1951

Foreign Firing Table FT-F-82-2, Soviet Mortar, 82 mm, Models 1936, 1937, 1941, and 1943 firing high explosive projectiles, O-832; high explosive projectile O-832Д; and smoke projectile, Д-832, March 1951

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FT - F-82-1

FOREIGN FIRING TABLES

for

S O V I E T

MORTAR, 82mm, Models 1936, 1937, 1941 and 1943

firing

High Explosive Projectile, O-832

High Explosive Projectile, O-832Д

Smoke Projectile, Д-832

WARNING! DO NOT USE THESE TABLES BEFORE READING NOTES INSIDE THIS COVER

Prepared by

ORDNANCE INTELLIGENCE

ORDNANCE CORPS, DEPARTMENT OF THE ARMY

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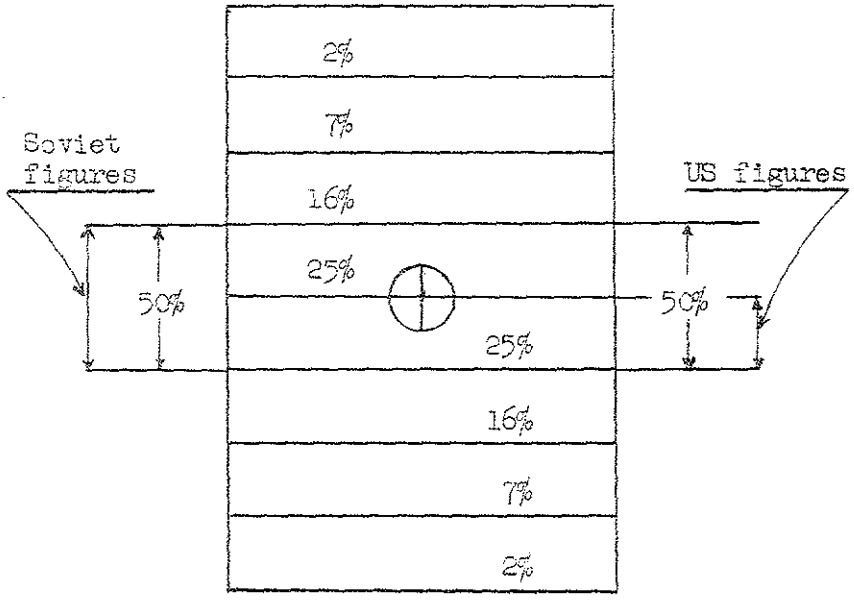
NOTES

1. The following notes apply to this firing table only.

2. The Soviet mil system differs from the U.S. system in that the circle is divided into 6000 parts instead of 6400.

3. The probable vertical error in this table is computed differently than in U.S. tables. It represents the entire 50% dispersion, hence it is twice as large as a comparable figure shown in U.S. tables. See sketch below:



4. These tables are a translation from the original Soviet firing tables, however, the data has not been checked by United States Army Ordnance Corps Firing Tests.

FIRING TABLES OF THE 82MM BATTALION MORTAR

These firing tables are used with the Soviet 82mm mortar HE shells O-832 and O-832Д (O-832D). They can also be used with the 82mm mortar smoke shell Д-832 (D-832), but the known range must be increased by 4%, due to the smoke shell being slightly heavier than the HE shell.

Shell O-832 has six fins, while shell O-832Д has ten. Both shells use the same fuzes, but require different size, and shaped, propelling increments.

Soviet mortar fuzes, models M-1, M-2, M-3, M-4, МП-82 and ПМ-М are used, and are interchangeable between the two above listed HE shells. The smoke shell Д-832 uses the МП-82 fuze.

NOTE: If prior to use, a red line is visible around the circumference of the striker of the model M-1 fuze, DO NOT use this fuze as it is in the armed condition, and may detonate the shell in the mortar tube when it is fired.

Shell O-832 (six fins) uses a maximum of six (6) "boat" shaped propelling increments. Shell O-832Д (ten fins) uses a maximum of three (3) "ring" shaped increments. One "ring" shaped increment has twice the propulsive energy of a "boat" shaped increment. These increments are NOT interchangeable. Shells O-832 and O-832Д, and the smoke shell Д-832 may be fired with the ignition cartridge only. This is known as Charge O.

Soviet propelling charges listed in these tables are numbered from Charge 0/0 thru Charge 6/3 in the form of a fraction, as follows: Charge 0/0, Charge 1/-, Charge 2/1, Charge 3/-, Charge 4/2, Charge 5/- and Charge 6/3 - a total of seven (7) charges. Where the charge number is listed, the numeral before the slash (numerator) indicates the number of "boat" type increments to be used with shell O-832 (six fins). The numeral following the slash (denominator) indicates the number of "ring" type increments to be used with shell O-832Д (O-832D) (ten fins). EXAMPLE: Charge 2/1 indicates that two (2) "boat" type increments and shell O-832 can be used, OR, one (1) "ring" type increment and shell O-832Д can be used for that particular mission.

Charge 3/- indicates three (3) "boat" type increments and shell O-832, only, can be used for that particular mission; there being no comparable charge of "ring" type increments. The hyphen following the slash in the charge number indicates that no comparable charge of "ring" type increments exists, and therefore shell O-832 cannot be used for that particular target.

The firing data listed herein is indicated on four (4) tables. Table 1 lists the optimum charge and sight setting that can be used for a known range and target. Table 2 lists basic ballistic data for firing under NORMAL firing conditions, i.e., range in yards and meters, sight setting in Soviet mils, elevation in degrees, angle of fall in degrees, maximum ordinate in meters, time of flight in seconds, and probable error in range and azimuth. Tables 3 and 4 list correction data to be used when conditions other than normal are encountered.

Procedure for using the firing tables:

1. Starting with the range, determine from Table 1 the smallest charge and initial sight setting which would insure the necessary changes in range in order to bracket the target.

2. From Table 2 determine the following ballistic data of the mortar shell: (when firing with a selected charge and selected sight setting.) (1) angle of elevation, (2) angle of fall, (3) maximum ordinate, (4) time of flight and, (5) probable error.

3. Tables 3 and 4 are used to allow for non-standard conditions (wind, temperature of the air, atmospheric pressure). Tables 3 and 4 are also used to determine the necessary corrections for setting of the azimuth circle and the sights and for the location of targets with respect to the horizontal plane of the mortar.

NOTE: The symbol -* (hyphen and star) in Table 3 indicates that with given conditions it is impossible to get the trajectory necessary to hit the target.

An example using the tables.

Firing conditions: known range to the target is 1400 meters; height of ground above sea level is 1200 meters; target above the mortar 100 meters; temperature of the air 15 degrees; wind - 8 meters per second from the right front with a sharp angle against the direction of fire; fragmentation shell; supplemented charges of "boat" type increments; reading on the mortar to the initial aiming point is 24-45.

Solution.

1. From Table 1 determine the optimum charge and sight setting which is Charge 3, sight setting 6-37;

2. From Table 2 determine the basic ballistic data - which are: angle of elevation 66 degrees 46 minutes, angle of fall 70 degrees, maximum ordinate 880 meters, time of flight 27 seconds, range probable error 19 meters, probable error in lateral dispersion 7.7 meters.

3. Considering the firing conditions and differentiating them from the normal: the temperature of the air differs from the normal (+ 15°) by + 30 degrees (3x10), the ground height differs from the normal (+ 100 meters) by 1100 meters (11x100) consequently the difference in atmospheric pressure from normal (750mm) is 100mm (10x10) the wind, blowing with a sharp angle, is broken down (roughly) into the following components: longitudinal wind 5 meters per second and a lateral wind 5 meters per second.

4. The corrections determined from Table 3:

A correction on the azimuth circle for a lateral wind component to the right is 0-15; a correction for a longitudinal wind component is 29: a range correction for the temperature of the air is + 30 meters (10x3); the range correction for the atmospheric pressure is 40 meters (4-10); and the range corrections amount to 19 meters (29 + 30 - 40).

5. Make the correction on the azimuth circle and determine its setting 24-60 (24 - 45 + 0 - 15).

6. Make the range correction in the sight and determine its setting 6-46.

7. From Table 4 determine the correction between the horizontal sight (target) and the mortar, which is / 0-15, and add it to the sight setting (6 - 46 / 0 - 15 = 6 - 61).

The outcome of the setting is: Charge 3, azimuth circle setting 24-60, sight setting 6-61.

BASIC PRE-FIRING INSTRUCTIONS

1. Adjustment of the clinometer: (quadrant)

a. Set the mortar tube at an angle of 45 degrees, as indicated by the bubble of the elevating scale on the mortar sight.

b. Set the graduated scale of the clinometer at 0 degrees, and place it on the white line on the mortar tube, or vertically across the muzzle of the tube. The bubble of the clinometer, and the bubble of the sight elevating scale should both be centered.

2. Correcting mortar tube cant:

a. Set the graduated scale of the clinometer at "0" degrees, and place it on the graduated scale of the azimuth circle of the mortar sight, perpendicular to the direction of fire.

b. With the mortar cross-leveling mechanism, center the clinometer bubble.

3. Selection of initial aiming point:

a. Select a prominent landmark, i.e., tree, building, telephone pole, etc., in the direction of fire.

b. While standing 10-15 feet behind the mortar position, suspend a plumb line from a stake, tree limb, or hold it in the hand, and have the gunner traverse the mortar tube right or left until the plumb line, the white line on the mortar tube, and the selected initial aiming

point (tree, building, telephone pole, etc.) coincide.

4. Adjusting zero line of sight:

a. Set the azimuth circle, of the mortar sight, on 30.00 (30 on the azimuth circle, and "0" on the fine adjustment scale) and check the direction of the line of sight.

b. Set the mortar tube at an angle of 45 degrees, as indicated by the sight elevating scale. Check this elevation with the clinometer.

c. Adjust the mortar tube so that the white line on it will be pointing in the direction of the initial aiming point. Check the horizontal level of the mortar by means of the cross-leveling bubble.

d. Align the slit on the sight collimator with the initial aiming point by means of the fine adjustment knob of the azimuth circle.

e. Check the azimuth circle reading. If the reading is 30.00, plus or minus 2 mils (0.02), and the slit in the sight collimator coincides with the white line on the mortar tube, the zero line of sight is correct. If the reading of the fine adjustment scale of the azimuth circle if off more than 2 mils (0.02), the scale must be set to "0" as follows: loosen the set screw holding the fine adjustment scale to the adjusting knob, re-set the scale to "0", and tighten the screw. NOTE: Check to insure that the reading of the azimuth circle proper is still on 30 (30.00).

5. Sight longitudinal level adjustment:

a. Level the mortar by means of the cross-level bubble of the sight.

b. Set the mortar tube at an angle of 45 degrees by means of the elevating mechanism bubble. Check this elevation with the clinometer.

c. Center the bubble of the longitudinal level by means of the elevating knob of the sight.

d. The "0" graduation on the elevation scale for fine adjustment should be opposite the index, plus or minus 2 mils (0.02). If not, reset the fine adjustment elevation scale as follows:

(1) Loosen the screws holding the fine adjustment scale to the elevating knob, and reset the fine adjustment scale so that the "0" graduation on the scale is opposite the index on the elevating knob. Tighten the screws.

(2) Check the elevation of the mortar, by means of the clinometer, to see that it is still at 45 degrees.

e. Check the elevation scale for rough adjustment. The graduation 10.00 (10) should be opposite the index. If not, loosen the set screws holding the rough adjustment scale, and reset the rough adjustment scale so that the graduation 10.00 (10) is opposite the index. Check with the clinometer to insure that the mortar tube is still at 45 degrees.

TABLE 1

SELECTION OF CHARGES AND INITIAL SIGHT SETTING

Yards	Range in Meters	No. of Charge (Numerator - "Boat-type", Denominator - Ring type)							Range in Meters
		0/0	1/-	2/1	3/-	4/2	5/-	6/3	
		Sight Setting in Mils							
109	100	3-50	-	-	-	-	-	-	100
218	200	4-58	3-38	-	-	-	-	-	200
328	300	5-81	3-85	3-48	-	-	-	-	300
437	400	7-36	4-34	3-81	3-46	-	-	-	400
547	500	-	4-86	4-14	3-72	3-50	3-36	-	500
656	600	-	5-42	4-49	3-98	3-71	3-55	3-48	600
766	700	-	6-02	4-84	4-26	3-93	3-75	3-65	700
875	800	-	6-70	5-21	4-53	4-16	3-95	3-82	800
984	900	-	7-51	5-61	4-81	4-39	4-15	4-00	900
1094	1000	-	8-56	6-02	5-09	4-61	4-35	4-17	1000
1203	1100	-	-	6-47	5-38	4-84	4-55	4-35	1100
1312	1200	-	-	6-98	5-69	5-09	4-76	4-53	1200
1422	1300	-	-	7-58	6-02	5-34	4-96	4-71	1300
1531	1400	-	-	8-35	6-37	5-60	5-17	4-90	1400
1640	1500	-	-	9-93	6-74	5-88	5-39	5-09	1500
1750	1600	-	-	-	7-16	6-16	5-62	5-29	1600
1895	1700	-	-	-	7-65	6-46	5-85	5-49	1700
1968	1800	-	-	-	8-25	6-77	6-10	5-71	1800
2078	1900	-	-	-	9-25	7-11	6-37	5-94	1900
2187	2000	-	-	-	-	7-49	6-65	6-17	2000
2297	2100	-	-	-	-	7-92	6-94	6-40	2100
2406	2200	-	-	-	-	8-46	7-25	6-64	2200
2515	2300	-	-	-	-	9-20	7-57	6-88	2300
2625	2400	-	-	-	-	-	7-93	7-14	2400
2734	2500	-	-	-	-	-	8-36	7-42	2500
2843	2600	-	-	-	-	-	8-92	7-73	2600
2953	2700	-	-	-	-	-	9-78	8-07	2700
3062	2800	-	-	-	-	-	-	8-46	2800
3171	2900	-	-	-	-	-	-	8-94	2900
3281	3000	-	-	-	-	-	-	9-58	3000

TABLE 2

BASIC BALLISTIC DATA

Yards	Range in Meters	Sight in Mils	Angle of Elevation in Degrees & Min.		Angle of Fall in Degrees	Maximum Ordinate in Meters	Time of Flight in Seconds	Probable Error in Meters		Range in Meters
								Range	Azimuth	
CHARGE 0/0 - Muzzle Velocity 229 feet/sec										
92	85	3-33	85	00	85	218	14	1.2	1.1	85
109	100	3-50	84	00	84	216	14	1.3	1.3	100
218	200	4-58	77	31	78	204	14	1.9	1.8	200
328	300	5-81	70	09	71	188	13	2.8	1.9	300
437	400	7-36	60	51	61	163	12	4.2	1.6	400
518	475	10-00	45	00	46	107	10	6.1	1.0	475
CHARGE 1/- Muzzle Velocity 344 feet/sec										
207	190	3-33	85	00	85	500	21	4.0	2.2	190
218	200	3-38	84	42	85	500	21	4.0	2.4	200
328	300	3-85	81	53	83	498	21	4.6	3.3	300
437	400	4-34	78	57	80	493	20	5.2	3.8	400
547	500	4-86	75	50	77	486	20	5.9	4.1	500
656	600	5-42	72	30	74	475	20	6.7	4.3	600
766	700	6-02	68	53	71	460	19	7.7	4.2	700
875	800	6-70	64	48	67	437	19	8.9	4.0	800
984	900	7-51	59	55	63	401	18	10	3.5	900
1094	1000	8-56	53	39	56	343	16	12	2.8	1000
1166	1065	10-00	45	00	48	250	15	13	2.2	1065

Continuation TABLE 2

Yards	Range in Meters	Sight in Mils	Angle of Elevation in Degrees & Min.		Angle of Fall in Degrees	Maximum Ordinate in Meters	Time of Flight in Seconds	Probable Error in Meters		Range in Meters
								Range	Azimuth	
CHARGE 2/1 - Muzzle Velocity 432 feet/sec										
278	255	3-33	85	00	85	763	25	6.4	3.2	255
328	300	3-48	84	06	85	760	25	6.8	3.6	300
437	400	3-81	82	08	83	752	25	7.6	4.4	400
547	500	4-14	80	08	81	744	25	8.4	5.1	500
656	600	4-49	78	05	79	734	25	9.3	5.6	600
766	700	4-84	75	58	78	722	25	10	5.9	700
875	800	5-21	73	44	76	707	24	11	6.1	800
984	900	5-61	71	22	74	690	24	12	6.1	900
1094	1000	6-02	68	52	71	669	24	13	6.0	1000
1203	1100	6-47	66	10	69	644	23	14	5.8	1100
1312	1200	6-98	63	08	66	612	23	15	5.5	1200
1422	1300	7-58	59	33	63	572	22	17	5.0	1300
1531	1400	8-35	54	56	59	519	21	18	4.3	1400
1640	1500	9-93	45	24	51	412	18	20	3.3	1500
1645	1505	10-00	45	00	49	393	18	20	3.2	1505
CHARGE 3/- Muzzle Velocity 508 feet/sec										
383	350	3-33	85	00	86	1000	29	8.6	4.2	350
437	400	3-46	84	15	85	1000	29	9.0	4.6	400
547	500	3-72	82	42	84	996	29	9.8	5.4	500
656	600	3-98	81	06	82	990	29	11	6.1	600
766	700	4-26	79	28	81	984	29	12	6.7	700
875	800	4-53	77	49	80	976	29	13	7.1	800
984	900	4-81	76	09	78	967	29	14	7.5	900
1094	1000	5-09	74	27	77	956	28	15	7.7	1000
1203	1100	5-38	72	42	75	943	28	16	7.9	1100
1312	1200	5-69	70	52	74	926	28	17	7.9	1200
1422	1300	6-02	68	54	72	905	27	18	7.8	1300
1531	1400	6-37	66	46	70	880	27	19	7.7	1400
1640	1500	6-74	64	33	68	850	26	21	7.3	1500
1750	1600	7-16	62	02	66	809	26	22	6.9	1600
1859	1700	7-65	59	06	64	756	25	23	6.3	1700
1968	1800	8-25	55	29	60	690	24	24	5.6	1800
2078	1900	9-25	49	30	53	598	22	26	4.5	1900
2099	1920	10-00	45	00	50	598	21	27	4.2	1920

Continuation TABLE 2

Yards	Range in Meters	Sight in Mils	Angle of Elevation in Degrees and Minutes	Angle of Fall in Degrees	Maximum Ordinate in Meters	Time of Flight in Seconds	Probable Error in Meters		Range in Meters
							Range	Azimuth	
CHARGE 4/2 - Muzzle Velocity 573 feet/sec									
465	425	3-33	85 00	86	1250	32	10	5.3	425
547	500	3-50	84 02	85	1240	32	11	5.9	500
656	600	3-71	82 45	84	1240	32	12	6.7	600
766	700	3-93	81 25	83	1230	32	13	7.4	700
875	800	4-16	80 03	82	1220	32	15	8.0	800
984	900	4-39	78 41	81	1210	32	16	8.5	900
1094	1000	4-61	77 19	80	1200	32	17	9.0	1000
1202	1100	4-84	75 56	79	1190	31	18	9.3	1100
1312	1200	5-09	74 29	77	1170	31	19	9.5	1200
1422	1300	5-34	72 58	76	1160	31	21	9.5	1300
1531	1400	5-60	71 23	75	1140	31	22	9.6	1400
1640	1500	5-88	69 44	74	1120	30	23	9.5	1500
1750	1600	6-16	68 01	72	1090	30	24	9.3	1600
1859	1700	6-46	66 14	70	1060	30	26	9.1	1700
1968	1800	6-77	64 22	69	1030	29	27	8.7	1800
2078	1900	7-11	62 21	67	993	29	28	8.3	1900
2187	2000	7-49	60 05	65	956	28	30	7.8	2000
2297	2100	7-92	57 28	63	911	27	31	7.1	2100
2406	2200	8-46	54 15	60	850	26	32	6.4	2200
2515	2300	9-20	49 50	56	754	25	33	5.5	2300
2575	2355	10-00	45 00	51	650	23	34	4.9	2355

Continuation TABLE 2

Yards	Range in Meters	Sight in Mils	Angle of Elevation in Degrees and Minutes	Angle of Fall in Degrees	Maximum Ordinate in Meters	Time of Flight in Seconds	Probable Error in Meters		Range in Meters
							Range	Azimuth	
CHARGE 5/- Muzzle Velocity 632 feet/sec									
529	485	3-33	85 00	86	1460	35	13	6.2	485
547	500	3-36	84 50	86	1460	35	13	6.3	500
656	600	3-55	83 41	85	1450	35	14	7.0	600
766	700	3-75	82 31	84	1440	35	16	7.8	700
875	800	3-95	81 20	83	1430	34	17	8.5	800
984	900	4-15	80 08	82	1420	34	18	9.1	900
1094	1000	4-35	78 56	81	1400	34	20	9.6	1000
1203	1100	4-55	77 42	80	1390	34	21	10	1100
1312	1200	4-76	76 28	79	1380	34	22	10	1200
1422	1300	4-96	75 13	78	1370	34	24	11	1300
1531	1400	5-17	73 57	78	1350	33	25	11	1400
1640	1500	5-39	72 39	77	1330	33	27	11	1500
1750	1600	5-62	71 18	75	1310	33	28	11	1600
1859	1700	5-85	69 53	74	1290	33	29	11	1700
1968	1800	6-10	68 23	73	1270	32	30	11	1800
2078	1900	6-37	66 48	72	1240	32	32	10	1900
2187	2000	6-65	65 08	71	1210	31	33	10	2000
2297	2100	6-94	63 23	69	1180	31	34	9.7	2100
2406	2200	7-25	61 32	68	1140	31	36	9.2	2200
2515	2300	7-57	59 34	66	1100	30	37	8.7	2300
2625	2400	7-93	57 24	64	1060	29	38	8.1	2400
2734	2500	8-36	54 50	62	1010	29	40	7.5	2500
2843	2600	8-92	51 30	60	939	28	41	6.7	2600
2953	2700	9-78	46 21	55	818	26	43	5.9	2700
3074	2720	10-00	45 00	53	768	25	44	5.7	2720

Continuation TABLE 2

Yards	Range in Meters	Sight in Mils	Angle of Elevation in Degrees and Minutes	Angle of Fall in Degrees	Maximum Ordinate in Meters	Time of Flight in Seconds	Probable Error in Meters		Range in Meters
							Range	Azimuth	
CHARGE 6/3 - Muzzle Velocity 601 feet/sec									
563	515	3-33	85 00	86	1650	37	16	6.4	515
656	600	3-48	84 08	85	1640	37	17	7.2	600
766	700	3-65	83 06	85	1630	37	19	8.0	700
875	800	3-82	82 04	84	1620	37	20	8.7	800
984	900	4-00	81 01	83	1610	37	22	9.4	900
1094	1000	4-17	79 57	82	1600	36	23	10	1000
1203	1100	4-35	78 53	82	1580	36	25	11	1100
1312	1200	4-53	77 49	81	1570	36	26	11	1200
1422	1300	4-71	76 44	80	1560	36	28	11	1300
1531	1400	4-90	75 38	79	1540	36	29	12	1400
1640	1500	5-09	74 29	79	1530	36	31	12	1500
1750	1600	5-29	73 17	78	1510	35	32	12	1600
1859	1700	5-49	72 02	77	1490	35	34	12	1700
1968	1800	5-71	70 44	76	1470	35	35	12	1800
2078	1900	5-94	69 23	75	1450	35	36	12	1900
2187	2000	6-17	68 00	74	1430	34	38	12	2000
2297	2100	6-40	66 36	73	1400	34	39	11	2100
2406	2200	6-64	65 10	72	1370	34	41	11	2200
2515	2300	6-88	63 42	71	1340	33	42	11	2300
2625	2400	7-14	62 10	69	1310	33	43	10	2400
2734	2500	7-42	60 30	68	1280	33	45	9.9	2500
2843	2600	7-73	58 39	66	1240	32	46	9.5	2600
2953	2700	8-07	56 35	65	1190	31	48	8.9	2700
3062	2800	8-46	54 14	63	1130	30	50	8.2	2800
3171	2900	8-94	51 24	60	1060	29	52	7.5	2900
3281	3000	9-58	47 30	57	950	26	54	6.7	3000
3324	3040	10-00	45 00	54	875	27	55	6.4	3040

TABLE 3

CORRECTION DATA FOR NON STANDARD FIRING CONDITIONS

Yards	Range in Meters	Sight in Mils	Sight Setting for Increasing Range			Corrections				Range in Meters
			For 25 Meters	For 50 Meters	For 75 Meters	For lateral Wind 10 meters/sec in Micrometer Scale Unit	For Longitudinal Wind 10 meters/sec in Meters	For Variable Temperature of the Air for 10° in Meters	For Variable Atmospheric Pressure for 10mm in Meters	
CHARGE 0/0 - Muzzle Velocity 229 feet/sec										
109	100	3-50	3-76	4-30	4-30	0-26	9	1	0	100
219	200	4-58	4-87	5-17	5-48	0-23	10	1	0	200
328	300	5-81	6-15	6-51	6-90	0-19	9	1	0	300
437	400	7-36	7-91	8-58	10-00	0-13	9	1	0	400
CHARGE 1/- Muzzle Velocity 344 feet/sec										
219	200	3-38	3-49	3-61	3-73	0-44	20	1	1	200
328	300	3-85	3-97	4-09	4-21	0-41	21	2	1	300
437	400	4-34	4-47	4-60	4-73	0-36	21	3	1	400
547	500	4-86	4-99	5-13	5-27	0-31	22	4	1	500
656	600	5-42	5-57	5-72	5-87	0-26	23	4	1	600
766	700	6-02	6-18	5-35	6-52	0-23	24	5	1	700
875	800	6-70	6-88	7-08	7-29	0-19	24	6	1	800
984	900	7-51	7-75	8-00	8-27	0-17	24	7	1	900
1094	1000	8-56	9-00	9-54	-*	0-15	24	8	1	1000

Continuation TABLE 3

Yards	Range in Meters	Sight in Mils	Sight Setting for Increasing Range			Corrections				Range in Meters
			For 25 Meters	For 50 Meters	For 75 Meters	For Lateral Wind 10 meters/sec in Micrometer Scale Unit	For Longitudinal Wind 10 meters/sec in Meters	For Variable Temperature of the Air for 10° in Meters	For Variable Atmospheric Pressure for 10mm in Meters	
CHARGE 2/1 - Muzzle Velocity 432 feet/sec										
328	300	3-48	3-56	3-65	3-73	0-69	29	1	1	300
437	400	3-81	3-89	3-98	4-06	0-63	30	2	1	400
547	500	4-14	4-22	4-31	4-40	0-55	31	3	1	500
656	600	4-49	4-57	4-66	4-75	0-47	32	4	1	600
766	700	4-84	4-93	5-02	5-11	0-40	34	4	2	700
875	800	5-21	5-31	5-41	5-51	0-35	35	4	2	800
984	900	5-61	5-71	5-81	5-91	0-30	37	5	2	900
1094	1000	6-02	6-13	6-24	6-35	0-27	38	6	2	1000
1200	1100	6-47	6-59	6-72	6-85	0-25	40	6	3	1100
1312	1200	6-98	7-12	7-26	7-42	0-22	42	7	3	1200
1422	1300	7-58	7-75	7-93	8-13	0-19	43	8	3	1300
1531	1400	8-35	8-60	8-88	9-30	0-16	42	8	3	1400
1640	1500	9-93	*	*	*	0-14	40	9	3	1500

Continuation TABLE 3

Yards	Range in Meters	Sight in Mils	Sight Setting for Increasing Range			Corrections				Range in Meters
			For 25 Meters	For 50 Meters	For 75 Meters	For Lateral Wind 10 meters/sec in Micrometer Scale Unit	For Longitudinal Wind 10 meters/sec in Meters	For Variable Temperature of the Air for 10° in Meters	For Variable Atmospheric Pressure for 10mm in Meters	
CHARGE 3/- Muzzle Velocity 508 feet/sec										
437	400	3-46	3-52	3-59	3-65	0-75	49	3	1	400
547	500	3-72	3-78	3-85	3-91	0-70	50	4	2	500
656	600	3-98	4-05	4-12	4-19	0-65	50	5	2	600
766	700	4-26	4-32	4-39	4-46	0-60	51	6	2	700
875	800	4-53	4-60	4-67	4-74	0-54	52	7	2	800
984	900	4-81	4-88	4-95	5-02	0-48	52	8	2	900
1094	1000	5-09	5-16	5-24	5-31	0-43	53	9	3	1000
1203	1100	5-38	6-45	5-53	5-61	0-38	54	9	3	1100
1312	1200	5-69	5-77	5-85	5-93	0-34	55	9	3	1200
1422	1300	6-02	6-10	6-19	6-28	0-31	57	9	3	1300
1531	1400	6-37	6-46	6-55	6-64	0-29	58	10	4	1400
1640	1500	6-74	6-84	6-94	7-05	0-27	59	11	4	1500
1750	1600	7-16	7-28	7-40	7-52	0-25	60	11	4	1600
1859	1700	7-65	7-79	7-93	8-09	0-23	61	12	4	1700
1968	1800	8-25	8-43	8-63	8-89	0-20	60	13	5	1800
2078	1900	9-25	-*	-*	-*	0-17	57	13	5	1900

Continuation TABLE 3

Yards	Range in Meters	Sight in Mils	Sight Setting for Increasing Range			Corrections				Range in Meters
			For 25 Meters	For 50 Meters	For 75 Meters	For Lateral Wind 10 meters/sec in Micrometer Scale Unit	For Longitudinal Wind 10 meters/sec in Meters	For Variable Temperature of the Air for 10° in Meters	For Variable Atmospheric Pressure for 10mm in Meters	
CHARGE 4/2 - Muzzle Velocity 573 feet/sec										
547	500	3-50	3-55	3-60	3-65	0-89	68		3	500
656	600	3-71	3-76	3-82	3-88	0-84	68		3	600
766	700	3-93	3-99	4-05	4-10	0-78	69	5	3	700
875	800	4-16	4-21	4-27	4-33	0-72	70	6	4	800
984	900	4-39	4-44	4-50	4-55	0-66	70	7	4	900
1094	1000	4-61	4-67	4-73	4-78	0-60	71	9	4	1000
1203	1100	4-84	4-90	4-96	5-02	0-53	72	10	5	1100
1312	1200	5-09	5-15	5-21	5-28	0-47	73	11	5	1200
1422	1300	5-34	5-40	5-47	5-53	0-43	74	11	5	1300
1531	1400	5-60	5-67	5-74	5-81	0-40	76	12	5	1400
1640	1500	5-88	5-95	6-02	6-09	0-37	77	13	5	1500
1750	1600	6-16	6-23	6-31	6-38	0-35	78	13	5	1600
1859	1700	6-46	6-53	6-61	6-69	0-33	78	14	6	1700
1968	1800	6-77	6-85	6-94	7-02	0-31	79	15	6	1800
2078	1900	7-11	7-20	7-29	7-39	0-28	80	15	7	1900
2187	2000	7-49	7-59	7-70	7-81	0-27	80	16	7	2000
2297	2100	7-92	8-05	8-18	8-32	0-25	80	17	8	2100
2406	2200	8-46	8-62	8-78	8-97	0-22	80	18	8	2200
2515	2300	9-20	9-49	9-85	*	0-19	78	18	8	2300

Continuation TABLE 3

Yards	Range in Meters	Sight in Mils	Sight Setting for Increasing Range			Corrections				Range in Meters
			For 25 Meters	For 50 Meters	For 75 Meters	For Lateral Wind 10 meters/sec in Micrometer Scale Unit	For Longitudinal Wind 10 meters/sec in Meters	For Variable Temperature of the Air for 10° in Meters	For Variable Atmospheric Pressure for 10mm in Meters	
CHARGE 5/- Muzzle Velocity 632 feet/sec										
547	500	3-36	3-41	3-46	3-50	1-12	84	6	3	500
656	600	3-55	3-60	3-65	3-70	1-05	85	7	3	600
766	700	3-75	3-80	3-85	3-90	0-97	86	7	4	700
875	800	3-95	4-00	4-05	4-10	0-90	86	8	4	800
984	900	4-15	4-20	4-25	4-30	0-84	87	9	4	900
1094	1000	4-35	4-40	4-45	4-50	0-76	87	10	4	1000
1203	1100	4-55	4-60	4-65	4-70	0-68	88	11	5	1100
1312	1200	4-76	4-81	4-86	4-91	0-62	88	12	5	1200
1422	1300	4-96	5-01	5-07	5-12	0-57	89	13	6	1300
1531	1400	5-17	5-22	5-28	5-33	0-52	90	13	6	1400
1640	1500	5-39	5-44	5-50	5-56	0-49	91	14	7	1500
1750	1600	5-62	5-67	5-73	5-79	0-46	92	15	7	1600
1859	1700	5-85	5-91	5-97	6-03	0-43	93	16	7	1700
1968	1800	6-10	6-16	6-23	6-30	0-41	94	17	7	1800
2078	1900	6-37	6-43	6-50	6-57	0-38	95	18	8	1900
2187	2000	6-65	6-72	6-79	6-86	0-36	96	19	8	2000
2297	2100	6-94	7-01	7-09	7-17	0-34	98	21	9	2100
2406	2200	7-25	7-33	7-41	7-49	0-32	99	22	9	2200
2515	2300	7-57	7-66	7-75	7-84	0-30	100	23	9	2300
2625	2400	7-93	8-03	8-14	8-25	0-28	100	24	10	2400
2734	2500	8-36	8-49	8-62	8-77	0-25	99	24	10	2500
2843	2600	8-92	9-09	9-29	9-52	0-23	97	25	10	2600
2953	2700	9-78	-*	-*	-*	0-21	94	26	10	2700

Continuation TABLE 3

Yards	Range in Meters	Sight in Mils	Sight Setting for Increasing Range			Corrections				Range in Meters
			For 25 Meters	For 50 Meters	For 75 Meters	For Lateral Wind 10 meters/sec in Micrometer Scale Unit	For Longitudinal Wind 10 meters/sec in Meters	For Variable Temperature of the Air for 10° in Meters	For Variable Atmospheric Pressure for 10mm in Meters	
CHARGE 6/3 - Muzzle Velocity 691 feet/sec										
656	600	3-48	3-52	3-56	3-60	1-24	105	8	5	600
766	700	3-65	3-69	3-74	3-78	1-17	106	9	5	700
875	800	3-82	3-86	3-91	3-95	1-09	106	10	5	800
984	900	4-00	4-04	4-09	4-13	1-02	107	11	5	900
1094	1000	4-17	4-21	4-26	4-30	0-95	107	12	5	1000
1203	1100	4-35	4-39	4-44	4-48	0-87	108	13	5	1100
1312	1200	4-53	4-57	4-62	4-66	0-80	108	14	6	1200
1422	1300	4-71	4-75	4-80	4-85	0-73	109	15	6	1300
1531	1400	4-90	4-94	4-99	5-04	0-67	109	16	6	1400
1640	1500	5-09	5-14	5-19	5-24	0-62	110	17	7	1500
1750	1600	5-29	5-34	5-39	5-44	0-57	112	18	8	1600
1859	1700	5-49	5-54	5-60	5-65	0-53	113	19	8	1700
1968	1800	5-71	5-76	5-82	5-88	0-49	114	20	9	1800
2078	1900	5-94	6-00	6-05	6-11	0-46	116	21	9	1900
2187	2000	6-17	6-22	6-28	6-34	0-44	117	23	10	2000
2297	2100	6-40	6-46	6-52	6-58	0-41	119	24	10	2100
2406	2200	6-64	6-70	6-76	6-82	0-39	120	25	10	2200
2515	2300	6-88	6-94	7-01	7-07	0-37	121	26	10	2300
2625	2400	7-14	7-21	7-28	7-35	0-35	122	27	10	2400
2734	2500	7-42	7-49	7-57	7-65	0-34	123	28	11	2500
2843	2600	7-73	7-81	7-89	7-98	0-32	123	28	11	2600
2953	2700	8-07	8-16	8-26	8-36	0-30	122	29	12	2700
3062	2800	8-46	8-57	8-69	8-81	0-28	121	30	13	2800
3171	2900	8-94	9-08	9-23	9-40	0-26	118	31	13	2900
3281	3000	9-58	9-80	-*	-*	0-24	114	32	13	3000

TABLE 4

CORRECTIONS FOR THE ANGLE OF SITE (Vertical Angle)

Range in Yards	Range in Meters	Corrections to be applied to the sight for differences in elevation between the mortar and the target for the given charge and range. These corrections are given in the form of a fraction, with the numerator indicating plus values (+) target above mortar, and the denominator indicating minus values (-) target below mortar.							
		20 m	40 m	60 m	80 m	100 m	120 m	140 m	160 m
		CHARGE 1/-							
218	200	+ 1/- 1	+ 2/- 2	+ 3/- 3	+ 4/- 4	+ 5/- 5	+ 6/- 6	+ 7/- 7	+ 9/- 8
328	300	+ 2/- 2	+ 3/- 3	+ 5/- 4	+ 7/- 6	+ 8/- 7	+ 10/- 9	+12/- 10	+15/- 11
437	400	+ 2/- 2	+ 5/- 4	+ 8/- 6	+10/- 8	+13/-10	+ 16/-12	+19/- 14	+23/- 16
547	500	+ 3/- 3	+ 7/- 6	+11/- 9	+15/-11	+20/-14	+ 24/-17	+30/- 20	+36/- 22
656	600	+ 5/- 4	+10/- 8	+16/-12	+22/-16	+29/-20	+ 36/-23	+45/- 27	+54/- 30
766	700	+ 8/- 6	+16/-11	+24/-17	+34/-22	+44/-28	+ 57/-32	+71/- 37	+86/- 41
875	800	+13/- 9	+27/-18	+42/-26	+61/-33	+84/-40	+112/-47	- */- 52	- */- 58
984	900	+31/-16	+81/-31	- */-46	- */-60	- */-74	- */-88	- */-101	- */-114
1094									

CHARGE 2/1

437	400	0/0	≠ 1/= 1	≠ 2/= 2	≠ 4/= 3	≠ 4/= 4	≠ 6/= 5	≠ 7/= 6	≠ 8/= 7
547	500	0/0	≠ 2/= 1	≠ 3/= 2	≠ 5/= 4	≠ 6/= 5	≠ 8/= 6	≠ 9/= 7	≠11/= 8
656	600	≠ 1/= 1	≠ 3/= 2	≠ 5/= 3	≠ 7/= 5	≠ 8/= 6	≠10/= 7	≠12/= 9	≠14/= 10
766	700	≠ 1/= 1	≠ 4/= 3	≠ 6/= 4	≠ 8/= 6	≠10/= 8	≠12/= 9	≠15/= 11	≠18/= 13
875	800	≠ 2/= 2	≠ 5/= 4	≠ 7/= 6	≠ 9/= 8	≠12/=10	≠15/=12	≠18/= 14	≠22/= 16
984	900	≠ 2/= 2	≠ 6/= 5	≠ 9/= 8	≠12/=10	≠15/=12	≠19/=15	≠23/= 17	≠27/= 19
1094	1000	≠ 3/= 3	≠ 7/= 6	≠11/=10	≠16/=12	≠20/=15	≠25/=18	≠30/= 21	≠35/= 24
1203	1100	≠ 4/= 4	≠ 9/= 8	≠15/=12	≠21/=15	≠28/=19	≠34/=23	≠42/= 26	≠50/= 30
1312	1200	≠ 6/= 6	≠14/=11	≠22/=16	≠30/=21	≠40/=26	≠50/=30	≠62/= 34	≠74/= 39
1422	1300	≠11/= 8	≠24/=15	≠38/=22	≠54/=28	≠70/=35	≠87/=42	= */= 48	= */= 55
1531	1400	≠17/=13	≠38/=26	= */=39	= */=52	= */=65	= */=78	= */= 92	= */=107

CHARGE 3/-

656	600	0/0	≠ 1/- 1	≠ 2/- 2	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 4	≠ 6/- 5
766	700	≠ 1/- 1	≠ 2/- 2	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 5	≠ 8/- 6
875	800	≠ 1/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 6	≠ 8/- 6	≠10/- 7
984	900	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 6	≠ 8/- 7	≠10/- 7	≠12/- 8
1094	1000	≠ 2/- 2	≠ 3/- 3	≠ 5/- 4	≠ 6/- 5	≠ 8/- 7	≠10/- 8	≠12/- 9	≠14/- 10
1203	1100	≠ 2/- 2	≠ 3/- 3	≠ 5/- 4	≠ 7/- 6	≠ 9/- 8	≠12/- 9	≠14/- 11	≠16/- 12
1312	1200	≠ 2/- 2	≠ 4/- 3	≠ 6/- 5	≠ 9/- 7	≠11/- 9	≠14/- 11	≠16/- 13	≠19/- 14
1422	1300	≠ 3/- 2	≠ 5/- 4	≠ 7/- 6	≠10/- 8	≠13/-10	≠16/- 13	≠19/- 15	≠23/- 17
1531	1400	≠ 3/- 2	≠ 5/- 4	≠ 8/- 7	≠12/-10	≠15/-12	≠19/- 15	≠23/- 18	≠27/- 20
1640	1500	≠ 3/- 3	≠ 6/- 5	≠10/- 9	≠14/-12	≠18/-15	≠23/- 18	≠29/- 21	≠34/- 24
1750	1600	≠ 4/- 4	≠ 9/- 8	≠13/-12	≠19/-16	≠25/-19	≠32/- 23	≠40/- 26	≠48/- 30
1859	1700	≠ 6/- 6	≠13/-11	≠20/-16	≠28/-21	≠37/-25	≠46/- 29	≠56/- 33	≠68/- 37
1968	1800	≠10/- 9	≠23/-17	≠39/-24	≠59/-31	≠67/-38	≠ */- 44	- */- 49	- */- 54
2078	1900	- */-17	- */-33	- */-49	- */-63	- */-76	- */- 89	- */-100	- */-110

CHARGE 4/2

875	800	0/0	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 4	≠ 5/- 5
984	900	0/0	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 6
1094	1000	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 6	≠ 7/- 7
1203	1100	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 6/- 5	≠ 7/- 6	≠ 8/- 7
1312	1200	≠ 1/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 7/- 6	≠ 8/- 7	≠ 9/- 8
1422	1300	≠ 1/- 1	≠ 2/- 2	≠ 3/- 3	≠ 5/- 5	≠ 6/- 6	≠ 8/- 7	≠ 9/- 8	≠10/- 9
1531	1400	≠ 1/- 1	≠ 2/- 2	≠ 4/- 4	≠ 5/- 5	≠ 7/- 7	≠ 9/- 8	≠11/- 9	≠12/- 11
1640	1500	≠ 1/- 1	≠ 2/- 2	≠ 4/- 4	≠ 6/- 6	≠ 8/- 7	≠10/- 9	≠12/-10	≠14/- 12
1750	1600	≠ 1/- 1	≠ 3/- 3	≠ 5/- 5	≠ 7/- 7	≠ 9/- 8	≠11/-10	≠14/-12	≠16/- 14

CHARGE 4/2 (Contd)

1859	1700	⁄ 2/- 2	⁄ 4/- 4	⁄ 6/- 6	⁄ 8/- 8	⁄11/- 10	⁄ 13/- 12	⁄ 16/-14	⁄ 19/- 16
1968	1800	⁄ 2/- 2	⁄ 5/- 5	⁄ 7/- 7	⁄ 9/- 9	⁄13/- 12	⁄ 16/- 14	⁄ 19/-16	⁄ 23/- 19
2078	1900	⁄ 3/- 3	⁄ 6/- 6	⁄ 9/- 8	⁄12/- 11	⁄17/- 14	⁄ 21/- 17	⁄ 25/-19	⁄ 30/- 23
2187	2000	⁄ 4/- 4	⁄ 8/- 7	⁄12/-10	⁄16/- 13	⁄21/- 17	⁄ 26/- 20	⁄ 32/-23	⁄ 38/- 27
2297	2100	⁄ 5/- 5	⁄11/- 9	⁄17/-13	⁄23/- 18	⁄30/- 22	⁄ 38/- 26	⁄ 46/-30	⁄ 55/- 34
2406	2200	⁄ 8/- 8	⁄19/-14	⁄30/-20	⁄43/- 26	⁄58/- 32	⁄ 74/- 38	- */-44	- */- 49
2515	2300	⁄13/-12	- */-23	- */-35	- */- 47	- */- 58	- */- 68	- */-76	- */- 84

CHARGE 5/-

875	800	0/0	⁄ 1/- 1	⁄ 1/- 1	⁄ 2/- 2	⁄ 3/- 2	⁄ 3/- 2	⁄ 4/- 3	⁄ 5/- 4
984	900	0/0	⁄ 1/- 1	⁄ 1/- 1	⁄ 2/- 2	⁄ 3/- 2	⁄ 3/- 2	⁄ 4/- 3	⁄ 5/- 4
1094	1000	0/0	⁄ 1/- 1	⁄ 2/- 2	⁄ 3/- 2	⁄ 3/- 3	⁄ 4/- 3	⁄ 5/- 4	⁄ 5/- 5
1203	1100	0/0	⁄ 1/- 1	⁄ 2/- 2	⁄ 3/- 3	⁄ 3/- 3	⁄ 4/- 3	⁄ 5/- 4	⁄ 6/- 5
1312	1200	⁄ 1/- 1	⁄ 2/- 1	⁄ 2/- 2	⁄ 3/- 3	⁄ 4/- 3	⁄ 5/- 4	⁄ 5/- 5	⁄ 6/- 5
1422	1300	⁄ 1/- 1	⁄ 2/- 1	⁄ 3/- 2	⁄ 3/- 3	⁄ 4/- 3	⁄ 5/- 4	⁄ 6/- 5	⁄ 7/- 6
1531	1400	⁄ 1/- 1	⁄ 2/- 2	⁄ 3/- 2	⁄ 4/- 3	⁄ 5/- 4	⁄ 5/- 4	⁄ 7/- 5	⁄ 8/- 6
1640	1500	⁄ 1/- 1	⁄ 2/- 2	⁄ 3/- 3	⁄ 4/- 3	⁄ 5/- 4	⁄ 6/- 5	⁄ 8/- 6	⁄ 9/- 7
1750	1600	⁄ 2/- 1	⁄ 3/- 2	⁄ 4/- 3	⁄ 5/- 3	⁄ 6/- 4	⁄ 7/- 6	⁄ 9/- 7	⁄ 10/- 8
1859	1700	⁄ 2/- 1	⁄ 3/- 2	⁄ 4/- 3	⁄ 5/- 4	⁄ 7/- 5	⁄ 8/- 7	⁄ 10/- 8	⁄ 11/- 9
1968	1800	⁄ 2/- 1	⁄ 4/- 2	⁄ 5/- 3	⁄ 6/- 4	⁄ 8/- 6	⁄ 9/- 8	⁄ 11/- 9	⁄ 12/- 10
2078	1900	⁄ 2/- 1	⁄ 4/- 2	⁄ 5/- 4	⁄ 7/- 5	⁄ 8/- 7	⁄ 10/- 9	⁄ 12/-10	⁄ 14/- 11
2187	2000	⁄ 2/- 1	⁄ 4/- 3	⁄ 6/- 4	⁄ 8/- 6	⁄ 9/- 8	⁄ 11/- 10	⁄ 14/-11	⁄ 16/- 13
2297	2100	⁄ 2/- 1	⁄ 4/- 3	⁄ 6/- 5	⁄ 8/- 7	⁄10/- 9	⁄ 13/- 11	⁄ 16/-13	⁄ 18/- 15
2406	2200	⁄ 2/- 2	⁄ 4/- 4	⁄ 7/- 6	⁄ 9/- 8	⁄13/- 10	⁄ 16/- 12	⁄ 19/-15	⁄ 22/- 17

CHARGE 5/- (Contd)

2515	2300	≠ 2/- 2	≠ 5/- 5	≠ 8/- 8	≠12/-10	≠ 16/-13	≠ 20/- 15	≠ 24/- 18	≠ 28/- 20
2625	2400	≠ 3/- 3	≠ 7/- 7	≠11/- 9	≠16/-12	≠ 21/-15	≠ 26/- 19	≠ 31/- 22	≠ 36/- 25
2734	2500	≠ 6/- 5	≠10/-10	≠16/-14	≠23/-19	≠ 31/-24	≠ 41/- 28	≠ 51/- 32	≠ 62/- 36
2843	2600	≠10/- 9	≠21/-16	≠36/-23	≠56/-29	≠ 81/-35	≠110/- 41	- */- 47	- */- 52
2953	2700	- */-22	- */-39	- */-52	- */-64	- */-74	- */- 83	- */- 90	- */- 97

CHARGE 6/3

1094	1000	0/0	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 2	≠ 3/- 3	≠ 4/- 3	≠ 4/- 3
1203	1100	0/0	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 2	≠ 3/- 3	≠ 4/- 3	≠ 4/- 4
1312	1200	0/0	≠ 1/- 1	≠ 2/- 2	≠ 3/- 2	≠ 3/- 3	≠ 4/- 3	≠ 4/- 4	≠ 5/- 4
1422	1300	0/0	≠ 1/- 1	≠ 2/- 2	≠ 3/- 2	≠ 3/- 3	≠ 4/- 3	≠ 4/- 4	≠ 5/- 5
1531	1400	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 3	≠ 4/- 4	≠ 5/- 4	≠ 6/- 5
1640	1500	≠ 1/- 1	≠ 2/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 6
1750	1600	≠ 1/- 1	≠ 2/- 1	≠ 3/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 4	≠ 6/- 5	≠ 7/- 6
1859	1700	≠ 1/- 1	≠ 2/- 1	≠ 3/- 2	≠ 4/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 6	≠ 7/- 7
1968	1800	≠ 1/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 4	≠ 6/- 5	≠ 7/- 6	≠ 8/- 7
2078	1900	≠ 1/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 6/- 6	≠ 7/- 7	≠ 9/- 7
2187	2000	≠ 1/- 1	≠ 2/- 2	≠ 3/- 3	≠ 4/- 4	≠ 6/- 5	≠ 7/- 6	≠ 8/- 7	≠ 10/- 8
2297	2100	≠ 1/- 1	≠ 2/- 2	≠ 3/- 3	≠ 5/- 5	≠ 6/- 6	≠ 7/- 7	≠ 9/- 8	≠ 11/- 9
2406	2200	≠ 1/- 1	≠ 3/- 3	≠ 4/- 4	≠ 5/- 5	≠ 7/- 6	≠ 8/- 8	≠ 10/- 9	≠ 12/- 10
2515	2300	≠ 1/- 1	≠ 3/- 3	≠ 4/- 4	≠ 6/- 6	≠ 8/- 7	≠ 10/- 9	≠ 12/- 10	≠ 14/- 12
2625	2400	≠ 2/- 1	≠ 3/- 3	≠ 5/- 5	≠ 7/- 7	≠ 9/- 8	≠ 11/- 10	≠ 14/- 12	≠ 17/- 14
2734	2500	≠ 2/- 2	≠ 4/- 4	≠ 6/- 6	≠ 8/- 8	≠ 11/-10	≠ 13/- 12	≠ 17/- 14	≠ 20/- 16
2843	2600	≠ 2/- 2	≠ 5/- 4	≠ 7/- 7	≠ 9/- 9	≠ 13/-11	≠ 16/- 14	≠ 20/- 16	≠ 23/- 18
2953	2700	≠ 3/- 2	≠ 6/- 5	≠ 9/- 8	≠12/-10	≠ 16/-13	≠ 20/- 16	≠ 24/- 19	≠ 28/- 21
3062	2800	≠ 4/- 3	≠ 8/- 6	≠12/-10	≠17/-13	≠ 21/-16	≠ 26/- 19	≠ 31/- 23	≠ 37/- 26