405	337	287
-40		1196	866	671	542	451	383
-50			1088	843	680	566	480
-60			1312	1017	820	681	578
-70			1539	1193	961	797	676
-80			1771	1369	1102	913	774
-90				1546	1244	1030	873
-100				1725	1387	1148	973
-110				1906	1531	1267	1073
-120				2088	1676	1387	1174
-130				2272	1822	1507	1276
-140				2458	1969	1628	1378
-150					2118	1750	1480
-160					2269	1873	1585
-170					2421	1997	1687
-180					2574	2122	1792
-190					2728	2247	1897
-200					2883	2373	2002
-220						2628	2215
-240						2887	2430
-260						3149	2648
-280						3414	2866
-300							3091
-320							3317
-340							3545
-360							3776
-380							
-400							
-420							
-440							
-460							
-480							
-500							

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE,POINT DET. MK III

Part 2b. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Map Range - yards 4500	5000	5500	6000	6500	7000	7500	Height of Target feet
82	72	64	57	51	46	41	-10
165	144	127	113	101	91	82	-20
248	216	190	169	152	137	124	-30
331	289	254	228	202	182	165	-40
414	361	318	283	253	228	206	-50
498	434	382	340	304	274	248	-60
583	508	447	397	355	320	290	-70
667	582	512	455	407	366	331	-80
752	656	577	512	458	413	373	-90
838	730	642	570	510	459	415	-100
924	805	708	628	562	506	457	-110
1011	880	774	687	614	552	499	-120
1098	956	840	745	666	599	542	-130
1185	1031	906	803	718	646	584	-140
1273	1107	972	862	771	693	626	-150
1361	1183	1039	922	824	740	669	-160
1450	1260	1106	981	877	788	712	-170
1539	1337	1174	1041	930	835	754	-180
1628	1414	1241	1100	983	883	797	-190
1718	1492	1309	1160	1036	931	840	-200
1898	1647	1445	1280	1143	1027	927	-220
2081	1805	1583	1402	1251	1123	1014	-240
2267	1965	1722	1524	1360	1220	1101	-260
2454	2126	1862	1647	1469	1318	1189	-280
2642	2288	2003	1771	1579	1416	1277	-300
2832	2451	2145	1896	1690	1515	1366	-320
3024	2615	2288	2022	1801	1614	1455	-340
3218	2781	2433	2149	1913	1714	1545	-360
3414	2949	2579	2277	2026	1814	1635	-380
3612	3120	2726	2405	2139	1915	1726	-400
3812	3292	2874	2534	2253	2017	1817	-420
4014	3465	3024	2665	2368	2119	1908	-440
4218	3639	3175	2797	2484	2222	2000	-460
4424	3814	3327	2930	2601	2326	2093	-480
	3990	3480	3062	2717	2430	2187	-500

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target feet	Map Range - yards							Height of Target feet
	8000	8500	9000	9500	10000	10500	11000	
-10	37	34	31	29	27	25	23	-10
-20	74	68	63	58	53	49	46	-20
-30	112	102	94	87	80	74	69	-30
-40	150	137	125	115	106	98	91	-40
-50	187	171	157	144	133	123	114	-50
-60	225	205	188	173	160	148	137	-60
-70	263	240	220	202	187	172	160	-70
-80	301	275	252	232	214	197	182	-80
-90	339	310	284	261	240	221	205	-90
-100	377	344	315	290	267	246	228	-100
-110	415	379	347	319	294	271	251	-110
-120	454	414	379	348	321	296	274	-120
-130	492	449	411	378	347	320	297	-130
-140	531	484	443	407	374	345	320	-140
-150	569	519	475	436	401	370	343	-150
-160	608	554	507	466	428	395	366	-160
-170	647	590	540	496	456	420	389	-170
-180	685	625	572	525	483	446	413	-180
-190	724	661	605	555	511	471	436	-190
-200	763	696	637	585	538	496	459	-200
-220	841	767	702	644	593	547	506	-220
-240	920	839	767	704	648	598	553	-240
-260	999	911	833	765	704	649	600	-260
-280	1078	983	899	825	759	700	647	-280
-300	1158	1055	965	885	814	751	694	-300
-320	1238	1128	1031	946	870	802	741	-320
-340	1319	1201	1098	1007	926	854	789	-340
-360	1400	1274	1164	1068	982	905	836	-360
-380	1481	1347	1231	1129	1038	957	884	-380
-400	1563	1421	1298	1190	1095	1010	932	-400
-420	1645	1495	1365	1252	1152	1062	980	-420
-440	1727	1570	1433	1314	1208	1113	1028	-440
-460	1810	1645	1501	1376	1265	1165	1076	-460
-480	1893	1720	1569	1438	1322	1218	1124	-480
-500	1977	1795	1637	1500	1379	1271	1173	-500

Height of Target feet	Map Range - yards							Height of Target feet
	11500	12000	12500	13000	13500	14000	14500	
-10	21	20	18	17	16	15	14	-10
-20	42	39	36	34	32	29	27	-20
-30	64	59	55	51	47	44	41	-30
-40	85	79	73	68	63	58	54	-40
-50	106	98	91	85	79	73	68	-50
-60	127	118	110	102	95	88	82	-60
-70	148	138	128	119	111	103	96	-70
-80	169	157	146	136	126	117	109	-80
-90	191	177	164	152	142	132	123	-90
-100	212	197	182	169	158	147	137	-100
-110	233	216	201	187	174	162	151	-110
-120	254	236	219	204	190	177	165	-120
-130	276	256	238	221	205	191	178	-130
-140	297	276	256	238	221	206	192	-140
-150	319	296	274	254	237	221	206	-150
-160	340	315	292	271	253	236	220	-160
-170	361	335	311	289	269	251	234	-170
-180	383	355	329	306	285	266	248	-180
-190	404	375	348	323	301	281	262	-190
-200	426	395	366	340	317	296	276	-200
-220	469	435	404	375	349	326	304	-220
-240	512	475	441	410	382	356	332	-240
-260	556	516	479	445	414	386	360	-260
-280	599	556	516	479	446	416	388	-280
-300	643	596	553	514	478	446	416	-300
-320	687	637	591	549	511	476	444	-320
-340	730	677	628	584	543	506	472	-340
-360	774	718	666	619	576	537	501	-360
-380	818	758	704	654	608	567	529	-380
-400	862	799	742	689	641	597	557	-400
-420	906	840	780	725	674	628	586	-420
-440	951	881	818	760	707	658	614	-440
-460	995	922	856	795	739	689	643	-460
-480	1039	963	894	830	772	719	671	-480
-500	1084	1004	931	865	805	750	700	-500

"12-N-1"

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK VII

Part 2b. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	15000	15500	16000	16500	17000	17500	18000
-10	13	12	11	11	10	9	9
-20	26	24	22	21	20	19	18
-30	38	36	34	32	30	28	26
-40	51	48	45	42	40	38	35
-50	64	60	56	53	50	47	44
-60	77	72	68	64	60	56	53
-70	90	84	79	74	70	66	62
-80	102	96	90	85	80	75	71
-90	115	108	101	95	90	85	80
-100	128	120	113	106	100	94	89
-110	141	132	124	117	110	104	98
-120	154	144	136	128	120	113	107
-130	167	157	147	139	130	122	115
-140	180	169	159	149	140	132	124
-150	193	181	170	160	150	141	133
-160	206	193	181	170	160	151	142
-170	219	205	193	181	170	160	151
-180	232	217	204	192	181	170	160
-190	245	230	216	203	191	180	169
-200	258	242	227	214	201	189	178
-220	284	266	250	235	221	208	196
-240	310	291	273	256	241	227	214
-260	337	316	296	278	261	246	232
-280	363	340	319	300	282	265	250
-300	389	365	342	321	302	284	268
-320	415	389	365	343	322	303	285
-340	442	414	388	364	342	322	303
-360	468	438	411	386	363	341	321
-380	495	463	434	407	383	360	339
-400	521	488	457	429	403	379	357
-420	548	513	480	450	423	398	375
-440	574	537	503	472	444	418	393
-460	601	562	527	494	464	437	411
-480	627	587	550	516	485	456	429
-500	654	612	573	537	505	475	447

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Map Range - yards								Height of Target
18500	19000	19500	20000	20500	21000	21500	22000	feet
8	8	7	7	7	6	6	6	-10
17	16	15	14	13	12	12	11	-20
25	23	22	21	20	19	18	17	-30
33	31	30	28	26	25	23	22	-40
42	39	37	35	33	31	29	28	-50
50	47	44	42	40	37	35	34	-60
59	55	52	49	46	43	41	39	-70
67	63	59	56	53	50	47	45	-80
76	71	67	63	59	56	53	50	-90
84	79	74	70	66	62	59	56	-100
92	87	82	77	72	68	65	62	-110
101	95	89	84	79	75	71	67	-120
109	102	96	91	86	81	77	73	-130
117	110	104	98	92	87	82	78	-140
126	118	111	105	99	93	88	84	-150
134	126	119	112	105	99	94	90	-160
143	134	126	119	112	106	100	95	-170
151	142	134	126	119	112	106	101	-180
159	150	141	133	126	119	112	106	-190
168	158	149	140	132	125	118	112	-200
185	174	164	154	145	137	130	123	-220
202	190	179	169	159	150	142	135	-240
219	206	194	183	173	163	154	146	-260
236	222	209	197	186	175	166	158	-280
252	238	224	211	199	188	178	169	-300
269	254	239	225	212	201	190	180	-320
286	270	254	239	226	214	202	191	-340
302	285	269	254	239	226	214	203	-360
319	301	284	268	253	239	226	214	-380
336	317	299	282	266	252	239	226	-400
353	333	314	296	280	265	251	237	-420
370	349	329	311	294	278	263	249	-440
387	365	344	325	307	290	275	260	-460
404	381	359	339	320	303	287	271	-480
421	397	375	354	334	316	299	283	-500

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards							
feet	22500	23000	23500	24000	24500	25000	25500	26000
-10	5	5	5	5	4	4	4	4
-20	10	10	10	9	8	8	8	7
-30	16	15	14	14	13	12	11	11
-40	21	20	19	18	17	16	15	14
-50	26	25	24	23	21	20	19	18
-60	32	30	29	27	25	24	23	22
-70	37	35	34	32	30	28	27	26
-80	42	40	38	36	34	33	31	29
-90	48	46	43	41	39	37	35	33
-100	53	51	48	46	43	41	39	37
-110	59	56	53	51	48	45	43	41
-120	64	61	58	55	52	49	47	45
-130	69	66	62	59	56	54	51	48
-140	75	71	67	64	61	58	55	52
-150	80	76	72	69	65	62	59	56
-160	85	81	77	73	69	66	63	60
-170	90	86	82	78	74	70	67	64
-180	96	91	87	83	79	75	71	67
-190	101	96	91	87	83	79	75	71
-200	106	101	96	92	87	83	79	75
-220	117	111	106	101	96	91	87	83
-240	128	122	116	110	105	100	95	90
-260	139	132	125	119	113	108	103	98
-280	150	142	135	128	122	117	111	105
-300	160	152	145	138	131	125	119	113
-320	171	162	154	147	140	133	127	121
-340	182	173	164	156	148	141	135	128
-360	193	183	174	165	157	150	143	136
-380	203	195	183	174	166	158	150	143
-400	214	203	193	183	174	166	158	151
-420	224	213	203	193	183	174	166	159
-440	235	223	212	202	192	183	174	166
-460	246	234	222	211	201	191	182	174
-480	257	244	231	220	210	200	190	181
-500	268	254	241	229	218	208	198	189

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table B.

TARGET BELOW GUN - RANGE EFFECTS IN YARDS

Map Range - yards								Height of Target
26500	27000	27500	28000	28500	29000	29500	30000	feet
3	3	3	3	3	3	3	3	-10
7	7	6	6	6	6	6	5	-20
10	10	10	9	9	8	8	8	-30
14	14	13	12	12	11	11	10	-40
17	17	16	15	15	14	14	13	-50
21	20	19	18	18	17	17	16	-60
24	23	22	21	21	20	20	19	-70
28	27	26	25	24	23	22	21	-80
31	30	29	28	27	26	25	24	-90
35	34	32	31	30	29	28	27	-100
39	37	35	34	33	32	31	30	-110
42	40	38	37	36	35	34	32	-120
46	44	42	40	38	37	36	35	-130
49	47	45	43	41	40	39	37	-140
53	51	48	46	44	43	42	40	-150
57	54	51	49	47	46	45	43	-160
61	58	55	52	50	49	47	45	-170
64	61	58	56	53	51	50	48	-180
68	65	62	59	56	54	52	50	-190
71	68	65	62	59	57	55	53	-200
79	75	72	68	65	63	60	58	-220
86	82	78	74	71	68	66	63	-240
93	89	85	81	77	74	71	69	-260
100	95	91	87	83	79	77	74	-280
107	102	98	93	89	85	82	79	-300
115	109	104	99	95	91	87	84	-320
122	116	111	106	101	97	93	89	-340
129	123	118	112	107	102	98	94	-360
137	130	124	119	113	108	104	99	-380
144	137	131	125	119	114	109	104	-400
151	144	138	131	125	120	114	109	-420
158	151	144	137	131	125	120	114	-440
166	158	151	144	137	131	125	120	-460
173	165	157	150	143	136	130	125	-480
180	172	164	156	149	142	136	130	-500

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE,POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	1000	1500	2000	2500	3000	3500	4000
10	-440	-287	-211	-164	-133	-111	-94
20	-870-	-570	-419	-327	-265	-221	-188
30		-849	-625	-489	-396	-330	-281
40		-1124	-828	-650	-527	-439	-374
50		-1395	-1029	-809	-657	-547	-466
60			-1228	-967	-785	-654	-556
70			-1425	-1124	-912	-761	-649
80			-1620	-1279	-1039	-867	-740
90			-1813	-1433	-1165	-975	-831
100				-1585	-1290	-1078	-921
110				-1736	-1414	-1182	-1011
120				-1886	-1537	-1286	-1100
130				-2035	-1659	-1389	-1186
140				-2182	-1780	-1491	-1276
150				-2328	-1899	-1593	-1364
160				-2473	-2018	-1694	-1451
170					-2136	-1794	-1538
180					-2253	-1894	-1624
190					-2369	-1995	-1709
200					-2485	-2092	-1794
220					-2714	-2288	-1965
240					-2940	-2481	-2131
260						-2671	-2297
280						-2859	-2461
300						-3045	-2624
320						-3228	-2785
340						-3409	-2944
360							-3102
380							-3259
400							-3415
420							-3569
440							-3722
460							-3875
480							
500							

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE,POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range - yards							Height of Target
4500	5000	5500	6000	6500	7000	7500	feet
-81	-71	-63	-56	-50	-45	-41	10
-163	-142	-125	-112	-100	-90	-81	20
-244	-213	-188	-167	-150	-135	-122	30
-324	-283	-250	-223	-200	-180	-163	40
-404	-354	-312	-278	-249	-225	-204	50
-484	-424	-374	-333	-298	-269	-244	60
-563	-493	-435	-388	-348	-314	-284	70
-642	-563	-497	-442	-397	-359	-325	80
-721	-632	-558	-497	-446	-403	-365	90
-799	-700	-619	-551	-495	-447	-405	100
-877	-769	-680	-606	-544	-491	-445	110
-955	-837	-740	-660	-593	-535	-485	120
-1032	-905	-800	-713	-641	-579	-525	130
-1108	-972	-860	-767	-689	-622	-564	140
-1185	-1040	-920	-820	-737	-666	-604	150
-1261	-1107	-979	-873	-785	-709	-643	160
-1337	-1174	-1038	-926	-833	-753	-683	170
-1412	-1240	-1098	-980	-881	-796	-722	180
-1487	-1306	-1157	-1033	-928	-839	-761	190
-1561	-1372	-1215	-1085	-976	-882	-800	200
-1709	-1503	-1332	-1190	-1070	-967	-878	220
-1856	-1633	-1448	-1294	-1164	-1052	-955	240
-2002	-1762	-1563	-1397	-1257	-1137	-1032	260
-2147	-1890	-1677	-1500	-1350	-1221	-1109	280
-2290	-2016	-1790	-1602	-1442	-1305	-1186	300
-2431	-2142	-1903	-1703	-1534	-1388	-1262	320
-2571	-2267	-2015	-1804	-1625	-1471	-1338	340
-2710	-2391	-2126	-1904	-1716	-1554	-1413	360
-2849	-2514	-2236	-2003	-1806	-1636	-1488	380
-2987	-2636	-2345	-2102	-1895	-1717	-1563	400
-3125	-2757	-2454	-2200	-1984	-1799	-1638	420
-3258	-2878	-2562	-2297	-2073	-1880	-1712	440
-3391	-2997	-2670	-2395	-2162	-1961	-1786	460
-3523	-3115	-2777	-2492	-2250	-2041	-1859	480
-3654	-3233	-2883	-2588	-2337	-2121	-1933	500

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	8000	8500	9000	9500	10000	10500	11000
10	-37	-34	-31	-29	-26	-24	-23
20	-74	-68	-62	-57	-53	-49	-45
30	-111	-101	-93	-86	-79	-73	-68
40	-148	-135	-124	-114	-106	-98	-91
50	-185	-169	-155	-143	-132	-122	-113
60	-222	-203	-186	-171	-158	-146	-135
70	-258	-236	-217	-200	-184	-170	-157
80	-295	-269	-247	-228	-211	-195	-180
90	-332	-303	-278	-256	-237	-219	-203
100	-369	-337	-309	-285	-263	-243	-225
110	-405	-370	-340	-313	-289	-267	-247
120	-441	-403	-370	-341	-315	-291	-270
130	-478	-437	-401	-369	-341	-315	-292
140	-514	-470	-432	-398	-367	-339	-315
150	-550	-503	-462	-426	-393	-363	-337
160	-586	-536	-492	-454	-419	-387	-359
170	-622	-569	-523	-482	-445	-411	-381
180	-658	-602	-553	-509	-470	-435	-404
190	-693	-634	-583	-537	-496	-459	-426
200	-729	-667	-613	-565	-522	-483	-448
220	-800	-732	-673	-620	-573	-530	-492
240	-871	-797	-733	-676	-624	-578	-536
260	-941	-862	-793	-731	-675	-625	-580
280	-1012	-927	-852	-786	-726	-672	-623
300	-1082	-991	-912	-841	-777	-719	-667
320	-1152	-1055	-971	-896	-828	-766	-710
340	-1221	-1119	-1030	-950	-878	-813	-753
360	-1290	-1183	-1089	-1004	-928	-859	-796
380	-1359	-1247	-1148	-1058	-977	-905	-839
400	-1428	-1310	-1206	-1112	-1027	-951	-882
420	-1497	-1373	-1263	-1165	-1077	-997	-925
440	-1565	-1436	-1321	-1218	-1126	-1043	-967
460	-1633	-1498	-1379	-1272	-1175	-1088	-1010
480	-1700	-1561	-1437	-1325	-1224	-1134	-1052
500	-1768	-1623	-1494	-1378	-1273	-1179	-1094

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range - yards							Height of Target
11500	12000	12500	13000	13500	14000	14500	feet
-21	-19	-18	-17	-16	-15	-14	10
-42	-39	-36	-34	-32	-29	-27	20
-63	-58	-54	-50	-47	-44	-41	30
-84	-78	-72	-67	-63	-58	-54	40
-105	-97	-90	-84	-79	-73	-68	50
-125	-116	-108	-101	-95	-88	-82	60
-146	-136	-127	-118	-110	-103	-96	70
-167	-155	-145	-135	-126	-117	-109	80
-188	-174	-162	-151	-141	-132	-123	90
-209	-194	-180	-168	-157	-146	-136	100
-229	-213	-198	-185	-173	-161	-150	110
-250	-232	-216	-201	-188	-175	-163	120
-271	-251	-233	-218	-204	-190	-177	130
-292	-270	-251	-234	-219	-204	-190	140
-313	-290	-269	-251	-235	-219	-204	150
-334	-309	-287	-268	-250	-233	-218	160
-354	-328	-305	-284	-265	-248	-232	170
-375	-348	-323	-301	-281	-262	-245	180
-395	-367	-341	-317	-296	-276	-258	190
-416	-386	-359	-334	-312	-291	-272	200
-457	-424	-394	-367	-343	-320	-299	220
-498	-462	-429	-400	-373	-348	-326	240
-538	-500	-465	-433	-404	-377	-352	260
-578	-537	-500	-466	-434	-405	-379	280
-619	-575	-535	-498	-465	-434	-406	300
-659	-612	-569	-530	-495	-463	-433	320
-699	-649	-604	-563	-526	-491	-459	340
-739	-687	-639	-596	-556	-519	-486	360
-779	-724	-674	-628	-586	-548	-513	380
-819	-761	-708	-660	-616	-576	-539	400
-859	-798	-742	-692	-646	-604	-566	420
-898	-835	-777	-724	-676	-632	-592	440
-938	-872	-811	-756	-706	-660	-618	460
-977	-908	-845	-788	-736	-688	-644	480
-1016	-945	-880	-820	-766	-716	-671	500

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target	Map Range - yards						
feet	15000	15500	16000	16500	17000	17500	18000
10	-13	-12	-11	-11	-10	-9	-9
20	-26	-24	-23	-21	-20	-19	-18
30	-38	-36	-34	-32	-30	-28	-26
40	-51	-48	-45	-42	-40	-38	-35
50	-64	-60	-57	-53	-50	-47	-44
60	-77	-72	-68	-64	-60	-56	-53
70	-90	-84	-79	-74	-70	-66	-62
80	-102	-96	-91	-85	-80	-75	-70
90	-115	-108	-102	-96	-90	-85	-79
100	-128	-120	-113	-106	-100	-94	-88
110	-141	-132	-124	-117	-110	-103	-97
120	-153	-144	-135	-127	-120	-113	-106
130	-166	-156	-147	-138	-130	-122	-115
140	-178	-168	-158	-149	-140	-131	-123
150	-191	-180	-169	-159	-150	-141	-132
160	-204	-192	-181	-170	-160	-150	-141
170	-217	-204	-192	-180	-169	-159	-150
180	-229	-215	-203	-191	-179	-168	-158
190	-242	-227	-214	-201	-189	-178	-167
200	-255	-239	-225	-212	-199	-187	-176
220	-280	-263	-247	-233	-219	-205	-193
240	-305	-286	-269	-253	-238	-224	-211
260	-330	-310	-292	-274	-257	-242	-228
280	-356	-334	-314	-295	-277	-261	-246
300	-381	-358	-336	-316	-297	-279	-263
320	-406	-381	-358	-336	-316	-297	-280
340	-431	-405	-380	-357	-336	-316	-297
360	-456	-428	-402	-378	-355	-334	-315
380	-481	-451	-424	-399	-375	-353	-332
400	-506	-475	-446	-419	-394	-371	-349
420	-531	-498	-467	-439	-413	-389	-366
440	-555	-521	-489	-460	-433	-407	-383
460	-580	-544	-511	-480	-452	-425	-400
480	-604	-567	-533	-501	-471	-443	-417
500	-629	-591	-555	-521	-490	-461	-434

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range - yards								Height of Target
18500	19000	19500	20000	20500	21000	21500	22000	feet
-8	-8	-7	-7	-7	-6	-6	-6	10
-17	-16	-15	-14	-13	-12	-12	-11	20
-25	-23	-22	-21	-20	-19	-18	-17	30
-33	-31	-30	-28	-26	-25	-24	-22	40
-42	-39	-37	-35	-33	-31	-30	-28	50
-50	-47	-44	-42	-40	-38	-36	-34	60
-58	-55	-52	-49	-46	-44	-42	-39	70
-66	-62	-59	-56	-53	-50	-47	-45	80
-74	-70	-67	-63	-59	-56	-53	-50	90
-83	-78	-74	-70	-66	-63	-59	-56	100
-91	-86	-81	-77	-73	-69	-65	-62	110
-100	-94	-89	-84	-79	-75	-71	-67	120
-108	-102	-96	-91	-86	-82	-77	-73	130
-116	-110	-104	-98	-93	-88	-83	-79	140
-124	-117	-111	-105	-99	-94	-89	-84	150
-133	-125	-118	-112	-106	-100	-95	-90	160
-141	-133	-126	-119	-112	-106	-101	-95	170
-149	-141	-133	-126	-119	-112	-106	-101	180
-157	-148	-140	-132	-125	-119	-112	-106	190
-166	-156	-147	-139	-132	-125	-118	-112	200
-182	-172	-162	-153	-145	-137	-130	-123	220
-199	-188	-177	-167	-158	-150	-142	-134	240
-215	-203	-191	-181	-172	-162	-153	-145	260
-231	-218	-206	-195	-185	-175	-165	-156	280
-248	-234	-221	-209	-198	-187	-177	-168	300
-264	-249	-236	-223	-211	-200	-189	-179	320
-280	-264	-250	-237	-224	-212	-201	-190	340
-297	-280	-265	-251	-237	-224	-212	-201	360
-313	-295	-279	-264	-250	-237	-224	-212	380
-329	-311	-294	-278	-263	-249	-236	-223	400
-345	-326	-308	-292	-276	-261	-247	-234	420
-361	-341	-322	-305	-289	-274	-259	-245	440
-378	-357	-337	-319	-302	-286	-271	-257	460
-394	-372	-351	-332	-314	-298	-283	-268	480
-410	-387	-366	-346	-327	-310	-294	-279	500

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE,POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Height of Target feet	Map Range-yards 22500	23000	23500	24000	24500	25000	25500	26000
10	-5	-5	-5	-5	-4	-4	-4	-4
20	-11	-10	-10	-9	-8	-8	-8	-7
30	-16	-15	-14	-14	-13	-12	-11	-11
40	-21	-20	-19	-18	-17	-16	-15	-14
50	-27	-25	-24	-23	-21	-20	-19	-18
60	-32	-30	-29	-27	-25	-24	-23	-22
70	-37	-35	-34	-32	-30	-28	-27	-26
80	-43	-41	-39	-37	-35	-33	-31	-29
90	-48	-46	-43	-41	-39	-37	-35	-33
100	-53	-51	-48	-46	-43	-41	-39	-37
110	-59	-56	-53	-50	-47	-45	-43	-41
120	-64	-61	-58	-55	-52	-49	-47	-45
130	-69	-66	-63	-59	-56	-54	-51	-48
140	-75	-71	-67	-64	-61	-58	-55	-52
150	-80	-76	-72	-69	-65	-62	-59	-56
160	-85	-81	-77	-73	-69	-66	-63	-60
170	-90	-86	-82	-78	-74	-70	-67	-63
180	-96	-91	-86	-82	-78	-74	-70	-67
190	-101	-96	-91	-87	-82	-78	-74	-70
200	-106	-101	-96	-91	-86	-82	-78	-74
220	-117	-111	-105	-100	-95	-90	-86	-82
240	-127	-121	-115	-109	-103	-98	-94	-89
260	-138	-131	-124	-118	-112	-107	-102	-97
280	-148	-141	-134	-127	-121	-115	-109	-104
300	-159	-151	-143	-136	-129	-123	-117	-112
320	-170	-161	-153	-145	-138	-131	-125	-119
340	-180	-171	-162	-154	-146	-139	-133	-127
360	-191	-181	-172	-163	-155	-148	-141	-134
380	-201	-191	-182	-173	-164	-156	-149	-142
400	-211	-201	-191	-182	-173	-164	-156	-149
420	-222	-211	-201	-191	-181	-172	-164	-156
440	-232	-221	-210	-200	-190	-181	-172	-164
460	-243	-231	-220	-209	-199	-189	-180	-171
480	-254	-241	-229	-218	-207	-197	-187	-178
500	-264	-251	-239	-227	-216	-205	-195	-186

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE,POINT DET. MK III

Part 2b. Table C.

TARGET ABOVE GUN - RANGE EFFECTS IN YARDS

Map Range-yards 26500	27000	27500	28000	28500	29000	29500	Height of Target feet
-3	-3	-3	-3	-3	-3	-3	10
-7	-7	-6	-6	-6	-6	-5	20
-10	-10	-10	-9	-8	-8	-8	30
-14	-14	-13	-12	-11	-11	-10	40
-17	-17	-16	-15	-14	-14	-13	50
-21	-20	-19	-18	-17	-17	-16	60
-24	-23	-22	-21	-20	-20	-19	70
-28	-27	-26	-25	-23	-22	-21	80
-31	-30	-29	-28	-26	-25	-24	90
-35	-34	-32	-31	-29	-28	-27	100
-39	-37	-35	-34	-32	-31	-30	110
-42	-40	-38	-37	-35	-34	-32	120
-46	-44	-42	-40	-38	-36	-35	130
-49	-47	-45	-43	-41	-39	-37	140
-53	-51	-48	-46	-44	-42	-40	150
-57	-54	-51	-49	-47	-45	-43	160
-60	-58	-55	-52	-50	-48	-45	170
-64	-61	-58	-56	-53	-50	-48	180
-67	-65	-62	-59	-56	-53	-50	190
-71	-68	-65	-62	-59	-56	-53	200
-78	-75	-71	-68	-65	-62	-58	220
-85	-82	-78	-74	-71	-67	-64	240
-93	-88	-84	-81	-77	-73	-69	260
-100	-95	-91	-87	-82	-78	-75	280
-107	-102	-97	-93	-88	-84	-80	300
-114	-109	-104	-99	-94	-90	-85	320
-121	-116	-110	-105	-100	-95	-91	340
-128	-122	-116	-111	-106	-101	-96	360
-135	-129	-123	-117	-111	-106	-102	380
-142	-136	-129	-123	-117	-112	-107	400
-149	-142	-135	-129	-123	-118	-112	420
-156	-149	-142	-135	-129	-123	-118	440
-163	-156	-149	-142	-135	-129	-123	460
-170	-162	-155	-148	-141	-135	-129	480
-177	-169	-161	-154	-147	-140	-134	500

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part Nb. Table D.

WEIGHT OF PROJECTILE, EFFECTS IN YARDS OF RANGE DUE TO VARIATIONS IN

Range	Variations in Weight of Projectile - per cent										
yards	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
1000	24	19	15	10	5	0	-5	-10	-15	-20	-25
2000	44	35	27	18	9	0	-9	-18	-28	-37	-46
3000	61	49	37	25	12	0	-12	-25	-38	-51	-65
4000	75	60	45	30	15	0	-15	-30	-46	-61	-76
5000	85	68	51	34	17	0	-17	-34	-51	-68	-86
6000	92	73	55	37	18	0	-18	-37	-55	-73	-92
7000	95	76	57	38	19	0	-19	-38	-57	-76	-95
8000	95	76	57	38	19	0	-19	-38	-57	-77	-95
9000	92	73	55	37	18	0	-19	-37	-56	-75	-94
10000	85	68	51	34	17	0	-18	-35	-53	-71	-89
11000	76	61	46	30	15	0	-16	-32	-48	-64	-81
12000	64	52	39	26	13	0	-14	-28	-42	-56	-71
13000	50	41	31	21	10	0	-11	-22	-34	-46	-58
14000	35	27	21	14	7	0	-8	-16	-25	-34	-43
15000	14	12	10	7	4	0	-4	-9	-14	-20	-26
16000	-6	-4	-2	-1	0	0	0	-1	-2	-4	-7
17000	-28	-21	-15	-9	-4	0	+4	+7	+10	+12	+15
18000	-51	-39	-28	-18	-9	0	8	16	23	29	34
19000	-75	-58	-42	-27	-13	0	12	24	36	46	56
20000	-99	-78	-57	-37	-18	0	17	33	49	64	79
21000	-124	-98	-72	-47	-23	0	22	43	63	83	102
22000	-148	-117	-87	-57	-28	0	27	53	78	102	126
23000	-172	-136	-101	-66	-33	0	32	62	98	121	150
24000	-195	-154	-114	-75	-37	0	36	71	106	140	175
25000	-217	-172	-128	-84	-42	0	41	80	119	158	195
26000	-238	-189	-141	-93	-46	0	45	89	132	175	217
27000	-258	-204	-152	-101	-50	0	49	97	144	191	237
28000	-276	-219	-163	-108	-54	0	53	104	155	206	256
29000	-293	-233	-174	-115	-57	0	56	111	166	220	273
30000	-309	-246	-184	-122	-60	0	59	118	176	233	289

Part 2b. Table E.

***ROTATION OF THE EARTH, EFFECTS IN YARDS OF RANGE DUE TO**

Latitude 0°

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+5-	+11-	+15-	+19-	+21-	+21-
4000	0	+10-	+20-	+28-	+35-	+39-	+40-
6000	0	+14-	+28-	+39-	+48-	+54-	+56-
8000	0	+17-	+34-	+48-	+59-	+66-	+69-
10000	0	+20-	+39-	+55-	+68-	+76-	+79-
12000	0	+22-	+43-	+61-	+75-	+84-	+87-
14000	0	+24-	+46-	+65-	+80-	+89-	+92-
16000	0	+25-	+48-	+68-	+85-	+92-	+96-
18000	0	+26-	+49-	+70-	+85-	+95-	+99-
20000	0	+26-	+50-	+71-	+87-	+97-	+101-
22000	0	+26-	+51-	+72-	+88-	+99-	+102-
24000	0	+27-	+52-	+73-	+89-	+100-	+103-
26000	0	+27-	+52-	+74-	+90-	+101-	+104-
28000	0	+27-	+51-	+73-	+90-	+100-	+103-
30000	0	+25-	+49-	+69-	+84-	+94-	+97-
	180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270
	Azimuth of Target - degrees						

Latitude 10° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
2000	0	+5-	+11-	+15-	+18-	+20-	+21-	2000
4000	0	+10-	+20-	+28-	+34-	+38-	+39-	4000
6000	0	+14-	+28-	+39-	+47-	+53-	+54-	6000
8000	0	+17-	+34-	+48-	+58-	+65-	+67-	8000
10000	0	+20-	+39-	+55-	+67-	+75-	+77-	10000
12000	0	+22-	+43-	+60-	+74-	+82-	+85-	12000
14000	0	+24-	+45-	+64-	+79-	+87-	+91-	14000
16000	0	+25-	+47-	+67-	+82-	+91-	+95-	16000
18000	0	+25-	+49-	+69-	+84-	+94-	+97-	18000
20000	0	+26-	+50-	+70-	+86-	+96-	+99-	20000
22000	0	+26-	+50-	+71-	+87-	+97-	+101-	22000
24000	0	+26-	+51-	+72-	+88-	+98-	+102-	24000
26000	0	+27-	+51-	+73-	+89-	+99-	+103-	26000
28000	0	+26-	+50-	+72-	+88-	+98-	+102-	28000
30000	0	+25-	+48-	+68-	+85-	+92-	+96-	30000
	180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270	
	Azimuth of Target - degrees							

Latitude 20° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+5-	+10-	+14-	+18-	+19-	+20-
4000	0	+10-	+19-	+26-	+33-	+36-	+37-
6000	0	+14-	+26-	+37-	+46-	+50-	+52-
8000	0	+17-	+32-	+46-	+56-	+62-	+64-
10000	0	+19-	+37-	+53-	+64-	+72-	+74-
12000	0	+21-	+41-	+58-	+70-	+79-	+82-
14000	0	+22-	+43-	+61-	+75-	+84-	+87-
16000	0	+23-	+45-	+64-	+78-	+87-	+90-
18000	0	+24-	+46-	+66-	+80-	+89-	+93-
20000	0	+24-	+47-	+67-	+82-	+91-	+95-
22000	0	+25-	+48-	+68-	+83-	+93-	+96-
24000	0	+25-	+49-	+69-	+84-	+94-	+97-
26000	0	+25-	+49-	+69-	+85-	+95-	+98-
28000	0	+25-	+48-	+68-	+84-	+94-	+97-
30000	0	+24-	+46-	+65-	+79-	+88-	+91-
	180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270
	Azimuth of Target - degrees						

Latitude 30° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
2000	0	+5-	+9-	+13-	+16-	+18-	+19-	2000
4000	0	+9-	+17-	+24-	+30-	+34-	+35-	4000
6000	0	+12-	+24-	+34-	+42-	+47-	+48-	6000
8000	0	+15-	+30-	+42-	+51-	+57-	+59-	8000
10000	0	+17-	+34-	+48-	+59-	+66-	+68-	10000
12000	0	+19-	+37-	+53-	+65-	+72-	+75-	12000
14000	0	+21-	+40-	+57-	+69-	+77-	+80-	14000
16000	0	+22-	+42-	+59-	+72-	+81-	+84-	16000
18000	0	+22-	+43-	+61-	+74-	+83-	+86-	18000
20000	0	+23-	+44-	+62-	+75-	+84-	+87-	20000
22000	0	+23-	+44-	+63-	+76-	+85-	+88-	22000
24000	0	+23-	+45-	+63-	+77-	+86-	+89-	24000
26000	0	+23-	+45-	+64-	+78-	+87-	+90-	26000
28000	0	+23-	+44-	+63-	+78-	+86-	+90-	28000
30000	0	+22-	+42-	+60-	+73-	+81-	+84-	30000
	180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270	
	Azimuth of Target - degrees							

*For argument at top of tables use the sign that is before the number.
*For argument at bottom of tables use the sign that follows the number.
*Azimuth measured clockwise from the North.

Part 2b. Table E.

***ROTATION OF THE EARTH, EFFECTS IN YARDS OF RANGE DUE TO**

Latitude 40° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+4-	+8-	+12-	+15-	+16-	+16-
4000	0	+8-	+15-	+22-	+27-	+30-	+30-
6000	0	+11-	+21-	+30-	+37-	+41-	+42-
8000	0	+14-	+26-	+37-	+45-	+50-	+52-
10000	0	+16-	+30-	+43-	+52-	+58-	+60-
12000	0	+17-	+33-	+47-	+57-	+64-	+66-
14000	0	+18-	+35-	+50-	+61-	+68-	+71-
16000	0	+19-	+37-	+52-	+64-	+71-	+74-
18000	0	+20-	+38-	+53-	+66-	+73-	+76-
20000	0	+20-	+39-	+54-	+67-	+74-	+77-
22000	0	+20-	+39-	+55-	+68-	+75-	+78-
24000	0	+21-	+40-	+56-	+69-	+76-	+79-
26000	0	+21-	+40-	+56-	+69-	+77-	+80-
28000	0	+20-	+39-	+55-	+68-	+76-	+79-
30000	0	+19-	+37-	+53-	+64-	+72-	+74-
	180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270
	Azimuth of Target - degrees						

Latitude 50° (North or South)

Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
0	+4-	+7-	+10-	+12-	+13-	+14-	2000
0	+7-	+13-	+18-	+22-	+25-	+26-	4000
0	+9-	+18-	+25-	+31-	+35-	+36-	6000
0	+11-	+22-	+31-	+38-	+43-	+44-	8000
0	+13-	+25-	+36-	+44-	+49-	+51-	10000
0	+14-	+28-	+39-	+48-	+54-	+56-	12000
0	+15-	+30-	+42-	+51-	+58-	+59-	14000
0	+16-	+31-	+44-	+53-	+60-	+62-	16000
0	+16-	+32-	+45-	+55-	+61-	+64-	18000
0	+17-	+32-	+46-	+56-	+62-	+65-	20000
0	+17-	+33-	+46-	+57-	+63-	+66-	22000
0	+17-	+33-	+47-	+58-	+64-	+66-	24000
0	+17-	+34-	+47-	+58-	+65-	+67-	26000
0	+17-	+33-	+46-	+57-	+64-	+66-	28000
0	+16-	+31-	+44-	+54-	+60-	+62-	30000
180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270	
Azimuth of Target - degrees							

Latitude 60° (North or South)

Range yards	Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90
2000	0	+3-	+5-	+8-	+9-	+10-	+11-
4000	0	+5-	+10-	+15-	+17-	+19-	+20-
6000	0	+7-	+14-	+20-	+24-	+27-	+28-
8000	0	+9-	+17-	+24-	+30-	+33-	+34-
10000	0	+10-	+20-	+28-	+34-	+38-	+39-
12000	0	+11-	+22-	+31-	+37-	+42-	+43-
14000	0	+12-	+23-	+33-	+40-	+45-	+46-
16000	0	+12-	+24-	+34-	+42-	+47-	+48-
18000	0	+13-	+25-	+35-	+43-	+48-	+49-
20000	0	+13-	+25-	+36-	+44-	+49-	+50-
22000	0	+13-	+26-	+36-	+44-	+49-	+51-
24000	0	+13-	+26-	+37-	+45-	+50-	+52-
26000	0	+13-	+26-	+37-	+45-	+50-	+52-
28000	0	+13-	+25-	+36-	+44-	+50-	+51-
30000	0	+13-	+24-	+34-	+42-	+47-	+49-
	180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270
	Azimuth of Target - degrees						

Latitude 70° (North or South)

Azimuth of Target - degrees 0 / 180	15 / 165	30 / 150	45 / 135	60 / 120	75 / 105	90 / 90	Range yards
0	+2-	+4-	+5-	+6-	+7-	+8-	2000
0	+4-	+7-	+10-	+11-	+13-	+14-	4000
0	+5-	+10-	+14-	+16-	+18-	+19-	6000
0	+6-	+12-	+17-	+20-	+22-	+23-	8000
0	+7-	+13-	+19-	+23-	+26-	+27-	10000
0	+8-	+15-	+21-	+25-	+29-	+30-	12000
0	+8-	+16-	+22-	+27-	+31-	+32-	14000
0	+9-	+16-	+23-	+28-	+32-	+33-	16000
0	+9-	+17-	+24-	+29-	+33-	+34-	18000
0	+9-	+17-	+24-	+30-	+33-	+34-	20000
0	+9-	+17-	+25-	+30-	+34-	+35-	22000
0	+9-	+18-	+25-	+31-	+34-	+35-	24000
0	+9-	+18-	+25-	+31-	+34-	+36-	26000
0	+9-	+18-	+25-	+31-	+34-	+35-	28000
0	+9-	+17-	+24-	+29-	+32-	+33-	30000
180 / 360	195 / 345	210 / 330	225 / 315	240 / 300	255 / 285	270 / 270	
Azimuth of Target - degrees							

*For argument at top of tables use the sign that is before the number.
*For argument at bottom of tables use the sign that follows the number.
*Azimuth measured clockwise from the North.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table Fa.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN

Range	Increase in Muzzle Velocity - feet per second							
yards	10	20	30	40	50	60	70	80
1000	7	15	22	30	37	44	52	59
2000	14	29	43	58	73	87	102	116
3000	21	43	64	86	107	128	150	171
4000	28	56	84	112	140	168	196	224
5000	35	69	103	138	172	207	241	275
6000	41	81	122	162	205	244	284	325
7000	47	93	140	186	233	280	326	373
8000	52	104	157	209	262	314	366	419
9000	58	115	173	231	289	347	404	462
10000	63	126	189	252	315	378	441	504
11000	68	136	204	272	340	408	476	544
12000	73	145	218	291	364	437	509	582
13000	77	154	232	309	386	464	541	619
14000	82	163	245	327	408	490	572	654
15000	86	172	258	344	429	515	602	688
16000	90	180	270	360	450	540	631	721
17000	94	188	282	376	470	564	659	753
18000	98	196	294	391	489	586	686	784
19000	102	203	305	407	509	611	713	815
20000	106	211	316	422	528	634	740	846
21000	109	219	328	438	548	657	767	877
22000	113	226	340	453	567	680	794	908
23000	117	234	352	469	587	704	822	940
24000	121	243	364	486	608	729	851	973
25000	126	251	377	503	629	755	881	1008
26000	130	260	391	521	651	782	913	1044
27000	135	270	405	540	675	810	946	1082
28000	140	280	420	560	700	841	982	1123
29000	146	291	437	583	729	876	1024	1171
30000	152	304	457	611	765	919	1074	1229

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table Fa.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN

Range	Increase in Muzzle Velocity - feet per second						
yards	90	100	110	120	130	140	150
1000	67	74	82	89	96	103	111
2000	131	145	160	174	189	203	218
3000	192	214	235	257	279	300	321
4000	252	280	308	337	365	393	421
5000	310	344	379	414	448	482	517
6000	366	406	447	488	528	569	610
7000	420	466	513	559	606	653	700
8000	471	523	576	628	681	733	786
9000	520	578	636	694	752	810	868
10000	567	631	694	757	820	884	947
11000	612	681	749	817	885	954	1022
12000	655	728	801	874	947	1020	1093
13000	696	774	851	929	1007	1084	1162
14000	736	818	900	982	1064	1146	1228
15000	774	860	946	1033	1119	1206	1292
16000	811	901	992	1082	1173	1263	1354
17000	847	941	1036	1130	1225	1319	1414
18000	882	980	1079	1177	1276	1374	1473
19000	917	1019	1122	1224	1327	1429	1532
20000	952	1058	1165	1271	1378	1484	1591
21000	987	1097	1207	1318	1428	1538	1649
22000	1022	1136	1250	1365	1479	1593	1708
23000	1058	1176	1294	1413	1531	1649	1768
24000	1096	1218	1340	1463	1585	1708	1831
25000	1135	1262	1388	1515	1642	1769	1897
26000	1175	1307	1438	1570	1701	1833	1965
27000	1218	1354	1490	1627	1763	1900	2037
28000	1265	1406	1547	1689	1831	1973	2116
29000	1319	1467	1615	1764	1913	2062	2212
30000	1384	1540	1697	1854	2012	2170	2328

700 LB. C.S. SHELL MK X M.V. = 2600 F/S , FUZE, POINT DET. MK III

Part 2b. Table Fb.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN

Range	Decrease in Muzzle Velocity - feet per second							
yards	10	20	30	40	50	60	70	80
[illegible]	-7	-15	-22	-30	-37	-44	-52	-59
[illegible]	-15	-29	-43	-58	-73	-87	-102	-116
3000	-22	-43	-64	-85	-107	-128	-150	-171
4000	-28	-56	-84	-112	-140	-168	-196	-224
5000	-34	-69	-103	-138	-172	-206	-241	-275
6000	-41	-81	-121	-162	-203	-243	-284	-324
7000	-47	-93	-139	-186	-233	-279	-325	-371
8000	-52	-104	-156	-209	-261	-313	-365	-417
9000	-57	-115	-173	-230	-288	-346	-403	-461
10000	-63	-126	-189	-251	-314	-377	-439	-502
11000	-68	-136	-204	-271	-339	-407	-474	-542
12000	-73	-145	-218	-290	-363	-435	-507	-580
13000	-77	-154	-231	-308	-385	-462	-539	-616
14000	-82	-163	-244	-316	-407	-488	-570	-651
15000	-86	-171	-253	-343	-428	-513	-599	-685
16000	-90	-180	-269	-359	-449	-538	-628	-717
17000	-94	-188	-281	-375	-469	-562	-656	-749
18000	-98	-195	-293	-391	-488	-585	-683	-780
19000	-102	-203	-304	-406	-507	-608	-709	-811
20000	-105	-211	-316	-421	-526	-631	-736	-841
21000	-109	-218	-327	-436	-545	-654	-763	-871
22000	-113	-226	-339	-452	-564	-677	-790	-902
23000	-117	-234	-351	-468	-584	-701	-818	-934
24000	-121	-242	-363	-484	-605	-726	-847	-967
25000	-125	-251	-376	-501	-626	-751	-876	-1000
26000	-130	-260	-389	-519	-648	-777	-906	-1035
27000	-135	-269	-403	-537	-671	-805	-938	-1072
28000	-140	-279	-418	-556	-695	-834	-972	-1110
29000	-145	-290	-434	-578	-722	-866	-1009	-1151
30000	-151	-302	-453	-603	-753	-902	-1051	-1199

700 LB. C.S. SHELL MK X M.V.= 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table Fb.

MUZZLE VELOCITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN

Range	Decrease in Muzzle Velocity - feet per second						
yards	90	100	110	120	130	140	150
1000	-67	-74	-82	-89	-96	-104	-111
2000	-131	-145	-160	-174	-189	-204	-218
3000	-193	-214	-235	-256	-278	-299	-320
4000	-252	-280	-308	-335	-363	-391	-419
5000	-309	-344	-378	-412	-446	-481	-515
6000	-365	-405	-445	-486	-526	-567	-607
7000	-419	-464	-510	-556	-603	-649	-695
8000	-469	-521	-573	-624	-676	-728	-780
9000	-518	-575	-633	-690	-747	-805	-862
10000	-565	-627	-690	-753	-815	-878	-940
11000	-609	-677	-744	-812	-879	-947	-1014
12000	-652	-724	-796	-869	-941	-1013	-1085
13000	-693	-769	-846	-923	-1000	-1076	-1153
14000	-732	-813	-894	-975	-1056	-1137	-1218
15000	-770	-855	-940	-1026	-1111	-1196	-1281
16000	-807	-896	-985	-1075	-1164	-1253	-1342
17000	-842	-936	-1029	-1122	-1215	-1308	-1401
18000	-877	-974	-1071	-1168	-1265	-1362	-1459
19000	-912	-1012	-1113	-1214	-1315	-1415	-1516
20000	-946	-1050	-1155	-1260	-1364	-1468	-1573
21000	-980	-1089	-1197	-1305	-1413	-1521	-1629
22000	-1015	-1127	-1239	-1351	-1463	-1575	-1686
23000	-1050	-1166	-1282	-1398	-1514	-1629	-1745
24000	-1087	-1207	-1327	-1447	-1567	-1686	-1806
25000	-1125	-1249	-1373	-1497	-1621	-1745	-1869
26000	-1164	-1293	-1421	-1549	-1677	-1806	-1934
27000	-1205	-1338	-1471	-1603	-1736	-1869	-2001
28000	-1248	-1385	-1523	-1660	-1797	-1934	-2070
29000	-1294	-1436	-1578	-1720	-1861	-2002	-2143
30000	-1347	-1494	-1641	-1787	-1933	-2078	-2224

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Table 6a.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN (59° F. and 29.5 + in.)

Range yards	Decrease in Air Density - per cent							
	1	2	3	4	5	6	7	8
1000	0	0	0	0	0	0	0	0
2000	1	1	2	2	3	3	4	5
3000	2	3	5	6	8	10	12	14
4000	3	6	10	13	16	20	24	27
5000	5	10	16	22	28	34	40	46
6000	8	16	24	33	42	50	59	68
7000	11	23	34	46	56	70	82	94
8000	15	30	45	61	77	92	108	124
9000	19	38	58	78	98	118	138	159
10000	24	48	72	96	121	146	171	197
11000	29	58	87	116	146	176	207	238
12000	34	69	103	138	173	209	245	281
13000	40	80	120	161	202	245	285	327
14000	46	92	138	185	232	279	327	376
15000	52	104	157	210	264	318	372	428
16000	58	117	177	237	297	358	420	482
17000	65	131	198	265	332	400	470	539
18000	72	145	219	294	369	444	521	598
19000	80	160	241	323	406	489	573	658
20000	87	175	264	353	443	535	627	720
21000	94	190	286	383	481	581	681	782
22000	102	205	308	413	520	627	735	844
23000	109	220	331	444	558	675	790	908
24000	117	235	354	475	597	720	845	972
25000	124	250	377	505	635	767	900	1035
26000	131	264	399	535	673	812	954	1097
27000	138	278	420	563	709	856	1005	1157
28000	145	292	441	591	744	899	1056	1215
29000	152	306	462	620	781	943	1108	1275
30000	160	322	486	653	821	992	1165	1340

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table 6a.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO DECREASE IN (59° F. and 29.5 + in.)

Range yards	Decrease in Air Density - per cent							
	9	10	11	12	13	14	15	16
1000	0	1	1	1	1	1	1	1
2000	5	6	7	8	8	9	10	11
3000	15	17	19	21	23	26	28	30
4000	31	35	38	42	46	51	55	59
5000	52	58	64	70	77	84	90	97
6000	77	86	95	104	114	125	133	143
7000	107	119	132	144	157	170	184	197
8000	141	157	174	191	208	225	242	260
9000	180	201	222	243	265	287	308	331
10000	222	248	275	301	328	354	382	409
11000	268	299	331	363	395	427	460	493
12000	317	354	391	429	467	505	543	582
13000	369	412	455	499	543	587	632	677
14000	424	474	524	574	624	675	726	778
15000	483	539	596	653	710	768	826	885
16000	545	608	672	736	800	866	932	998
17000	609	680	751	823	895	969	1042	1116
18000	676	754	833	913	993	1075	1156	1239
19000	744	830	918	1006	1094	1184	1274	1365
20000	814	908	1004	1100	1197	1295	1394	1494
21000	884	987	1091	1196	1302	1408	1516	1625
22000	955	1067	1179	1293	1408	1523	1640	1758
23000	1027	1147	1268	1391	1515	1640	1766	1894
24000	1099	1228	1359	1491	1624	1759	1894	2032
25000	1172	1309	1449	1590	1733	1877	2022	2170
26000	1242	1388	1537	1687	1839	1992	2147	2304
27000	1309	1464	1621	1779	1940	2102	2266	2432
28000	1375	1538	1703	1869	2038	2209	2381	2556
29000	1443	1614	1787	1961	2138	2318	2499	2682
30000	1517	1697	1879	2062	2248	2436	2627	2819

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table Gb.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN (59° F. and 29.5 + in.)

Range yards	Increase in Air Density - per cent							
	1	2	3	4	5	6	7	8
1000	0	0	0	0	0	0	0	0
2000	0	-1	-1	-2	-2	-3	-3	-3
3000	-1	-3	-4	-6	-7	-8	-9	-11
4000	-3	-6	-9	-12	-15	-17	-20	-23
5000	-5	-10	-15	-20	-25	-30	-35	-40
6000	-8	-15	-23	-31	-38	-46	-53	-60
7000	-11	-22	-33	-44	-54	-65	-75	-85
8000	-15	-30	-44	-58	-72	-86	-100	-114
9000	-19	-38	-56	-75	-93	-110	-128	-146
10000	-23	-47	-70	-93	-115	-137	-159	-181
11000	-28	-57	-85	-112	-139	-166	-193	-219
12000	-33	-67	-100	-133	-165	-197	-229	-260
13000	-39	-78	-117	-155	-192	-230	-267	-303
14000	-45	-90	-134	-178	-221	-264	-307	-349
15000	-51	-102	-153	-203	-252	-301	-349	-397
16000	-58	-115	-172	-228	-284	-339	-393	-448
17000	-65	-129	-192	-255	-317	-379	-440	-501
18000	-72	-143	-213	-283	-352	-420	-488	-555
19000	-79	-157	-234	-311	-387	-462	-536	-610
20000	-86	-171	-255	-339	-422	-504	-585	-665
21000	-93	-185	-277	-367	-457	-546	-634	-720
22000	-101	-200	-299	-396	-492	-588	-682	-775
23000	-108	-215	-320	-424	-527	-629	-730	-829
24000	-115	-229	-341	-452	-562	-670	-777	-882
25000	-122	-243	-362	-480	-596	-711	-824	-935
26000	-129	-257	-383	-507	-629	-751	-870	-987
27000	-136	-270	-403	-534	-662	-789	-914	-1038
28000	-143	-284	-423	-560	-695	-828	-959	-1088
29000	-150	-298	-444	-587	-729	-868	-1006	-1141
30000	-158	-315	-467	-618	-767	-914	-1059	-1202

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table Gb.

AIR DENSITY, EFFECT IN YARDS OF RANGE, DUE TO INCREASE IN (59° F. and 29.5 + in.)

Range yards	Increase in Air Density - per cent							
	9	10	11	12	13	14	15	16
1000	0	0	0	0	0	0	0	0
2000	-4	-4	-4	-4	-5	-5	-5	-5
3000	-12	-13	-14	-15	-16	-17	-18	-18
4000	-25	-28	-30	-32	-35	-37	-39	-41
5000	-44	-48	-53	-57	-61	-65	-69	-73
6000	-67	-74	-81	-88	-94	-101	-107	-113
7000	-95	-105	-114	-124	-134	-143	-152	-161
8000	-127	-140	-153	-166	-179	-191	-204	-216
9000	-163	-180	-197	-213	-230	-246	-262	-278
10000	-203	-224	-245	-266	-287	-307	-327	-347
11000	-246	-272	-297	-323	-348	-372	-397	-421
12000	-291	-322	-353	-383	-413	-442	-471	-500
13000	-339	-376	-412	-447	-482	-516	-550	-584
14000	-391	-433	-474	-514	-554	-594	-633	-672
15000	-445	-492	-539	-585	-631	-676	-721	-765
16000	-502	-555	-608	-660	-711	-762	-812	-862
17000	-561	-620	-679	-737	-794	-851	-907	-963
18000	-621	-687	-752	-816	-879	-942	-1004	-1066
19000	-683	-755	-826	-896	-966	-1035	-1103	-1171
20000	-745	-823	-901	-977	-1053	-1128	-1203	-1276
21000	-806	-891	-974	-1057	-1139	-1220	-1300	-1379
22000	-867	-958	-1047	-1136	-1224	-1310	-1395	-1480
23000	-927	-1024	-1119	-1214	-1307	-1399	-1489	-1579
24000	-986	-1089	-1190	-1290	-1389	-1486	-1582	-1676
25000	-1045	-1153	-1260	-1365	-1469	-1571	-1672	-1771
26000	-1103	-1216	-1329	-1439	-1548	-1655	-1760	-1864
27000	-1159	-1278	-1396	-1512	-1626	-1738	-1848	-1956
28000	-1215	-1340	-1463	-1584	-1704	-1821	-1936	-2049
29000	-1274	-1405	-1534	-1661	-1786	-1909	-2029	-2148
30000	-1342	-1480	-1616	-1751	-1883	-2012	-2139	-2265

"12-N-1"

Part 2b. Table H.

TEMPERATURE,(ELASTICITY) EFFECTS IN YARDS OF RANGE (59° F.)

Range yards	Temperature of Air - degrees Fahrenheit											
	0	10	20	30	40	50	59	60	70	80	90	100
1000	-6	-5	-4	-3	-2	-1	0	0	+1	+2	+3	+4
2000	-9	-7	-6	-4	-3	-1	0	0	2	3	4	6
3000	-9	-7	-6	-4	-3	-1	0	0	2	3	4	6
4000	-6	-5	-4	-3	-2	-1	0	0	1	2	3	4
5000	-1	-1	-1	-1	0	0	0	0	0	0	1	1
6000	+6	+5	+4	+3	+2	+1	0	0	-1	-2	-3	-4
7000	15	13	10	8	5	2	0	0	-3	-5	-8	-11
8000	27	22	18	13	9	4	0	0	-5	-9	-14	-19
9000	40	33	26	19	13	6	0	-1	-7	-14	-21	-28
10000	53	44	35	26	17	8	0	-1	-10	-19	-28	-37
11000	67	56	44	33	22	10	0	-1	-13	-24	-35	-46
12000	81	67	53	40	26	12	0	-1	-15	-29	-42	-56
13000	94	78	62	46	30	14	0	-2	-18	-34	-50	-66
14000	108	89	71	53	35	16	0	-2	-20	-38	-57	-75
15000	121	100	80	59	39	18	0	-2	-23	-43	-64	-84
16000	133	111	88	66	43	20	0	-2	-25	-47	-70	-93
17000	145	121	96	72	47	22	0	-2	-27	-51	-76	-101
18000	156	130	103	77	50	24	0	-3	-29	-55	-81	-108
19000	165	137	109	81	53	25	0	-3	-31	-58	-86	-114
20000	171	142	113	84	55	26	0	-3	-32	-61	-90	-119
21000	174	145	115	85	56	26	0	-3	-32	-62	-92	-121
22000	173	144	114	85	56	26	0	-3	-32	-62	-91	-120
23000	167	139	110	82	54	25	0	-3	-31	-60	-88	-116
24000	156	130	103	77	50	24	0	-3	-29	-56	-82	-108
25000	140	116	92	69	45	21	0	-2	-26	-50	-73	-97
26000	118	98	78	58	38	18	0	-2	-22	-42	-62	-82
27000	90	75	60	44	29	14	0	-2	-17	-32	-48	-63
28000	57	48	38	28	18	9	0	-1	-11	-21	-31	-40
29000	19	16	13	10	6	3	0	0	-4	-8	-11	-14
30000	-24	-20	-15	-11	-7	-4	0	0	+4	+8	+12	+16

Part 2b. Table I.

REAR WIND, EFFECT IN YARDS OF RANGE, DUE TO

Range yards	Rear Wind - miles per hour									
	5	10	15	20	25	30	35	40	45	50
1000	0	0	0	0	0	0	0	0	0	0
2000	0	1	1	1	1	2	2	2	3	3
3000	1	2	2	3	4	5	5	6	7	8
4000	1	3	4	6	7	8	10	11	13	14
5000	2	5	7	9	11	13	16	18	20	22
6000	3	7	10	13	16	20	23	27	30	33
7000	5	9	14	18	23	28	32	37	42	46
8000	6	12	19	25	31	37	43	49	55	61
9000	8	16	24	32	40	47	55	63	71	79
10000	10	20	30	40	50	59	69	79	89	99
11000	12	24	37	49	61	73	85	97	109	122
12000	15	29	44	59	73	88	103	117	132	147
13000	17	35	52	70	87	105	122	140	157	175
14000	20	41	62	82	103	124	144	165	185	206
15000	24	48	72	96	120	144	168	192	216	240
16000	28	55	83	111	138	166	193	221	249	276
17000	32	63	94	126	157	189	220	252	284	315
18000	36	72	107	143	178	214	250	286	322	357
19000	40	81	121	161	201	241	282	323	363	403
20000	45	91	136	181	226	271	316	362	407	452
21000	51	102	152	202	252	303	353	404	455	505
22000	56	113	169	225	281	338	394	450	507	563
23000	62	125	187	250	312	375	438	500	563	625
24000	69	138	207	277	346	415	485	554	623	692
25000	76	152	229	306	382	458	535	611	687	763
26000	84	168	252	336	420	504	588	672	755	839
27000	92	184	276	368	460	552	644	736	828	920
28000	100	201	301	402	502	603	703	804	905	1005
29000	109	219	328	438	547	657	766	876	986	1095
30000	119	238	357	476	595	714	833	952	1071	1190

NOTE: The range effects due to a head wind are so nearly identical in numerical value to those for a rear wind that the above table with signs changed should be used for head wind effects.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table J.

CROSS WIND EFFECTS

Range yards	in mils					in degrees				
	Cross Wind - miles per hour									
	10	20	30	40	50	10	20	30	40	50
1000	0.1	0.2	0.3	0.4	0.5	0.01	0.01	0.02	0.02	0.03
2000	0.2	0.4	0.6	0.8	1.0	0.01	0.02	0.03	0.04	0.06
3000	0.3	0.6	1.0	1.3	1.6	0.02	0.04	0.05	0.07	0.09
4000	0.4	0.9	1.3	1.8	2.2	0.03	0.05	0.08	0.10	0.13
5000	0.6	1.2	1.7	2.3	2.9	0.03	0.07	0.10	0.13	0.16
6000	0.7	1.4	2.2	2.9	3.6	0.04	0.08	0.12	0.16	0.20
7000	0.9	1.7	2.6	3.5	4.3	0.05	0.10	0.15	0.19	0.24
8000	1.0	2.0	3.0	4.1	5.1	0.06	0.11	0.17	0.23	0.28
9000	1.2	2.3	3.5	4.7	5.8	0.07	0.13	0.20	0.26	0.33
10000	1.3	2.6	4.0	5.3	6.6	0.07	0.15	0.22	0.30	0.37
11000	1.5	3.0	4.4	5.9	7.4	0.08	0.17	0.25	0.33	0.41
12000	1.6	3.3	4.9	6.6	8.2	0.09	0.18	0.28	0.37	0.46
13000	1.8	3.6	5.4	7.3	9.1	0.10	0.20	0.31	0.41	0.51
14000	2.0	4.0	6.0	8.0	10.0	0.11	0.22	0.34	0.45	0.56
15000	2.2	4.3	6.5	8.7	10.9	0.12	0.24	0.37	0.49	0.61
16000	2.4	4.7	7.1	9.4	11.8	0.13	0.27	0.40	0.53	0.66
17000	2.5	5.1	7.6	10.2	12.7	0.14	0.29	0.43	0.57	0.72
18000	2.7	5.5	8.2	11.0	13.7	0.15	0.31	0.46	0.62	0.77
19000	2.9	5.9	8.8	11.8	14.7	0.17	0.33	0.50	0.66	0.83
20000	3.1	6.3	9.4	12.6	15.7	0.18	0.35	0.53	0.71	0.88
21000	3.3	6.7	10.0	13.4	16.7	0.19	0.38	0.56	0.75	0.94
22000	3.5	7.1	10.6	14.2	17.7	0.20	0.40	0.60	0.80	0.99
23000	3.7	7.5	11.2	15.0	18.7	0.21	0.42	0.63	0.84	1.05
24000	3.9	7.9	11.8	15.8	19.7	0.22	0.44	0.66	0.89	1.11
25000	4.1	8.3	12.4	16.5	20.7	0.23	0.46	0.70	0.93	1.16
26000	4.3	8.6	13.0	17.3	21.6	0.24	0.49	0.73	0.97	1.22
27000	4.5	9.0	13.5	18.1	22.6	0.25	0.51	0.76	1.02	1.27
28000	4.7	9.4	14.1	18.8	23.6	0.26	0.53	0.79	1.06	1.33
29000	4.9	9.8	14.7	19.6	24.6	0.28	0.55	0.83	1.10	1.38
30000	5.1	10.2	15.4	20.5	25.6	0.29	0.58	0.86	1.15	1.44

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table K.

*ROTATION OF THE EARTH, DEFLECTION EFFECTS IN MILS DUE TO

Latitude 0°

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10000	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12000	+0.1-	0.0	0.0	0.0	0.0	0.0	-0.1+
14000	+0.1-	+0.1-	0.0	0.0	0.0	-0.1+	-0.1+
16000	+0.1-	+0.1-	+0.1-	0.0	-0.1+	-0.1+	-0.2+
18000	+0.2-	+0.1-	+0.1-	0.0	-0.1+	-0.1+	-0.2+
20000	+0.2-	+0.2-	+0.1-	0.0	-0.1+	-0.2+	-0.2+
22000	+0.3-	+0.3-	+0.1-	0.0	-0.1+	-0.3+	-0.3+
24000	+0.4-	+0.4-	+0.2-	0.0	-0.2+	-0.4+	-0.4+
26000	+0.6-	+0.5-	+0.3-	0.0	-0.5+	-0.5+	-0.6+
28000	+0.9-	+0.7-	+0.4-	0.0	-0.4+	-0.7+	-0.9+
30000	+1.2-	+1.0-	+0.6-	0.0	-0.6+	-1.0+	-1.2+
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360

Azimuth of Target - degrees

Latitude 10° (North)

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180	Range yards
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2000
4000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	4000
6000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	6000
8000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	8000
10000	-0.1+	-0.1+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	10000
12000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.3+	12000
14000	-0.2+	-0.2+	-0.2+	-0.2+	-0.3+	-0.3+	-0.3+	14000
16000	-0.2+	-0.2+	-0.3+	-0.3+	-0.4+	-0.4+	-0.4+	16000
18000	-0.2+	-0.2+	-0.3+	-0.3+	-0.4+	-0.5+	-0.5+	18000
20000	-0.2+	-0.2+	-0.3+	-0.4+	-0.5+	-0.6+	-0.6+	20000
22000	-0.2+	-0.2+	-0.3+	-0.5+	-0.6+	-0.7+	-0.8+	22000
24000	-0.1+	-0.1+	-0.3+	-0.5+	-0.7+	-0.9+	-1.0+	24000
26000	0.0	-0.1+	-0.3+	-0.6+	-0.9+	-1.1+	-1.2+	26000
28000	+0.2-	0.0	-0.3+	-0.7+	-1.1+	-1.4+	-1.5+	28000
30000	+0.4-	+0.2-	-0.2+	-0.8+	-1.4+	-1.9+	-2.0+	30000
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360	

Azimuth of Target - degrees

Latitude 10° (South)

Latitude 20° (North)

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+
4000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+
6000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+
8000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+
10000	-0.3+	-0.3+	-0.3+	-0.3+	-0.4+	-0.4+	-0.4+
12000	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.5+	-0.5+
14000	-0.4+	-0.4+	-0.5+	-0.5+	-0.5+	-0.6+	-0.6+
16000	-0.5+	-0.5+	-0.6+	-0.6+	-0.6+	-0.7+	-0.7+
18000	-0.6+	-0.6+	-0.6+	-0.7+	-0.8+	-0.8+	-0.8+
20000	-0.6+	-0.6+	-0.7+	-0.8+	-0.9+	-1.0+	-1.0+
22000	-0.6+	-0.7+	-0.8+	-0.9+	-1.1+	-1.2+	-1.2+
24000	-0.7+	-0.7+	-0.9+	-1.1+	-1.3+	-1.4+	-1.5+
26000	-0.7+	-0.7+	-0.9+	-1.2+	-1.5+	-1.7+	-1.8+
28000	-0.6+	-0.8+	-1.0+	-1.4+	-1.8+	-2.1+	-2.2+
30000	-0.5+	-0.7+	-1.1+	-1.6+	-2.2+	-2.6+	-2.8+
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360

Azimuth of Target - degrees

Latitude 20° (South)

Latitude 30° (North)

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180	Range yards
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	2000
4000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	4000
6000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	6000
8000	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	8000
10000	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	10000
12000	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	-0.7+	-0.7+	12000
14000	-0.7+	-0.7+	-0.7+	-0.7+	-0.8+	-0.8+	-0.8+	14000
16000	-0.8+	-0.8+	-0.8+	-0.9+	-0.9+	-1.0+	-1.0+	16000
18000	-0.9+	-0.9+	-0.9+	-1.0+	-1.1+	-1.1+	-1.2+	18000
20000	-1.0+	-1.0+	-1.1+	-1.2+	-1.3+	-1.3+	-1.4+	20000
22000	-1.1+	-1.1+	-1.2+	-1.4+	-1.5+	-1.6+	-1.6+	22000
24000	-1.2+	-1.2+	-1.4+	-1.6+	-1.7+	-1.9+	-1.9+	24000
26000	-1.3+	-1.3+	-1.5+	-1.8+	-2.0+	-2.2+	-2.3+	26000
28000	-1.3+	-1.4+	-1.7+	-2.1+	-2.4+	-2.7+	-2.8+	28000
30000	-1.3+	-1.5+	-1.9+	-2.4+	-2.9+	-3.3+	-3.5+	30000
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360	

Azimuth of Target - degrees

Latitude 30° (South)

*Negative sign means the effect is to the right. *Positive sign means the effect is to the left. *For argument at top of table use sign that is before the number. *For argument at bottom of table use sign that follows the number. *Azimuth measured clockwise from North.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b. Table K.

*ROTATION OF THE EARTH, DEFLECTION EFFECTS IN MILS DUE TO

Latitude 40° (North)

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+
4000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+
6000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+
8000	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+
10000	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+
12000	-0.7+	-0.8+	-0.8+	-0.8+	-0.8+	-0.8+	-0.8+
14000	-0.9+	-0.9+	-0.9+	-0.9+	-1.0+	-1.0+	-1.0+
16000	-1.0+	-1.0+	-1.1+	-1.1+	-1.2+	-1.2+	-1.2+
18000	-1.2+	-1.2+	-1.3+	-1.3+	-1.4+	-1.4+	-1.4+
20000	-1.4+	-1.4+	-1.5+	-1.5+	-1.6+	-1.7+	-1.7+
22000	-1.5+	-1.6+	-1.7+	-1.7+	-1.9+	-2.0+	-2.0+
24000	-1.7+	-1.7+	-1.9+	-2.0+	-2.2+	-2.3+	-2.3+
26000	-1.9+	-1.9+	-2.1+	-2.3+	-2.5+	-2.7+	-2.7+
28000	-2.0+	-2.1+	-2.3+	-2.7+	-3.0+	-3.2+	-3.3+
30000	-2.2+	-2.3+	-2.6+	-3.1+	-3.6+	-3.9+	-4.0+
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360

Azimuth of Target - degrees

Latitude 40° (South)

Latitude 50° (North)

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180	Range yards
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	2000
4000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	4000
6000	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	-0.4+	6000
8000	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	-0.6+	8000
10000	-0.7+	-0.7+	-0.7+	-0.7+	-0.8+	-0.8+	-0.8+	10000
12000	-0.9+	-0.9+	-0.9+	-0.9+	-0.9+	-1.0+	-1.0+	12000
14000	-1.1+	-1.1+	-1.1+	-1.1+	-1.1+	-1.2+	-1.2+	14000
16000	-1.3+	-1.3+	-1.3+	-1.3+	-1.4+	-1.4+	-1.4+	16000
18000	-1.5+	-1.5+	-1.5+	-1.6+	-1.6+	-1.6+	-1.7+	18000
20000	-1.7+	-1.7+	-1.8+	-1.8+	-1.9+	-1.9+	-2.0+	20000
22000	-1.9+	-1.9+	-2.0+	-2.1+	-2.2+	-2.2+	-2.3+	22000
24000	-2.1+	-2.2+	-2.3+	-2.4+	-2.5+	-2.6+	-2.7+	24000
26000	-2.4+	-2.4+	-2.6+	-2.8+	-2.9+	-3.0+	-3.1+	26000
28000	-2.6+	-2.7+	-2.9+	-3.2+	-3.4+	-3.6+	-3.7+	28000
30000	-2.9+	-3.0+	-3.3+	-3.7+	-4.1+	-4.4+	-4.5+	30000
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360	

Azimuth of Target - degrees

Latitude 50° (South)

Latitude 60° (North)

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180
2000	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+	-0.1+
4000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+
6000	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+
8000	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+
10000	-0.8+	-0.8+	-0.8+	-0.9+	-0.9+	-0.9+	-0.9+
12000	-1.0+	-1.0+	-1.0+	-1.1+	-1.1+	-1.1+	-1.1+
14000	-1.2+	-1.2+	-1.8+	-1.3+	-1.3+	-1.3+	-1.3+
16000	-1.5+	-1.5+	-1.5+	-1.5+	-1.5+	-1.6+	-1.6+
18000	-1.7+	-1.7+	-1.7+	-1.8+	-1.8+	-1.8+	-1.9+
20000	-1.9+	-1.9+	-2.0+	-2.1+	-2.1+	-2.1+	-2.2+
22000	-2.2+	-2.3+	-2.3+	-2.4+	-2.4+	-2.5+	-2.5+
24000	-2.5+	-2.5+	-2.6+	-2.7+	-2.8+	-2.9+	-2.9+
26000	-2.8+	-2.9+	-3.0+	-3.1+	-3.2+	-3.3+	-3.4+
28000	-3.2+	-3.2+	-3.4+	-3.6+	-3.8+	-3.9+	-4.0+
30000	-3.6+	-3.6+	-3.9+	-4.2+	-4.5+	-4.7+	-4.8+
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360

Azimuth of Target - degrees

Latitude 60° (South)

Latitude 70° (North)

Range yards	Azimuth of Target - degrees 0 / 360	30 / 330	60 / 300	90 / 270	120 / 240	150 / 210	180 / 180	Range yards
2000	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	-0.2+	2000
4000	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	-0.3+	4000
6000	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	-0.5+	6000
8000	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	-0.7+	8000
10000	-0.9+	-0.9+	-0.9+	-0.9+	-0.9+	-0.9+	-0.9+	10000
12000	-1.1+	-1.1+	-1.1+	-1.1+	-1.2+	-1.2+	-1.2+	12000
14000	-1.4+	-1.4+	-1.4+	-1.4+	-1.4+	-1.4+	-1.4+	14000
16000	-1.6+	-1.6+	-1.6+	-1.6+	-1.7+	-1.7+	-1.7+	16000
18000	-1.9+	-1.9+	-1.9+	-1.9+	-2.0+	-2.0+	-2.0+	18000
20000	-2.2+	-2.2+	-2.2+	-2.2+	-2.3+	-2.3+	-2.3+	20000
22000	-2.5+	-2.5+	-2.5+	-2.6+	-2.6+	-2.6+	-2.7+	22000
24000	-2.8+	-2.8+	-2.9+	-3.0+	-3.0+	-3.0+	-3.1+	24000
26000	-3.2+	-3.2+	-3.3+	-3.4+	-3.4+	-3.5+	-3.6+	26000
28000	-3.6+	-3.7+	-3.8+	-3.9+	-4.0+	-4.1+	-4.2+	28000
30000	-4.1+	-4.2+	-4.3+	-4.5+	-4.7+	-4.9+	-5.0+	30000
	180 / 180	150 / 210	120 / 240	90 / 270	60 / 300	30 / 330	0 / 360	

Azimuth of Target - degrees

Latitude 70° (South)

*Negative sign means the effect is to the right. *Positive sign means the effect is to the left. *For argument at top of table use sign that is before the number. *For argument at bottom of table use sign that follows the number. *Azimuth measured clockwise from North.

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b.

Range	Elevation			Range	Elevation			Range	Elevation		
yards	mils	o	'	yards	mils	o	'	yards	mils	o	'
0	-1.0	0	-03	3000	22.6	1	17	6000	50.8	2	51
100	-0.2	0	-01	3100	23.6	1	20	6100	51.8	2	55
200	+0.4	0	+02	3200	24.4	1	22	6200	52.8	2	58
300	1.2	0	04	3300	25.4	1	25	6300	53.8	3	02
400	2.0	0	07	3400	26.2	1	28	6400	54.8	3	05
500	2.6	0	09	3500	27.0	1	31	6500	56.0	3	09
600	3.4	0	12	3600	28.0	1	34	6600	57.0	3	12
700	4.2	0	14	3700	28.8	1	37	6700	58.0	3	16
800	5.0	0	17	3800	29.6	1	40	6800	59.0	3	19
900	5.8	0	19	3900	30.6	1	43	6900	60.2	3	23
1000	6.4	0	22	4000	31.4	1	46	7000	61.4	3	27
1100	7.2	0	24	4100	32.4	1	49	7100	62.4	3	30
1200	8.0	0	27	4200	33.4	1	52	7200	63.4	3	34
1300	8.8	0	30	4300	34.2	1	56	7300	64.6	3	38
1400	9.6	0	32	4400	35.2	1	59	7400	65.8	3	41
1500	10.4	0	35	4500	36.0	2	02	7500	67.0	3	45
1600	11.2	0	38	4600	37.0	2	05	7600	68.0	3	49
1700	12.0	0	40	4700	38.0	2	08	7700	69.0	3	53
1800	12.8	0	43	4800	39.0	2	11	7800	70.0	3	56
1900	13.6	0	46	4900	39.8	2	15	7900	71.2	4	00
2000	14.2	0	48	5000	40.8	2	19	8000	72.6	4	04
2100	15.0	0	51	5100	41.8	2	21	8100	73.8	4	08
2200	16.0	0	54	5200	42.8	2	24	8200	74.8	4	12
2300	16.8	0	57	5300	43.8	2	28	8300	75.8	4	16
2400	17.6	1	00	5400	44.8	2	31	8400	77.0	4	20
2500	18.4	1	02	5500	45.8	2	34	8500	78.4	4	24
2600	19.4	1	05	5600	46.8	2	38	8600	79.6	4	28
2700	20.2	1	08	5700	47.8	2	41	8700	80.6	4	32
2800	21.0	1	11	5800	48.8	2	44	8800	81.8	4	36
2900	21.8	1	14	5900	49.8	2	48	8900	83.0	4	40
3000	22.6	1	17	6000	50.8	2	51	9000	84.4	4	44

700 LB. C.S. SHELL MK X M. V. = 2600 F/S FUZE, POINT DET. MK III

Part 2b.

Range	Elevation			Range	Elevation			Range	Elevation			Range	Elevation		
yards	mils	o	'	yards	mils	o	'	yards	mils	o	'	yards	mils	o	'
9000	84.4	4	44	12000	124.2	7	00	15000	173.0	9	44				
9100	85.6	4	48	12100	125.8	7	04	15100	174.8	9	50				
9200	86.8	4	52	12200	127.2	7	10	15200	176.6	9	56				
9300	88.0	4	57	12300	128.8	7	14	15300	178.4	10	02				
9400	89.2	5	01	12400	130.2	7	20	15400	180.2	10	08				
9500	90.6	5	05	12500	131.6	7	25	15500	182.2	10	15				
9600	91.8	5	09	12600	133.2	7	30	15600	184.0	10	21				
9700	93.0	5	14	12700	134.8	7	35	15700	186.0	10	28				
9800	94.2	5	18	12800	136.4	7	40	15800	187.8	10	34				
9900	95.6	5	22	12900	137.8	7	45	15900	189.8	10	40				
10000	97.0	5	27	13000	139.4	7	51	16000	191.6	10	47				
10100	98.2	5	31	13100	141.0	7	56	16100	193.6	10	53				
10200	99.4	5	35	13200	142.6	8	01	16200	195.6	11	00				
10300	100.6	5	40	13300	144.2	8	07	16300	197.6	11	07				
10400	102.0	5	44	13400	145.8	8	12	16400	199.4	11	13				
10500	103.4	5	49	13500	147.4	8	18	16500	201.4	11	20				
10600	104.6	5	53	13600	149.0	8	25	16600	203.4	11	27				
10700	106.0	5	58	13700	150.6	8	29	16700	205.6	11	34				
10800	107.4	6	02	13800	152.4	8	34	16800	207.6	11	40				
10900	108.8	6	07	13900	154.0	8	40	16900	209.6	11	47				
11000	110.2	6	12	14000	155.8	8	45	17000	211.6	11	54				
11100	111.4	6	16	14100	157.4	8	51	17100	213.8	12	01				
11200	112.8	6	21	14200	159.0	8	57	17200	215.8	12	08				
11300	114.2	6	26	14300	160.8	9	02	17300	218.0	12	16				
11400	115.6	6	30	14400	162.4	9	08	17400	220.0	12	23				
11500	117.2	6	35	14500	164.2	9	14	17500	222.2	12	30				
11600	118.6	6	40	14600	166.0	9	20	17600	224.4	12	37				
11700	120.0	6	45	14700	167.6	9	26	17700	226.6	12	45				
11800	121.4	6	50	14800	169.4	9	32	17800	228.8	12	52				
11900	122.8	6	55	14900	171.2	9	38	17900	231.0	12	59				
12000	124.2	7	00	15000	173.0	9	44	18000	233.2	13	07				

"12-N-1"

700 LB. C.S. SHELL MK X M.V. = 2600 F/S FUZE. POINT DET. MK III

Part 2b.

Range	Elevation		
yards	mils	o	'
18000	233.2	13	07
18100	235.4	13	14
18200	237.6	13	22
18300	239.8	13	30
18400	242.2	13	37
18500	244.6	13	45
18600	246.8	13	53
18700	249.2	14	01
18800	251.4	14	09
18900	253.8	14	17
19000	256.4	14	25
19100	258.8	14	33
19200	261.0	14	41
19300	263.4	14	49
19400	266.0	14	58
19500	268.6	15	06
19600	271.0	15	14
19700	273.4	15	23
19800	276.0	15	31
19900	278.6	15	40
20000	281.2	15	48
20100	283.6	15	57
20200	286.2	16	06
20300	288.8	16	15
20400	291.4	16	24
20500	294.2	16	33
20600	296.8	16	42
20700	299.6	16	51
20800	302.2	17	00
20900	305.0	17	09
21000	307.8	17	18

Range	Elevation		
yards	mils	o	'
21000	307.8	17	18
21100	310.4	17	28
21200	313.2	17	37
21300	316.0	17	47
21400	319.0	17	56
21500	321.8	18	06
21600	324.6	18	16
21700	327.6	18	25
21800	330.4	18	35
21900	333.4	18	45
22000	336.4	18	55
22100	339.2	19	05
22200	342.2	19	15
22300	345.4	19	25
22400	348.4	19	36
22500	351.4	19	46
22600	354.4	19	56
22700	357.6	20	07