3-1951

FOREIGN FIRING TABLE FT-F-122-2 for SOVIET GUN, Self-Propelled, 122mm, Model 1944, **А**-19 **С**, GUN, Self-Propelled, 122mm, Model 1943, **Д**-25**С**, GUN, Tank, 122mm, Model 1943, **Д**-25 firing Armor Piercing Tracer Projectile, **БР**-471, High Explosive Fragmentary Projectile, **ОФ**-471, High Explosive Fragmentary Projectile, **ОФ**-471Н

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FOREIGN FIRING TABLES

for

SOVIET

GUN, Self-Propelled, 122mm, Model 1944, А-19 С
GUN, Self-Propelled, 122mm, Model 1943, Д-25С
GUN, Tank, 122mm, Model 1943, Д-25

firing

Armor Piercing Tracer Projectile, ВР-471
High Explosive Fragmentary Projectile, ОФ-471
High Explosive Fragmentary Projectile, ОФ-471Н

Prepared by

Ordnance Intelligence

Ordnance Corps, Department of the Army

March 1951

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Abstract
This document is a 26 page collection of range tables prepared by Ordnance Intelligence. Probably it is a literal translation of a Soviet manual. One of the responsibility of Army technical intelligence agencies, like Ordnance Intelligence, was to evaluate foreign weapons and equipment. These range tables could be used for test firing of captured Soviet equipment.

FT - F-122-2

FOREIGN FIRING TABLES

for

S O V I E T

GUN, Self-Propelled, 122mm, Model 1944, А-19С
GUN, Self-Propelled, 122mm, Model 1943, Д-25С
GUN, Tank, 122mm, Model 1943, Д-25

firing

Armor Piercing Tracer Projectile, БР-471

High Explosive Fragmentation Projectile, ОФ-471

High Explosive Fragmentation Projectile, ОФ-471Н

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

Prepared by

ORDNANCE INTELLIGENCE

ORDNANCE CORPS, DEPARTMENT OF THE ARMY

March 1951

NOTES

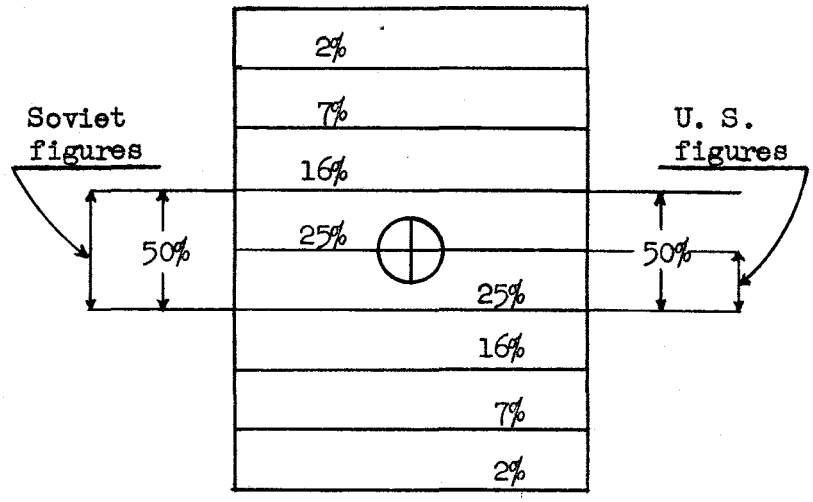
1. The following notes apply to this firing table only.

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 Soviet charges differ from the U. S. charges in that the:

   Soviet Full Charge - equals - U.S. Charge 4
   Soviet Charge 3 - equals - U.S. Charge 1

4. 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:



5. 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.

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ARTILLERY DEPARTMENT OF THE RED ARMY

Approved by:
Vice Director of the Artillery Dept
and Chairman, Artillery Committee,
Lt. General (Artillery) Khokhlov
27 July 1944

Service Use

FIRING TABLES

122mm Self-Propelled Gun
Model 1944 (A-19S) (А-19С)
122mm Self-Propelled Gun
Model 1943 (D-25C) (Д-25С)
122mm Tank Gun
Model 1943 (D-25) (Д-25)

Tank Unit
Artillery Dept, Red Army

No. 144T

Second Edition, Supplemented

High Explosive Fragmentation Shells
Armor Piercing Tracer Shells

War Publication
National Commissariat of Defense
Moscow 1944

I. BASIC INSTRUCTIONS

1. This publication contains firing instructions for the 122mm self-propelled gun, model 1944 (А-19С) ; for the 122mm self-propelled gun, model 1943 (Д-25С) ; and for the 122mm tank gun, model 1943 (Д-25) .

2. The 122mm self-propelled gun model 1944 (А-19С) has ballistic features the same as that of the 122mm Army Corps cannon, model 1931.

The 122mm self-propelled gun model 1943, (Д-25С) and the 122mm tank gun, model 1943(Д-25) have similar ballistics features and are somewhat lower in comparison to the ballistics of the self-propelled model 1944(А-19С). Therefore, in firing these guns it is necessary to use the same firing tables entered on page 17.

II. SIGHTS

1. The 122mm self-propelled gun model 1944 (А-19С) has the СТ-18 telescopic sight for fire by direct laying; and a panoramic sight of the 122mm Army Corps cannon, model 1931 for fire by indirect laying.

The following scales are contained in the field of vision of the СТ-18 sight:

- the ПГП БР scale for the ОФ-471Н shell, full charge. This scale should be used in firing the БР-471 armor-piercing tracer shell.

- the ПГЗ scale for the shell of the same name, charge #3. The ПГП БР and the ПГЗ scales are marked with numbers indicating distances in hundreds of meters (delta x equals 100 meters).

- the deflection correction scale in mils (1 mil equals 3.6 min.) the value of each division of the scale is equal to 4 mils.

On the sight there is a designation, СТ-18 for 122mm СУ . On the panoramic sight there is only a scale of "mils" from 0 to 750 mils, each mark being equal to 2 mils.

2. The 122mm self-propelled gun, model 1943 (Д-25С) has a hinged telescopic sight, the ТШ-17, for fire by direct laying and a mechanical sight with a panoramic attachment, and mil scale for fire by indirect laying. Earlier models of guns can be found which have a level and a panoramic sight for firing by indirect laying.

In the field of vision of the ТШ-17 sight, we find the ПГП and the ПГ3 scales for firing the same shells and charges as in the case of the СТ-18 sight. In addition to this there is a ДТ scale for firing light projectiles from the ДТ machine gun connected with the 122mm tank gun, model 1943 (Д-25). The ТШ-17 sight is also mounted on the 122mm tank gun, model 1943 (Д-25).

The ТШ-17 sight has a lateral correction scale which is made up of marks and angles; the value of each division of the scale (between an angle and a mark) is equal to 4 mils.

On the sight there is a designation, ТШ-17 for the 122mm tank gun Д-25

The level scale is marked in mils (1 mil equals 3.6 minutes).

3. The 122mm tank gun, model 1943 (Д-25) has, as its basic sight, the telescopic ТШ-17 sight, similar to the one used in the self-propelled gun, model 1943 (Д-25С).

Guns of earlier models can be found having the 10Т-17 telescopic sight and the ПТ4-17 periscope sight instead of the ТШ -17 sight.

The ПТ4-17 and the 10Т-17 sights have ПГП, ПГ3, and ДТ scales for the same shells and charges as contained on the СТ-18 and the ТШ-17 sights as well as deflection correction scales, each division being equal to 4 mils. The adjustment of the line of sighting at 0 settings of all the sights should be made as frequently as possible in conformance with regulations set forth by the service manual.

On the ПТ4-17 and the 10Т-17 sights there is a marking ПТ4-17 for the 122mm tank gun Д25 and 10Т-17 for the 122mm tank gun Д-25 respectively.

III. AMMUNITION

The 122mm self-propelled gun, model 1944 (А-19С), the 122mm self-propelled gun model 1943 (Д-25С), and the 122mm tank gun, model 1943 (Д-25) are supplied with shells made for the 122mm Army Corps cannon, model 1931. These are:

a. High explosive fragmentation shells ОФ-471 and high explosive fragmentation shells ОФ-471Н;

b. Armor piercing tracer shells БР-471.

The full charge is placed in the shell and consists of a main charge and supplementary charge #3 and two other supplementary charges of equal weight.

Charge three consists of one main charge. In order to obtain charge three, it is necessary to remove supplementary charge #3 and the two other supplementary charges of equal weight from the shell.

IV. FIRING INSTRUCTIONS

In firing high explosive fragmentation shells and armor-piercing tracer shells by direct pointing (laying) and using optical sight scales, the latter are used as follows: The ПГП is used in firing with full charges and the ПГ3 is used in firing with charge #3.

One division of the scale equals 100 meters.

Armor piercing projectiles with the full charge should be used against armored targets. In the absence of armor piercing projectiles, HE fragmentation projectiles should be used.

In firing by indirect laying, the panoramic sight scale or the level scale should be used. The setting for the level scale should be taken from the firing tables "sight setting" in mils.

For a level in which the horizontal position of the barrel is equal to a 30-00 setting, it is necessary to add 30-00 to the reading taken from the firing table.

In firing high explosive fragmentary shells with delayed fuzes Д-1 , the setting for the latter should likewise be taken from the firing table.

Fuze settings in the tables are calculated for bursts on the basis of the horizon of the weapon.

The firing tables are set up and the markings of the sight scale are made for high explosive fragmentation shell ОФ-471Н .

In firing the ОФ-471 shell with full charge, a 4% range correction should be entered; the sight should be lowered because the ОФ-471 shell has a greater range.

No corrections are necessary in firing with charge #3 because the ballistic features of the two shells in that case are practically the same. The shells should be distinguished from each other by the labels, ОФ-471 and ОФ-471Н found on the cylindrical portion of the shells.

It is against regulations to fire high explosive howitzer fragmentation shells of steel(ОФ-462) and cast iron-steel(О-462А) with all charges. These shells should be distinguished by the markings ОФ-462 and О-462А placed on the cylindrical surface of the shell; in addition, a black circular band is made above the rotating band of the cast iron steel shell.

V. SETTING OF THE FUZE AND FUZE ACTION

a. РГМ Fuze

In fuzes without caps, the lancet is set at "О" for fragmentation shell action; for fuzes with caps the lancet is set at "О" for high explosion shell action; for fuzes with caps, the lancet is set at " З " for delayed high explosive action.

b. The Delayed Д-1 Fuze

The delayed fuze is used exclusively for long range fire. Firing with a percussion setting of the fuze should be done only when fuzes of the second type are not available.

In case air bursts are not obtained, the fuze is set off by coming in contact with the ground. The table of fuze settings is computed for the production of medium altitude of bursts from the horizon of the weapon. The Д-1 fuze has 125 divisions numbered every 10 divisions and a percussion setting marked "Уд". The smallest setting of the fuze is equal to 5 divisions. It is against regulations to fire the Д-1 fuze at settings of 0 and less than 5 divisions, because the explosion of the shell occurs at distances dangerously close to the gun. Before charging in time fire and percussion fire, it is necessary to remove the safety cap from the fuze. In time fire, the fuze is set with a wrench by combining the given setting of the lower range scale with the red reference line.

VI. FIRING TABLES

122mm Self-propelled Guns, Model 1944 (A-19C)

1. 122mm fragmentary-high explosive long range steel shell ОФ-471Н

Full Charge

The following are fired according to this table:

a. 122mm fragmentary-high explosive long range steel shell ОФ-471 , full charge. A 4% range correction should be entered in this case. The ОФ-471 has a longer range, therefore the sights should be lowered.

b. Armor piercing projectile БР-471

Full Charge

2. The 122mm fragmentary-high explosive long range steel shells ОФ-471Н and ОФ-471

Charge Three

1944 Cannon
Full Charge

FRAGMENTARY-HIGH EXPLOSIVE LONG RANGE STEEL SHELL ОФ-471Н

Fuzes: РГМ and Д-1

ARMOR PIERCING TRACER SHELL БР-471

Fuze: МД-8

ПГП-БР- optical sight scales "mils" - level scale

Angle of Jump: Minus 2 minutes

Initial Velocity = 800 m/sec

Range of Direct Fire - 1000 M at Target 2 meters high

Range	Setting		Д-1 Fuze	Height of Trajectory	Time of Flight	Angle of Drift
	Sight					
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
200	2	2	2	0.1	0.3	0
400	4	4	4	0.3	0.5	0
600	6	5	6	0.7	0.8	0
800	8	7	8	1.3	1.0	0
1000	10	9	10	2.1	1.3	0
200	12	10	12	3.1	1.6	0
400	14	12	14	4.2	1.9	0
600	16	14	16	5.5	2.2	1
800	18	15	18	7.0	2.4	1
2000	20	17	20	8.8	2.7	1
200	22	19	21	11	3.0	1
400	24	21	23	13	3.3	2
600	26	23	25	16	3.6	2
800	28	25	27	20	3.9	2

1944 Cannon
Full Charge

Range	Setting		Д-1 Fuze	Height of Trajectory	Time of Flight	Angle of Drift
	Sight					
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
3000	30	27	29	24	4.2	2
200	32	29	31	29	4.6	2
400	34	31	33	34	4.9	2
600	36	34	35	39	5.3	2
800	38	36	36	45	5.6	3
4000	40	38	38	51	6.0	3
200	42	40	40	57	6.3	3
400	44	43	42	64	6.7	3
600	46	45	44	71	7.1	3
800	48	48	46	78	7.5	3
5000	50	51	48	86	7.9	3
200	52	53	50	94	8.3	3
400	54	56	52	102	8.7	3
600	56	59	54	111	9.1	3
800	58	62	56	120	9.5	4
6000	60	65	58	130	10.0	4
200	62	69	60	140	10.5	4
400	64	72	62	151	10.9	4
600	66	76	64	162	11.4	4
800	68	80	66	174	11.8	4
7000	70	84	68	186	12.3	4
200	72	87	70	199	12.8	4
400	74	91	72	213	13.3	4
600	76	95	74	228	13.8	4
800	78	99	76	245	14.3	4
8000	80	104	78	263	14.8	4
200		108	80	282	15.4	4
400		112	82	303	15.9	5
600		117	84	326	16.5	5
800		121	86	350	17.0	5

1944 Cannon
Full Charge

Range	Setting		Д-1 Fuze	Height of Trajectory	Time of Flight	Angle of Drift
	Sight					
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
9000		126	88	376	17.6	5
200		131	90	403	18.2	5
400		136	92	432	18.8	6
600		141	94	463	19.4	6
800		146	96	495	20.0	6
10000		151	98	529	20.6	6
200		157	100	565	21.2	6
400		162	102	602	21.9	6
600		168	104	641	22.5	6
800		174	106	682	23.2	6
11000		180	108	724	23.8	6
200		187	110	768	24.5	6
400		193	112	814	25.2	7
600		200	114	861	25.9	7
800		206	116	910	26.6	7
12000		213	118	960	27.3	7
200		220	120	1010	28.0	7
400		227	122	1060	28.7	7
600		235	124	1120	29.5	7
800		242	126	1180	30.2	7
13000		250		1240	31.0	8
200		258		1300	31.7	8
400		266		1370	32.5	9
600		274		1440	33.3	9
800		283		1510	34.0	9
14000		291		1580	34.8	9
200		300		1660	35.6	10
400		308		1740	36.4	10
600		317		1820	37.2	11
800		326		1900	38.0	11

1944 Cannon
Full Charge

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
15000		336		1990	38.8	11
200		345		2080	39.7	11
400		355		2170	40.6	11
600		365		2270	41.5	12
800		375		2370	42.4	12
16000		386		2470	43.3	12
200		397		2580	44.2	12
400		408		2690	45.2	13
600		419		2810	46.2	13
800		431		2930	47.2	13
17000		443		3060	48.2	14
200		455		3190	49.3	14
400		468		3330	50.4	14
600		481		3470	51.5	15
800		494		3620	52.7	15
18000		508		3780	53.8	15
200		523		3960	55.0	
400		540		4150	56.3	
600		558		4360	57.7	
800		578		4590	59.3	
19000		600		4850	61.0	
200		625		5150	62.8	
400		633		5510	64.8	
600		691		5990	67.7	
19750		750		6710	72.3	

Note: In firing ОФ-471 shell with a full charge a 4% range correction should be entered. The sight should be lowered.

1944 Cannon
Charge Three

FRAGMENTARY-HIGH EXPLOSIVE LONG RANGE STEEL SHELLS ОФ-471Н AND ОФ-471

Fuzes: РГМ and Д-1

Scales: The ПГ3 of the optical sight; "mils" - level scale.

Angle of Jump: Minus 2 minutes

Initial Velocity = 570 m/sec

Range of Direct Fire - 700 M at Targets 2 meters high

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
200	2	4	3	0.2	0.4	0
400	4	7	5	0.7	0.7	0
600	6	10	7	1.5	1.1	1
800	8	13	9	2.7	1.5	1
1000	10	17	11	4.3	1.9	1
200	12	20	13	6.3	2.3	1
400	14	23	15	8.8	2.7	1
600	16	27	18	12	3.1	2
800	18	30	20	16	3.5	2
2000	20	34	22	20	3.9	2
200	22	38	24	25	4.3	2
400	24	42	26	30	4.8	2
600	26	46	28	36	5.2	2
800	28	51	30	43	5.7	2
3000	30	55	32	50	6.1	2
200	32	60	34	58	6.6	2
400	34	64	36	66	7.1	2
600	36	69	37	75	7.6	2
3800	38	74	39	84	8.1	3

1944 Cannon
Charge Three

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
4000	40	79	41	94	8.7	3
200	42	81	43	104	9.2	3
400	44	89	45	115	9.7	3
600	46	94	47	127	10.3	3
800	48	100	49	140	10.8	3
5000	50	105	51	154	11.4	3
200		111	53	169	12.0	3
400		117	55	185	12.6	3
600		124	57	203	13.2	3
800		130	59	222	13.8	4
6000		137	61	243	14.4	4
200		144	63	266	15.1	4
400		151	65	291	15.7	4
600		158	67	318	16.4	4
800		165	69	347	17.0	5
7000		172	71	378	17.7	5
200		180	73	411	18.4	5
400		188	75	446	19.1	5
600		197	77	483	19.8	5
800		205	79	522	20.5	6
8000		214	81	563	21.2	6
200		223	83	606	22.0	6
400		232	85	651	22.7	6
600		241	87	698	23.5	6
800		250	90	747	24.2	7
9000		259	92	798	25.0	7
200		268	94	851	25.8	7
400		278	96	906	26.6	7
600		288	98	962	27.4	7
800		299	100	1010	28.2	8

1944 Cannon
Charge Three

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
10000		310	102	1080	29.0	8
200		321	105	1140	29.9	8
400		332	107	1210	30.7	8
600		344	109	1280	31.6	9
800		357	111	1360	32.5	9
11000		369	114	1440	33.4	10
200		382	116	1520	34.4	10
400		395	118	1610	35.4	10
600		408	120	1700	36.4	11
800		422	123	1800	37.4	11
12000		437	125	1900	38.4	11
200		452		2010	39.5	12
400		467		2120	40.6	12
600		483		2240	41.8	13
12800		500		2360	43.0	13

VII. FIRING TABLES

122mm Tank Guns model 1943 (Д-25) and the 122mm Self Propelled Guns model 1943 (Д-25С)

1. 122mm Fragmentary-high Explosive Long Range Steel Shell ОФ-471Н

Full Charge

The following are fired according to this table:

a. The 122mm fragmentary-high explosive long range steel shell ОФ-471 , full charge. In this case it is necessary to enter a 4% range correction. The ОФ-471 has a longer range, therefore it is necessary to lower this sight.

b. Armor piercing-tracer shell БР-471

Full Charge

2. The 122mm fragmentary-high Explosive Long Range Steel Shell ОФ-471Н and ОФ-471

Charge Three

1943 Cannon
Full Charge

FRAGMENTARY-HIGH EXPLOSIVE LONG RANGE
STEEL SHELL ОФ-471Н

Fuzes: РГМ and Д-1

ПГП optical scale
"mils" - level scale

Initial Velocity :
781 meters/sec

ARMOR PIERCING TRACER SHELL БР-471
Fuze МД-8

Angle of Jump:
Minus 3 minutes

Range of Direct Fire, 1000 M
at Target 2 meters high

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
200	2	2	2	0.1	0.3	0
400	4	4	4	0.3	0.5	0
600	6	6	6	0.7	0.8	0
800	8	7	8	1.3	1.1	0
915						
1000	10	9	10	2.1	1.4	0
200	12	11	12	3.1	1.6	0
400	14	12	14	4.3	1.9	0
600	16	14	16	5.7	2.1	1
800	18	16	18	7.4	2.4	1
2000	20	18	20	9.4	2.7	1
200	22	20	21	14	3.0	1
400	24	22	23	17	3.3	2
600	26	25	25	20	3.6	2
800	28	27	27	23	3.9	2

1943 Cannon
Full Charge

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
3000	30	29	29	26	4.2	2
200	32	31	31	30	4.6	2
400	34	34	33	35	4.9	2
600	36	36	35	40	5.3	2
800	38	38	36	46	5.6	3
4000	40	41	38	52	6.0	3
200	42	43	40	58	6.4	3
400	44	45	42	65	6.8	3
600	46	48	44	73	7.2	3
800	48	51	46	82	7.6	3
5000	50	54	48	91	8.1	3
200	52	57	51	101	8.5	3
400	54	60	54	111	9.0	3
600	56	63	56	121	9.4	3
800	58	67	58	131	9.9	4
6000	60	70	60	142	10.4	4
200	62	74	62	153	10.9	4
400	64	77	64	165	11.4	4
600	66	81	66	178	11.9	4
800	68	85	68	192	12.4	4
7000	70	89	70	207	12.9	4
200	72	93	72	223	13.4	4
400	74	97	74	240	13.9	4
600	76	101	76	258	14.4	4
800	78	105	78	277	14.9	4
8000	80	109	80	297	15.4	4
200	82	114	82	318	15.9	4
400	84	118	84	340	16.5	5
600	86	123	86	363	17.0	5
800	88	128	88	387	17.6	5

1943 Cannon
Full Charge

Range	Setting		Д-1 Fuze	Height of Trajectory	Time of Flight	Angle of Drift
	Sight					
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
9000	90	133	90	412	18.1	5
200	92	138	92	438	18.7	5
400	94	143	94	465	19.3	6
600	96	149	96	493	19.8	6
800	98	154	97	523	20.4	6
10000	100	160	99	555	21.0	6
200	102	165	101	589	21.6	6
400	104	171	103	625	22.2	6
600	106	177	105	662	22.8	6
800	108	183	106	700	23.4	6
11000	110	190	107	739	24.0	6
200	112	196	110	779	24.7	6
400	114	203	112	820	25.3	7
600	116	210	114	862	26.0	7
800	118	216	116	906	26.6	7
12000	120	223	118	952	27.3	7
200	122	230	120	1000	28.0	7
400	124	238	122	1050	28.7	7
600	126	245	124	1110	29.4	7
800	128	253	126	1170	30.1	7
13000	130	260		1240	30.8	8
200	132	268		1300	31.5	8
400	134	276		1360	32.2	9
600	136	284		1420	33.0	9
800	138	292		1480	33.7	9
14000	140	301		1550	34.5	9
200	142	309		1610	35.2	10
400	144	318		1680	36.0	10
600	146	327		1750	36.8	11
800	148	336		1820	37.6	11
15000	150	346		1900	38.4	11

Note: In firing the ОФ-471 shell with a full charge it is necessary to enter a 4% range correction. The sight should be lowered.

1943 Cannon
Charge Three

FRAGMENTARY-HIGH EXPLOSIVE LONG RANGE STEEL SHELL ОФ-471Н and ОФ-471

Scales: ПГ3 - optical
Scale: "mils" - level scale

Initial Velocity: 554 meters/sec

Fuzes: РГМ and Д-1

Angle of Jump:
Minus 3 minutes

Range of Direct Fire, 700 M
at Target 2 meters high

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
200	2	4	3	0.2	0.3	0
400	4	8	5	0.7	0.6	0
600	6	11	7	1.5	1.0	1
800	8	14	9	3.0	1.4	1
1000	10	18	11	4.8	1.8	1
200	12	21	13	6.9	2.2	1
400	14	25	15	9.4	2.6	1
600	16	29	18	13	3.1	2
800	18	33	20	16	3.6	2
2000	20	36	22	20	4.0	2
200	22	40	25	24	4.5	2
400	24	45	27	29	5.0	2
600	26	49	29	35	5.5	2
800	28	54	31	41	6.0	2
3000	30	58	33	48	6.5	2
200	32	63	35	56	6.9	2
400	34	68	36	65	7.4	2
600	36	73	38	75	7.9	2
3800	38	78	40	86	8.4	3

1943 Cannon
Charge Three

Range	Setting			Height of Trajectory	Time of Flight	Angle of Drift
	Sight		Д-1 Fuze			
Meters	Grad.	Mils	Grad.	Meters	Seconds	Mils
4000	40	83	42	98	8.9	3
200	42	88	44	111	9.4	3
400	44	94	46	125	9.9	3
600	46	99	48	140	10.4	3
800	48	105	50	156	11.0	3
5000	50	111	51	173	11.5	3
200	52	117	53	191	12.1	3
400	54	124	55	210	12.7	3
600	56	130	57	230	13.3	3
800	58	137	59	251	13.9	4
6000	60	144	61	273	14.6	4
200	62	150	63	296	15.3	4
400	64	158	66	321	16.0	4
600	66	165	68	348	16.7	4
800	68	173	70	377	17.4	5
7000	70	180	72	408	18.1	5
200	72	188	74	441	18.8	5
400	74	196	76	476	19.5	5
600	76	204	78	514	20.2	5
800	78	213	80	553	20.9	6
8000	80	221	82	593	21.6	6
200	82	230	84	634	22.3	6
400	84	239	86	676	23.0	6
600	86	248	88	720	23.7	6
800	88	257	90	767	24.5	7
9000	90	267	93	817	25.3	7
200	92	277	95	870	26.1	7
400	94	286	97	927	27.0	7
600	96	296	99	988	27.9	7
800	98	307	101	1050	28.8	8
10000	100	317	105	1120	29.7	8

MEAN ERRORS

Full Charge

Range	Mean Errors				
	Percussion Fire			Time Fire	
	Distance	Height	Deflection	Distance	Height
Meters	Meters	Meters	Meters	Meters	Meters
500	40	0.2	0.2	90	0.4
1000	37	0.3	0.3	88	0.9
1500	34	0.4	0.4	86	1.3
2000	32	0.6	0.6	83	1.7
2500	31	0.8	0.7	80	2.2
3000	30	1.0	0.9	77	2.7
3500	29	1.2	1.0	74	3.3
4000	29	1.5	1.2	72	3.9
4500	29	1.8	1.3	70	4.5
5000	30	2.2	1.5	67	5.2
5500	31	2.8	1.7	65	5.9
6000	32	3.4	1.8	63	6.7
6500	33	4.1	2.0	63	7.5
7000	35	4.8	2.1	62	8.3
7500	38	5.8	2.3	62	9.1
8000	41	7.2	2.4	62	9.9
8500	44	8.7	2.6	63	11

Full Charge					
Range	Mean Errors				
	Percussion Fire			Time Fire	
	Distance	Height	Deflection	Distance	Height
Meters	Meters	Meters	Meters	Meters	Meters
9000	47	10	2.7	63	12
9500	50	12	2.9	64	13
10000	53	15	3.1	66	15
10500	56	17	3.2	67	16
11000	58	20	3.4	69	18
11500	60	23	3.6	71	20
12000	63	27	3.8	72	22
12500	66	31	4.0		
13000	69	35	4.2		
13500	72	40	4.4		
14000	74	45	4.6		
14500	76	50	4.8		
15000	78	55	5.1		
15500	80	62	5.3		
16000	83	69	5.5		
16500	86	77	5.8		
17000	89	86	6.2		
17500	92	96	6.5		
18000	96	107	6.9		

Charge Three					
Range	Mean Errors				
	Percussion Fire			Time Fire	
	Distance	Height	Deflection	Distance	Height
Meters	Meters	Meters	Meters	Meters	Meters
500	18	0.2	0.2	65	0.5
1000	18	0.3	0.3	63	1.2
1500	19	0.5	0.4	61	1.8
2000	21	0.8	0.6	59	2.5
2500	22	1.2	0.8	57	3.2
3000	24	1.7	0.9	55	4.0
3500	26	2.3	1.0	53	4.8
4000	28	3.0	1.2	52	5.7
4500	30	3.9	1.4	51	6.7
5000	32	4.9	1.5	51	7.7
5500	34	6.1	1.6	51	8.8
6000	36	7.4	1.8	51	10
6500	38	9	2.0	51	12
7000	40	11	2.1	51	13
7500	42	13	2.3	52	14
8000	44	15	2.5	53	16
8500	46	18	2.7	54	18
9000	48	21	2.9	55	20
9500	50	24	3.1	56	22
10000	53	28	3.3	57	25
10500	55	32	3.5	58	28
11000	57	36	3.8	60	30
11500	59	41	4.1	61	31
12000	61	47	4.4	62	31
12500	63	54	4.7	63	31
12800	65	58	4.9		

VIII. TABLE OF ELEVATIONS OF TRAJECTORIES (IN METERS) ABOVE THE HORIZON OF THE GUN BARREL

Armor Piercing-Tracer Shell BP-471

Full Charge

Initial Velocity 781 meters/sec

Range in Meters	200	400	600	800	1000	1200	1400	1600	1800	2000
200	0	-0.6	-1.9	-						
400	0.3	0	-1.0	-2.0						
600	0.6	0.6	0	-1.3	-3.3					
800	0.9	1.3	1.0	0	-1.7	-4.2				
1000	1.3	2.0	2.0	1.4	0	-2.2	-5.0			
200	1.6	2.7	3.1	2.8	1.8	0	-2.5	-5.8		
400	2.0	3.4	4.1	4.2	3.6	2.2	0	-2.9	-0.7	
600	2.4	4.4	5.2	5.7	5.4	4.4	2.6	0	-3.4	-8.0
800	2.8	4.9	6.4	7.2	7.3	6.7	5.2	3.0	0	-4.2
2000	3.2	5.7	7.7	8.9	9.4	9.2	8.1	6.3	3.8	0
200	3.6	6.6	9.0	10.7	11.6	11.8	11.2	9.9	7.8	4.6
400	4.1	7.6	10.4	12.6	13.9	14.5	14.5	13.6	12.0	9.3
600	4.6	8.5	11.8	14.5	16.3	17.3	17.9	17.4	16.3	14.0
800	5.1	9.5	13.2	16.4	18.8	20.2	21.4	21.3	20.7	18.8
3000	5.6	10.5	14.7	18.4	21.3	23.2	24.9	25.4	25.2	23.8
200	6.1	11.5	16.3	20.5	23.9	26.3	28.4	29.6	29.9	28.9
400	6.6	12.6	17.9	22.6	26.5	29.5	32.0	33.8	34.7	34.2
600	7.1	13.7	19.5	24.8	29.2	32.8	35.8	38.1	39.6	39.7
800	7.7	14.8	21.2	27.1	32.0	36.2	39.8	42.6	44.7	45.4
4000	8.3	16.0	23.0	29.4	35.0	36.8	44.0	47.4	49.9	51.2

VIII. TABLE OF ELEVATIONS OF TRAJECTORIES (IN METERS) ABOVE THE HORIZON OF THE GUN BARREL

(Continued)

2200	2400	2600	2800	3000	3200	3400	3600	3800	4000	Range in Meters
										200
										400
										600
										800
										1000
										200
										400
										600
-9.7										800
-5.1	-11.0									2000
0	- 5.5	-12.2								200
5.1	0	- 6.2	-13.2							400
10.3	5.7	0	- 6.4	-14.7						600
15.7	11.5	6.2	0	- 7.8	-16.7					800
21.2	17.5	12.7	7.2	0	- 8.3	-17.7				3000
26.8	23.7	19.4	14.5	7.8	0	- 8.8	-19.1			200
32.6	30.0	26.3	22.0	15.7	8.3	0	- 9.7	-21.2		400
38.6	36.5	33.4	29.7	23.8	17.0	9.2	0	-11.0	-23.2	600
44.9	43.3	40.7	37.6	32.2	26.1	18.8	10.4	0	-11.6	800
51.3	50.5	48.3	45.7	41.0	35.6	28.8	20.9	11.0	0	4000

[BACK COVER]