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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

31 July 1981

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MEMORANDUM FOR: The Director of Central Intelligence
FROM : John H. Stein
Deputy Director for Operations
SUBJECT : USSR GENERAL STAFF ACADEMY LESSONS :
Organizing the Combat Actions of the
Front Rocket Troops and Artillery in
the Breakthrough of the Enemy Defense

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on a collection of 29 lessons, classified TOP SECRET, prepared in 1977 for use in the Soviet General Staff Academy. The lessons are broken down into two parts: the first 19 lessons deal with the staff preparation of a front offensive operation with conventional and nuclear weapons; the remaining 10 lessons deal with the conduct of an offensive employing conventional weapons at first with a transition to the use of nuclear weapons. This report is a translation of the lesson detailing the preparation, organization, tasking, and quantitative data for the employment of conventional artillery in the breakthrough by a front of a NATO defense line in the northern area of Germany.

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies.

John H. Stein

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Intelligence Information Special Report

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COUNTRY USSR

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DATE OF
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SUBJECT

GENERAL STAFF ACADEMY LESSON No. 21b: Organizing the
Combat Actions of the Front Rocket Troops and Artillery
in the Breakthrough of the Enemy Defense

SOURCE Documentary

Summary:

The following report is a translation from Russian of a lesson, classified TOP SECRET, prepared for use at the General Staff Academy of the Armed Forces of the USSR. This lesson is for the instruction of students acting as chief of staff of the rocket troops and artillery of a front in the preparation, organization, and tasking of conventionally-armed artillery for the support of an attack and breakthrough of a NATO defense line in northern Germany. The lesson details the preparation times, duration and scheduling of artillery fire, principal targets (NATO nuclear-capable missiles and guns, infantry strongpoints, antitank means, command posts, artillery radars, and air defense means), grouping and tasking of the artillery resources, and artillery quantitative data. Worthy of note in this respect is the planned use, in the artillery preparation for the breakthrough, of 1,824 guns, mortars, and rocket artillery, with a density of 107 guns per kilometer of breakthrough sector, to deliver 112,050 rounds of ammunition over an area approximately 50 km wide within 32 minutes.

End of Summary

Comment:

Although not specifically identified, the colors representing NATO countries in this series probably equate as follows:

Brown -- West Germany

Blue -- Great Britain

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Lesson No. 21b

I. Lesson subject: Organizing the combat actions of the front rocket troops and artillery in the breakthrough of the enemy defense.

II. Estimated time for completion of Lesson No. 21b:

- group training period 3 hours;
- individual study by students 3 hours;
- total 6 hours.

III. Training objectives of the lesson:

-- to study the organization of the combat actions of the front rocket troops and artillery in the breakthrough of an enemy defense;

-- to give the students practice in organizing the destruction by fire of the enemy in the period of the artillery preparation and support of the attack, as well as in preparing the artillery for the breakthrough of the enemy defense;

IV. Method of conducting the lesson: group exercise with maps in the classroom.

V. Methodological recommendations regarding the students' preparation for the lessons.

At the start of the students' individual preparation for the lesson, the directors of the training groups recommend /that the students/ do the following:

-- study pages 306-312, 318-320, and 363-365 in the textbook Rocket Troops and Artillery in Offensive and Defensive Operations, a 1977 publication of the General Staff Military Academy, accession no. 108858;

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-- study the assignment for Lessons Nos. 21 and 21b with the map from the Operational Art Department showing the initial situation as of 1900 hours 8 September;

-- allocate their time of individual study as follows:

-- for study of the assignment and for work using the map. Assessment of the composition, status, and positioning of the artillery according to the situation at 1900 hours 8 September.....30 min;

-- for determination of the main measures in preparing the artillery for the breakthrough of the enemy defense and the time to carry them out.....15 min;

-- for clarification of the scope of artillery tasks during the artillery preparation.....20 min;

-- for calculation of the artillery and ammunition requirements for the artillery preparation of the attack in the breakthrough sector of the adjacent flanks of the 7th and 9th armies.....20 min;

-- for clarification of the duration of the artillery preparation and development of the schedule for it.....20 min;

-- for determination of the method for and depth of the artillery support of the attack (the lines are to be plotted on the map).....10 min;

The preparation of the report must be carried out at the same time as the work on the training topics enumerated above.

Method of conducting the lesson:

1. Check of the students' preparedness for the lesson.....5 min;

2. The situation and status of the rocket troops and artillery of the Coastal Front according to the situation at 1900 hours 8 September.....15 min;

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3. The measures to prepare the artillery for the breakthrough of the enemy defense, and the time required to carry them out.....20 min;

4. Clarification of the scope of the artillery's tasks and its grouping for carrying out the fire destruction of the enemy.....45 min;

5. Clarification of the duration and organization of the artillery preparation for the attack and the method and depth of the artillery support of the attack.....45 min;

6. Concluding remarks by the lesson director.....5 min.

Theoretical Questions

1. Which calculations are carried out in the staff of the front rocket troops and artillery in planning the artillery preparation for the attack?

Answer ("The Procedures for Operational-Tactical Calculations on the Combat Employment of Artillery in an Operation and in Battle.")

The following are determined in the front when planning the artillery preparation for the attack:

-- the number and width of the sectors for conducting the artillery preparation for the attack on the axes of the armies' main and secondary thrusts;

-- the scope of the artillery's tasks, the artillery required, and the required artillery density in each breakthrough sector and in all the breakthrough sectors as a whole;

-- the armies' capabilities to concentrate the required amount of artillery on the breakthrough sector;

-- the ammunition required in the artillery preparation for the attack and the required duration of the preparation according to the scope of tasks and taking into account the forward movement of the troops when attacking from the march. As a rule, for the breakthrough of a defense by the adjacent flanks of /two/

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armies, the artillery preparation for the attack is organized in an integrated layout on the axis of the front's main thrust.

The training topics of this lesson are to be worked out in the form of a report by the chief of staff of the rocket troops and artillery of the Coastal Front (the student) given to the front chief of rocket troops and artillery (the instructor), containing the proposals for the combat employment of the artillery in accordance with the decision of the front commander on the development of the operation (in the breakthrough sector of the adjacent flanks of the 7th and 9th armies).

In the process, the director is to be guided by the following illustrative report by the chief of staff of the front rocket troops and artillery.

REPORT OF THE CHIEF OF STAFF OF THE ROCKET TROOPS AND ARTILLERY OF THE COASTAL FRONT ON THE SITUATION AS OF 1900 HOURS 8 SEPTEMBER

Operational time 1930 hours 8 September

1. Situation and status of the front rocket troops and artillery

The rocket troops and artillery of the Coastal Front have inflicted fire destruction on the invading groupings of enemy ground forces, and as of the morning of 8 September were supporting the offensive of the Coastal Front troops on the NEUMUNSTER and HANNOVER axes.

During the first day of combat actions, they defeated the 18th Motorized Infantry Division of the Brown 1st Army Corps in meeting engagements in the cover zone, and by 1900 hours 8 September they had arrived at Brown territory on the HANNOVER axis on a front up to 70 km wide and to a depth of from 12 to 30 km, and on the NEUMUNSTER axis on a front about 26 km wide and to a depth of from 5 to 15 km. Further advance by the first-echelon troops was halted by the enemy's organized resistance from prepared defensive lines. Forward units, supported by artillery fire from the march, made attempts to seize the enemy defensive lines, but did not succeed.

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At the same time, the artillery is firing against tanks and motorized infantry on the line WANZER, DEWITZ, BINDE, SALZWEDEL, and against the Blue tank and motorized infantry grouping that is endeavoring to break through to the MAGDEBURG area.

Regimental and divisional artillery groups are conducting combat actions in the zones of their divisions. The artillery of the 6th and 11th motorized rifle divisions is in movement together with its divisions.

The army artillery groups and army rocket artillery groups are in action as follows:

-- of the 4th Army - in the offensive zones of the 3rd and 7th motorized rifle divisions;

-- of the 7th Army - in the offensive zones of the 5th and 9th tank divisions;

-- of the 9th Army - in the offensive zones of the 10th Tank Division and the 18th Motorized Rifle Division.

The front antitank reserves and mobile obstacle detachments have begun their forward movement to the west bank of the ELBE River as follows: the 4th Antitank Artillery Brigade and the 1st Battalion of the 17th Combat Engineer Regiment -- from the area northwest of PRITSVELN/sic -- probably PRITZWALK/; and the 5th Antitank Artillery Brigade -- from the area north of GENTHIN (see map).

The artillery units intended for use in the breakthrough of the defensive line must complete a maneuver of 10 to 80 km up to the breakthrough sector.

Losses amount to the following:

-- 5 launchers (2 operational-tactical and 3 tactical);

-- 110 guns and mortars.

The rocket troops are in the siting areas, and are systematically pinpointing the targets for the initial nuclear

strike. The signal for the transfer of warheads to the divisions' missile subunits has not yet arrived.

In one day of combat actions, the army artillery expended 0.3 to 0.6 unit of fire in ammunition.

2. Artillery preparatory measures for the breakthrough of the enemy defense and the time required to carry them out

The immediate artillery preparation for the breakthrough is carried out while front troops are overcoming the enemy's cover zone, after the formation commander has updated the decision for the breakthrough. In conformity with the front commander's decision for the breakthrough, reconnaissance data on the enemy, and the artillery's situation and status, the front chief of rocket troops and artillery updates the scope of the artillery's tasks in the artillery preparation for the attack, the required number and composition of the artillery groupings for the breakthrough, the organization of the artillery preparation, the method and depth of artillery support of the attack, and the ammunition expenditure; he transmits the tasks and orders to the armies' chiefs of rocket troops and artillery, and also organizes cooperation among the artillery of the adjacent armies.

Based on the orders of the front chief of rocket troops and artillery, the armies' chiefs of rocket troops and artillery and their staffs carry out detailed planning of the artillery fire for the periods of artillery preparation, support of the attack, and close support of the motorized infantry and tank advance. The front and armies will require approximately six hours, including no less than two hours of daylight, in order to resolve the main points in the organization of the fire destruction of the enemy during the breakthrough of his defense.

The following are necessary in order to prepare the artillery to carry out the tasks of fire destruction of the enemy during the breakthrough of his defense:

- 1) As all the reconnaissance means advance and deploy at the breakthrough sectors of the 7th and 9th armies (the time required for artillery reconnaissance means to deploy is: up to 30 minutes for sound-ranging reconnaissance batteries, up to 1 hour for radiotechnical reconnaissance batteries, up to 15

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minutes for artillery mortar locating stations and artillery reconnaissance stations), to organize the reconnaissance of the enemy defense, the processing of reconnaissance data, and the fixing of the coordinates and dimensions of targets to be destroyed during the artillery preparation in the breakthrough sector and its flanks; as of dawn on 9 September, to conduct final reconnaissance of the objectives and targets and to update the artillery tasks on the ground, for which 2 to 2.5 hours of daylight is required at the army level.

2) To establish an artillery grouping for the fire destruction of the enemy, to clarify the duration of the artillery preparation for the attack, to have the front staff of rocket troops and artillery implement the expenditure of ammunition, and, by 2300 hours 8 September, to transmit the tasks to the armies' chiefs of rocket troops and artillery.

3) To complete the selection, topographic tie-in, and preparation of artillery firing positions and observation posts by 2400 hours (up to 1 hour is required to perform this work at the battalion level, 1.5 hours at the artillery group level, and 2 hours at the level of division artillery).

4) Up to 4 to 5 hours are required for the forward movement and deployment of the artillery against the breakthrough sectors.

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Large units and units	Takedown (in hours)	Route length (km)	Movement speed (km/hr)	Time required		
				For march (hours)	For deployment and preparation of fire (hours)	Total (hours)
Arty of 11th ✓ MtZR Div	-	60	25	2.15	1	3.15
7th Army Arty Gp	1	5	25	0.2	1	2.2
7th Army Rkt Lchr Arty Gp	1	8	25	0.3	1	2.3
Arty of 10th Tk Div	0.5	10	25	0.4	1	1.9
Arty of 6th Tk Div	-	75	25	3.0	1	4.0
Arty of 18th MtZR Div	0.5	20	25	0.8	1	2.3
9th Army Arty Gp	1	16	25	0.64	1	2.64
9th Army Rkt Lchr Arty Gp	1	8	25	0.32	1	2.32
8th Hvy HOW Bde of 11th Arty Div of the Reserve of the Supreme High Command /RVGK/	0.5	50	25	2.0	1	3.5
Army Arty of 6th Army	-	60	25	2.15	1	3.15

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5) To conduct the planning of the fire destruction in parallel in the armies and divisions. To complete the transmittal of tasks down to the batteries inclusively by 0700 hours 9 September.

6) To carry out the engineer preparation of the firing positions, observation posts, and the sites and posts for the reconnaissance means at night, completing the camouflage of the artillery's battle formations by 0500 hours 9 September.

7) To complete delivery and unloading of ammunition at the firing position in order to carry out the artillery preparation and support of the attack by 0500 hours 9 September.

8) During the daylight hours from 0530 to 0700 9 September, to conduct final reconnaissance of enemy targets and to update fire tasks on the ground.

3. Refinement of the scope of artillery tasks and of the artillery grouping to carry out the fire destruction of the enemy

In the operation's preparatory period, planning for fire destruction during the breakthrough of the enemy's defense was of a tentative nature, since at that time the forward defense line was not occupied by the enemy, and the necessary artillery density and duration of the artillery preparation for the attack had been determined according to previously calculated operational norms.

As a result of the combat actions of the front's forward units and large units to seize the forward defense line, reconnaissance data from all-source reconnaissance in the zones of the 7th and 9th armies have been received regarding the nature of the enemy's defense on the forward defense line and /about/ the specific objectives and targets which are to be hit by fire.

In view of this, the original planning of the fire destruction of the enemy during the breakthrough of his defense requires updating in the following aspects: refinement of the scope of tasks, the artillery and ammunition requirements for the artillery preparation for the attack, its duration, and its disposition on the axis of the front's main thrust.

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Main measures	Execution times								
	8 September				9 September				
	2000	2100	2200	2300	0500	0600	0700	0800	0830
I. Conducted in the front									
Organization of final reconnaissance with front means and transmittal of photos to troops.	-----								
Update of artillery tasks, of required artillery density, and of means to be allocated for fire destruction of the enemy.	-----								
Clarification of duration of artillery preparation for the attack, method and depth of artillery support, and ammunition expenditure.	-----								
Assignment of tasks to armies.			-----						
Organization of fire cooperation between artillery and front aviation.			-----						
Monitoring of artillery regrouping, ammunition delivery, and artillery readiness for the artillery preparation for the attack.					-----				
II. Conducted in the armies (divisions)									
Organization and conduct of reconnaissance of the enemy, collection and processing of reconnaissance data, fixing of objective and target coordinates.	-----								
Determination and refinement of the scope of artillery tasks.		-----							
Artillery redistribution and establishment of artillery grouping in the breakthrough sector of the 7th and 9th armies.		-----							
Regrouping (advance) and deployment of artillery.			-----						
Selection, topographical tie-in, and preparation of artillery firing positions and observation posts.	-----								
Ammunition delivery and unloading at firing positions.		-----							
Concrete planning of fire, assignment of tasks, and organization of control and cooperation.				-----					
Deployment of meteorological stations and transmission of meteorological reports.									
Calculation of ballistic range correction, and technical preparation.									
Protective measures against weapons of mass destruction.									
Monitoring of artillery readiness.									



Refinement of the scope of fire destruction tasks

The scope of the tasks for destroying enemy objectives and targets during the period of the artillery preparation for the attack is refined based on the enemy's defensive disposition in the breakthrough sector and its adjoining flanks.

The targets which are to be hit are calculated in terms of their expected quantity.


The scope of the tasks for the fire destruction of the enemy in the breakthrough sector during the period of the artillery preparation for the attack is given in Appendix 2* of the assignment for Lesson No. 21b.

When refining the scope of tasks, the targets which are to be hit are taken into account according to their expected quantity. In the preparatory fire period it will be necessary to hit:

a) and destroy the enemy's tactical means of nuclear attack (Honest John launchers in a 56 km zone, 203.2-mm and 155-mm howitzer batteries in a 37 km zone) (/equals/ the width of the breakthrough sector increased on the flank sides by half their range of fire). In view of the fact that the nuclear attack means will be immediately destroyed as they are discovered and that part of them may be destroyed before the conduct of the artillery preparation, in the operational calculations for the simultaneous strike it will suffice to reckon with 70 to 80 percent of targets of this type;

b) and neutralize all artillery and mortar subunits in a zone equal to the width of the breakthrough sector, increased on the flank sides by half their range of fire (81-mm mortars must be neutralized in a 22 km zone; 106.7-mm mortars -- 24 km; 155-mm howitzers -- 37 km; 175-mm guns -- 50 km);

c) and neutralize the platoon strongpoints of the first-echelon battalions in the breakthrough sector and 1 to 2 km on the flank sides;

 Comment: The appendices and other references cited in the lesson were not received.

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d) and destroy the antitank means outside the platoon strongpoints in the breakthrough sector and 3 km on the flank sides;

e) and destroy the antitank subunits located in the reserve of the first-echelon battalions which are on the defense in the breakthrough sector;

f) and neutralize individual targets outside the platoon strongpoints by firing from indirect fire positions in the breakthrough sector (against one or two targets for each company of the first-echelon battalions);

g) and neutralize the command posts of the battalions, brigades, and division in whose defensive sectors the breakthrough is being carried out;

h) and neutralize the radars of the enemy artillery in a zone equal to the width of the breakthrough sector increased on the flank sides by half the range of fire of the artillery served;

i) and neutralize the surface-to-air guided missile and antiaircraft artillery subunits in a zone equal to the width of the breakthrough sector and increased on the flank sides by half the slant range of fire for antiaircraft artillery and by the full launch range of surface-to-air guided missiles;

j) and neutralize the subunits of the brigade reserves, which are situated in the breakthrough sector;

k) other important targets: fire support helicopters at landing pads, etc.

Targets which are destroyed by the aviation are excluded from the total scope of tasks.

The artillery requirement for the artillery preparation for the attack

The artillery requirement for the artillery preparation for the attack is obtained as the total of the product of the number of each type of target times the operational-tactical norm of the



artillery required for the destruction of standard targets (Table S.1) and the prescribed destruction density /plotnost porazheniya/*

The artillery requirement for the artillery preparation for the attack is given in Appendix 2 to the assignment for Lesson No. 21b.

When revising the artillery requirement for the conduct of the artillery preparation for the attack, only those targets which will be hit simultaneously with first priority are taken into consideration. The following are usually included among them: tactical means of nuclear attack; artillery and mortar batteries (platoons); platoon strongpoints of the first-echelon battalions; antitank means in positions and in the battalions' (brigades') reserve; battalion and brigade command posts and division forward command posts; artillery radars; and the most important individual targets.

Depending on the time that the aviation fulfills its tasks, air defense means situated within the limits of the range of artillery fire are included among the first-priority targets.

In the breakthrough of the enemy's previously prepared defense, it is assumed that the destruction density against targets and objectives will be as follows:

-- to be destroyed: tactical means of nuclear attack and antitank means;

-- to be neutralized with a density equal to 1.0: artillery and mortar batteries (platoons), platoon strongpoints of the first-echelon companies, command posts, air defense means, radars;

-- to be neutralized with a density equal to 1.0: platoon strongpoints of the second-echelon companies and those positioned on the flanks of the breakthrough sector;

Translator's note: Destruction density is one of the factors used to determine the reliability of a target's destruction by artillery fire, and is expressed in terms of the standard allotment of shells needed to achieve destruction or neutralization. For example, to neutralize an enemy artillery battery with 1.0 (100 percent) density under a given set of conditions (range, nature of target, firing setup, etc.) requires the expenditure of 300 122-mm shells; 1.5 density will require 450 shells. See Soviet Military Encyclopedia, Vol. 6, p. 358.



-- to be neutralized with a density equal to 1.0: brigade reserves.

The destructive capabilities of the enemy's antitank means, especially his antitank guided missiles, have increased to such an extent that, without the reliable neutralization or destruction of these means during the breakthrough of the enemy's defense, a large number of tanks may be lost. Therefore, under present-day conditions it is impossible to count on destroying the antitank means only within the general system for fire destruction of the enemy. The following number of antitank means from the complement of the Brown 3rd and 7th tank divisions is to be expected in the breakthrough sector and on its flanks: 32 90-mm self-propelled antitank guns; 26 antitank guided missiles; 58 in all. In addition, there are 132 84-mm antitank rocket launchers and 746 44-mm antitank grenade launchers.

A large proportion of these antitank means will be positioned outside the platoon strongpoints and will be separate targets, part of which will be destroyed by direct fire, and part by fire from indirect firing positions. Accordingly, the firing task must be the /complete/ destruction of the antitank means; therefore, the destruction density for these targets (individual antitank means and other targets outside platoon strongpoints) is taken to equal 2.0, on account of which the number of guns allocated to hit these targets is taken to be twice the number that is given in Table S.1 (not 6 guns, but 12). The ammunition requirement is determined as the total of the product of the number of each type of target times the operational-tactical norm of the ammunition needed for the destruction of standard targets with the prescribed destruction density (Table S.1 of "The Procedures /?for Operational-Tactical Calculations on the Combat Employment of Artillery in an Operation and in Battle/").

All targets which are to be destroyed by fire in the artillery preparation for the attack (see Appendix 2 of Lesson 21b) are included in the calculation to determine the ammunition requirement.

Conclusions:

1. For the simultaneous destruction of the first-priority objectives and targets, 1,950 guns, mortars, and rocket artillery combat vehicles /MRL/ are required during the period of the artillery preparation.

2. For the fire destruction of all targets with fire from indirect firing positions, 112,050 rounds of ground artillery ammunition are required.

The artillery grouping allocated for the fire destruction of the enemy in the breakthrough sector.

By decision of the front commander the breakthrough of the defensive line on the axis of the front's main thrust is being carried out by the adjacent flanks of the 7th and 9th armies in the sector WESENDORF, (excluding) KASTORF (8 km) and KASTORF, (excluding) GIFHORN, (excluding) GIFHORN, ROTGESBUTTEL (9 km)/sic/. The following are allocated for the breakthrough:

-- in the 7th Army, the 11th Motorized Rifle Division and the 5th Tank Division;

-- in the 9th Army, the 10th Tank Division and the 6th and 18th motorized rifle divisions.

According to the situation as of 1900 hours 8 September, the large units of the 7th and 9th armies are conducting combat actions with the following artillery grouping (see Appendix 3 of the assignment for Lesson No. 21b).

In view of their commitment to battle for the breakthrough of the forward defense line, the 11th Motorized Rifle Division of the 7th Army and the 6th Motorized Rifle Division of the 9th Army will be reinforced with the artillery of the RVGK, operating as follows with the divisions of the army's /sic/ first echelon: the 9th Heavy Howitzer Brigade with the 11th Motorized Rifle Division and the 8th Heavy Howitzer Brigade with the 6th Motorized Rifle Division.

As a result, the following number of guns, mortars, and rocket artillery combat vehicles /MRL/ for firing from indirect fire positions can be allocated for the fire destruction of the enemy in the breakthrough sector (taking losses into account):

Formation	Large units (artillery groups)	Organic numbers, taking losses into account	Reinforcement		Allocated for artillery preparation		
			Designation	Numbers of guns (mor- tars)	From organic artillery	From rein- forcing artillery	Total
7th Army	11th MtzR Div	178	9th Hvy HOW Bde	69	160	69	229
	5th Tk Div	108	5th HOW Bde, 14th Hvy HOW Bde	137	108	137	245
	Army Arty Gp -- 7th Army Arty Bde, 2nd Gun Arty Bde	85		68	85	68	153
	Arty Rkt Lchr Arty Gp -- 11th Rkt Lchr Arty Bde, 7th Army Rkt Lchr Arty Rgt	52		71	52	71	123
	Army Arty of the 6th Army	144			144		144
	Subtotal						894
9th Army	10th Tk Div	104	6th HOW Bde	72	104	72	176
	6th MtzR Div	176	8th Hvy HOW Bde	65	161	65	226
	18th MtzR Div	173	15th Hvy HOW Bde	68	106	68	174
	Army Arty Gp -- 9th Army Arty Bde, 3rd Gun Arty Bde	87		70	87	70	157
	Army Rkt Lchr Arty Gp -- 9th Army Rkt Lchr Arty Rgt, 12th Rkt Lchr Arty Bde	54		71	54	71	125
	Arty Bns of the 2nd echelon	72			72		72
	Subtotal						930
	Total						1,824



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CONCLUSIONS: 1) For the conduct of the artillery preparation for the attack in the breakthrough sector, 1,824 guns, mortars, and rocket artillery combat vehicles /MRL/ can be allocated, of which 216 cannot shift firing positions without permission;

2) The average density per kilometer of the breakthrough sector will amount to 107 guns and mortars;

3) The allocated quantity of artillery will for the most part provide for the simultaneous fire destruction of all the first-priority targets and the gaining and retention of fire superiority over the enemy's artillery in the breakthrough sector and on his flanks, with a ratio of 1:8 or 9 in our favor.

5. Clarification of the duration and organization of the artillery preparation for the attack and the method and depth of the artillery support of the attack

Clarification of the duration and organization of the artillery preparation for the attack

In the breakthrough of the enemy's defense by the adjacent flanks of the armies on the axis of the front's main thrust, as a rule, an integrated organization of the artillery preparation for the attack is established.

The duration of the artillery preparation for the attack is determined by: the nature of the enemy's defense, the degree to which it must be neutralized, the scope of the tasks to be accomplished by aviation in the tactical depth of the enemy's defense, the availability of artillery and ammunition, and in addition, when attacking from the march, the time required for the first-echelon units to move forward and deploy for the attack, that is, to negotiate the distance from the deployment line in battalion columns to the line of transition to the attack.

1. Based on an analysis of reconnaissance data, the allocation of objectives and targets among fire destruction means (Appendix 2 of the assignment for Lesson No. 21b), and shell expenditure norms for destroying objectives and targets by firing from indirect fire positions, the ammunition expenditure required

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for the artillery preparation for the attack amounts to 112,050 rounds.

2. The amount of artillery to be allocated to the artillery preparation for the attack in the breakthrough sector is 1,824 guns (Appendix 4).

3. The average ammunition expenditure per gun is 62 rounds.

4. The load coefficient K_1 is 0.85 (the method of the artillery support of the attack is rolling barrage and successive fire concentration).

5. The duration of fire delivered at the maximum permissible rate is 32 minutes. (Table S.7 of "The Procedures /for Operational-Tactical Calculations on the Combat Employment of Artillery in an Operation and in Battle/").

Thus, it is necessary to set the duration of the attack's artillery preparation at 32 minutes in order to fulfill the scope of the tasks.

6. The average distance of the line of deployment into battalion columns from the line of attack is 8 km.

7. The average forward movement speed of the first-echelon regiments to the line of attack is 15 km per hour.

8. The average time for the arrival and deployment of the first-echelon regiments is 32 min.

9. The duration of the artillery preparation for the attack that is to cover the forward movement and deployment of the first-echelon regiments is 32 min.

The duration of the artillery preparation for the attack is set according to the greater /amount of/ time, i.e., 32 min.

The start of the artillery preparation for the attack is H-hour minus 0.39.

The end of the artillery preparation for the attack is H-hour minus 0.07.

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After the report on the duration of the artillery preparation, the students will report a sample schedule of its organization, using the data from Appendix 6 of the assignment for Lesson No. 21b.

Calculation

of the organization of the artillery preparation for the attack in the breakthrough of the adjacent flanks of the 7th and 9th armies

Target groups	Ammo spent per target group (rounds)	Ammo spent in 1 min of arty preparation (rounds)	Destruction time for each target group (min)	Number of fire concentrations	Number of fire concentrations and their duration			
					I fire concentration	II fire concentration	III fire concentration	overlapping fire concentration
I	22,500	-	7*	1	7	To be destroyed immediately upon discovery		
II	8,100	-	9**	$\frac{2}{5+9}$	$\frac{5}{0.5}$	<u>Observed fire</u> 0.1		$\frac{9}{0.4}$
III	59,650	2,545	24	$\frac{2}{13+11}$	$\frac{13}{0.6}$		$\frac{11}{0.4}$	
IV	21,800	2,545	8			$\frac{8}{1.0}$		
Total	81,450 ⁽¹⁾	2,545 /sic/	32		13	8	11	

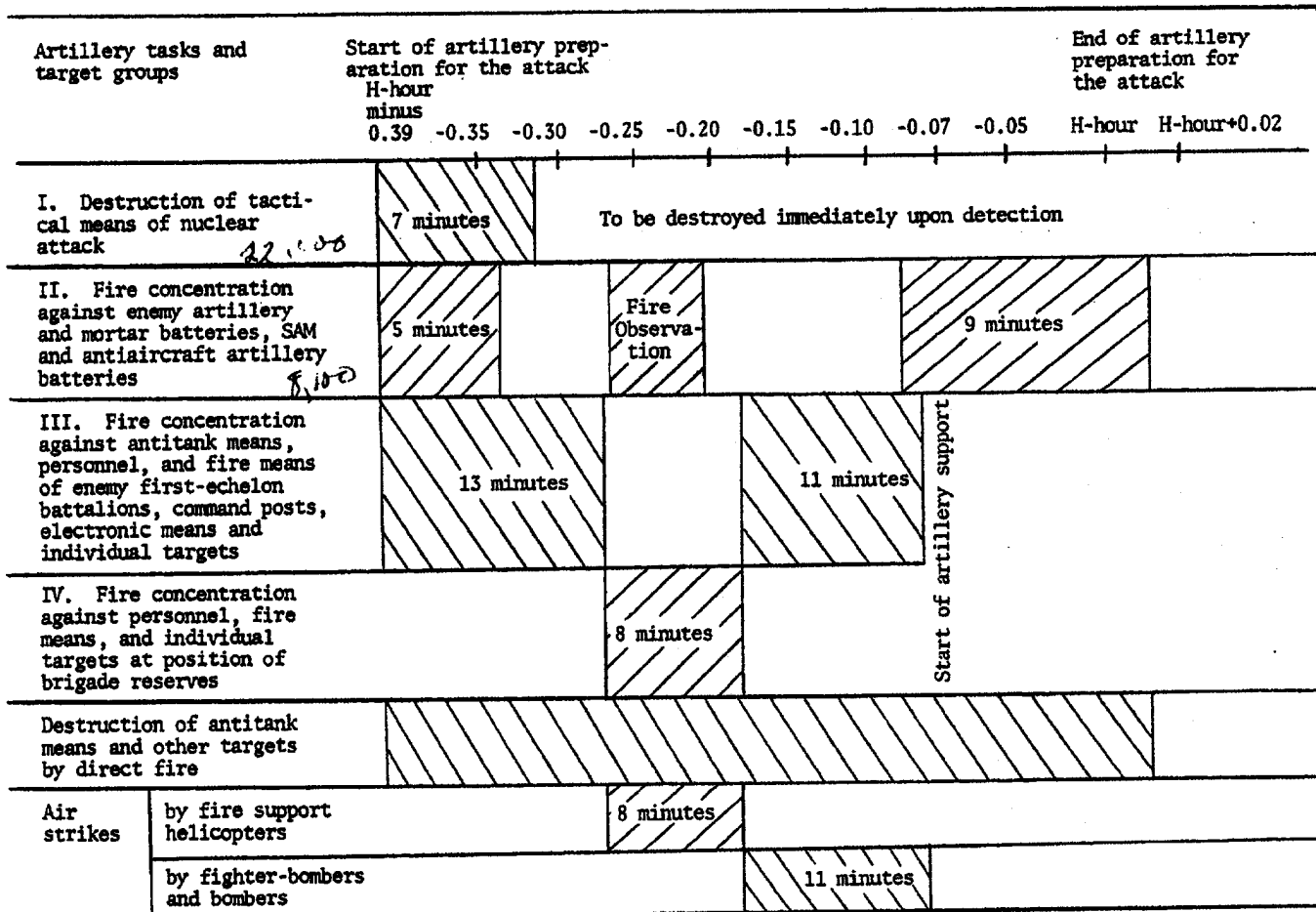
*22,500 divided by 900 = 25 shells per gun. At maximum permissible rate of fire -- 7 min. (In a massed concentration against nuclear attack means, two artillery battalions are allocated for the destruction of each of the enemy's batteries).

**8,100 divided by 276 = 30 shells per gun. At maximum permissible rate of fire -- 9 min.

(1) Translator's note: This figure is the total for target groups III and IV; the overall total is 112,050.



Schedule of the artillery preparation for the attack



The artillery support of the attack is to be carried out by rolling barrage combined with successive fire concentrations to the depth of defense of the first-echelon battalions.

The artillery close support of the troops' advance within the depth is to be carried out by massed and concentrated fire against the enemy's newly detected tactical means of nuclear attack, antitank means, artillery and mortar batteries, and also against personnel and fire means in strongpoints and centers of resistance.

Concluding remarks about the lesson

The following should be noted when summing up the lesson:

1. Under conditions in which an operation is conducted using only conventional means of destruction, artillery is the main and decisive means for the fire destruction of the enemy in the tactical depth, especially when breaking through his defense. The most important condition for the successful breakthrough of an enemy's defense is the reliable fire destruction of the enemy, the gaining and retention of fire superiority over his artillery, and continuous support of our attacking troops.

2. The organization of artillery combat actions during the breakthrough of the enemy's defense is carried out on the basis of the decisions of the front commander and is put into effect by the chief and staff of the rocket troops and artillery in cooperation with the front staff and chiefs of the branch arms and services.

3. The clarification of the tasks, the artillery grouping, and the duration of the artillery preparation for the attack is a very important part of the organization of artillery combat actions during the breakthrough of an enemy defense. As a rule, an integrated organization of the artillery preparation for the attack is established during the breakthrough of a defense by the adjacent flanks of the armies on the axis of the front's main thrust.

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4. The artillery's readiness to conduct the artillery preparation for the attack during the breakthrough of the enemy's defense in the course of an operation is determined first of all by the time spent on organizing reconnaissance, deploying and moving the artillery forward to the breakthrough sector, planning the firing, assigning tasks, and organizing control and cooperation with the motorized rifle and tank large units (units) and other fire destruction means.

5. The organization of continuous and firm control and comprehensive support of artillery combat actions is especially important in order to employ the artillery effectively during the breakthrough of the enemy's defense.

6. Indicate the degree of mastery of the lesson subject and note to what extent the lesson's training objectives were achieved. Rate the work and preparation of each student, pointing out existing deficiencies and the ways to eliminate them.



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