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PRIME MINISTER

SOVIET MILITARY POLICY

Chris Donnelly has sent me the attached very interesting paper on the development of Soviet military policy, as background for your meeting with Mr. Gorbachev. It argues that Gorbachev's proposals for conventional arms reductions have everything to do with his own internal needs and very little to do with benevolence towards the West. Internally he needs to divert funds away from the military and towards civilian purposes, which means avoiding expensive investment in new technology. Externally that requires the nuclear and conventional threat from NATO forces to be reduced, by creating a political climate which leaves western leaders no option but to cut back their forces and stop modernisation, thus reducing the pressure on the Soviet economy. The paper also brings out a disturbing contrast between the ability of the Soviet Union to maintain an effective defence with greatly reduced conventional forces, and the much more serious effect which 50 per cent cuts would have on NATO's ability to defend itself, unless accompanied by major and expensive adjustments in western strategy and force structures. As always with Chris Donnelly's work, it is a thought-provoking piece.

The second paper by Ken Brower deals with the implications of advances in military technology. It argues that after a long period in which the balance of advantage between platform weapons (eg. tanks) and anti-platform weapons (eg. anti-tank missiles) has oscillated, modern technology is likely to give a decisive and lasting advantage to anti-platform weapons. This could put the Soviet Union which has invested heavily in tanks and other platforms in a major quandary. But it also has very far-reaching consequences for western procurement decisions, for instance our own on the procurement of a new tank. As a caution I should add that I don't think the MOD or the military would agree with the analysis in the paper.

C D P

C. D. POWELL

24 March 1989

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PROSPECTS for the development of Soviet Military Policy. Chris Donnelly.

SYNOPSIS

POLITICAL & ECONOMIC BACKGROUND.

1. Four years Perestroyka has achieved no improvement in living standards, which continue to fall. Glasnost and reorganisation have given rise to the expression of social discontent. The USSR still faces the threat of crisis which it did when Gorbachev came to office. Time is not on his side. He urgently needs to 'kick start' his programme of economic and social reform and rekindle national enthusiasm. If Gorbachev were a western leader coming up for re-election, he would surely fail. As a Leninist he has a long-term view, his foreign policies (including military and arms control issues) are driven by his domestic needs, and he has the single-mindedness to concentrate on the all-important issue - national survival as a superpower with the Communist Party in charge. All other considerations are secondary to this.

2. The structural economic reforms which he has implemented to date are extremely unlikely of themselves to achieve the necessary economic improvement.

Any military resources re-allocated will not go primarily to expand the consumer sector - this should be supplemented by private enterprise - but some allocation will be necessary to generate popular support.

3. The General Staff.

For 70 years the Soviet General Staff has had:

(a) great authority to establish a coordinated military system in the USSR, turning the USSR into a war machine,

and

(b) a complete monopoly of advice to the Party Leadership on military matters.

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This means that, in fact, the General Staff can have an overwhelming influence on Soviet Policy as a whole. The result has been a total distortion of the economic system, an effective portrayal of the West as a threat to the bulk of the population, and a military system designed for pre-emptive conventional destruction of NATO.

But:

(a) Gorbachev believes there to be no danger of conventional war.

(b) Soviet Military deployment has been counter-productive, spurred NATO force modernisation and preventing Soviet acquisition of Western technology, finance and industry, and current problems in the armed forces do not lead to confidence in their capability to win a war with the West. The massive investment in defence is, therefore, mostly wasted.

Gorbachev's task is to reduce the General Staff's influence on policy without damaging their ability to plan for war. He needs to convince them of the priority of his political requirements over their military ones to guarantee national security. He cannot afford to alienate the General Staff too much.

MILITARY CONSIDERATIONS

Since Gorbachev's 7th December 1988 speech to the UN, a great deal of attention has been focused on how the USSR will implement the reductions and what impact these will have on Soviet combat capability.

For those analysts who thought that the USSR was likely to launch a bolt-from-the-blue attack and that it could and might do so at 48 hours notice, then the reductions will seem very significant indeed. This is because as long as NATO remains at its current strength and readiness, they render the Soviet Armed Forces in E Europe incapable of launching such an attack without giving unadvantagous warning. However, to those who never thought this a plausable scenario and who interpreted 'surprise' as limited surprise achieved by deception during a long and serious pre-war crisis, the reductions will be significant as an indicator that the Soviet leadership does not think that war is imminent, and not as signifying any real reduction in Soviet combat capability.

One thing is certain, the force reductions announced last December are only a start. Gorbachev needs more drastic cuts very rapidly for real impact on his economic problem. Let us recap on a few of the military and political factors directing the current policy.

(a) Gorbachev needs to reduce the nuclear threat to the USSR. The fewer nuclear weapons NATO has, the fewer ready conventional forces the USSR needs.

(b) Significant reduction in conventional forces coupled with no need to invest heavily in new weapons is necessary to fuel Gorbachev's economic reform.

(c) Gorbachev could not afford long-winded and detailed negotiations. Time is not on his side. He needs real improvement within 3 years.

(d) The USSR needs easy access to technology, finance and industrial expertise from the West. This cannot be achieved unless the Soviet threat perception in the West is reduced.

(e) There are strict limits to the extent to which Gorbachev can risk alienating the Soviet General Staff by forcing on them military options which they dislike.

(f) Technology is changing the nature of battle very rapidly and past methods of calculation and planning are rapidly becoming less reliable.

(g) Technical developments in the future will change the relative value of weapons and military systems and put high premium on efficient C3I, and the ability to switch rapidly from defence to attack and back.

(h) The characteristics of new equipment and weapons make them versatile and equally useful in attack and defence.

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(i) Current force structures and military organisations are not suited to the needs of tomorrows battle and to exploiting the characteristics of new kit.

(j) To maintain high tempo on the future battlefield the Soviet Army needs the lowest force density consistent with cohesion.

(k) The General Staff still believes that it is essential to maintain an offensive capability if defence is to be effective.

In addition to the above factors, we should note that Gorbachev:

(a) Has stressed the need for rapid and deep cuts.

(b) Has promised to reorganise every division in E Germany. Tank Divisions are to be reduced to 220/240 tanks, MR Divisions to 160. There is to be a 50% increase in anti-tank and anti-aircraft weapons in forward defence sectors.

(c) Is encouraging force cuts in E European armies.

(d) Promises that we will see the Soviet armed Forces in Eastern Europe adopt a "clearly defensive character".

(e) Has set in motion a reform of the General Staff.

(f) Has begun studies on reforming the conscription system and improving the means of rapid mobilization.

(g) Is pushing the Soviet Armed Forces to improve its training system, re-think its operations and tactics, and complete its structural reorganisations.

We should now expect to see really significant changes in Soviet structure and deployment in Europe, perhaps along the following lines:

1. The maintenance of a strong border covering force by the East German army.

2. The creation opposite US and German Corps areas of "Fortified Regions" - extensive in-depth all-round terrain fortifications manned by Soviet and E German forces and saturated with artillery, anti-aircraft, rapid-fire anti-personnel and anti-tank weapons.

3. The reorganisation of Soviet mobile armies into corps-brigade formations withdrawn from border areas, deployed as counter-attack forces.

4. Other groups of Soviet forces and WP armies following suit.

5. The gradual disbanding of Airborne Divisions and their re-allocation as airborne brigades deployed in-depth as an integral part of combined arms corps.

6. The reduction of displaced forces to "Cadre status" with improved levels of reserve training.

7. The reorganisation of Military Districts to cope with this new training/mobilization role and to establish defensive plans.

8. The development of the theatre command system to include the command tasks previously done by the Military Districts.

9. The reorganisation of arms of service to take account of:

(a) The increased importance of space defence and its coordination with air defence.

(b) The combined arms nature of future battle, doing away with the need for separate army and air force arms.

(c) The need for a unified rear area and mobilization organisation.

Such a reorganisation would confer several advantages:

(a) It would guarantee the effective defence of Eastern Europe and the USSR, but could do so at approximately half current ready force levels.

(b) It would permit the reorganisation of combat forces along more versatile lines to keep pace with the demands of new tactics and technology.

(c) It would enable forces of different qualities to be used - less competent forces in defence, higher quality troops with better leadership and command and control deployed as mobile counter-attack forces.

(d) It would permit the General Staff to retain its offensive capability.

(e) It would be much less provocative to the West as it would appear obviously defensive.

(f) It would ease the integration of land and air operations.

(g) It would render Soviet forces less vulnerable to new technology weapons by virtue of their ability to create fortifications and deploy in-depth.

(h) It would permit verification without loss of security.

We must always bear in mind that "reasonable defence sufficiency" - the term used to describe this reorganisation, is not itself an element of doctrine but the product of new doctrinal thinking. It is a tool of policy, a device to help achieve the political objectives of Gorbachev, viz; reducing the threat from the West especially the nuclear threat; reducing the need to compete by retarding Western force modernization and the development of new weapons; assisting resource re-allocation within and from the military; and facilitating military restructing for greater efficiency.

IMPLICATIONS FOR THE WEST

If NATO made no response to the Soviet reorganisation noted above, than the USSR would still be secure. The force reductions would still be essential to fund military modernization and development of new weapons for the Soviet armed forces.

But the "number crunching" approach common in the West holds that in the face of such a Warsaw Pact proposal (to cut ready forces to half current limits), NATO's refusal to make similar cuts is untenable. This may become political reality, but it ignores the operational reality that a NATO significantly reduced in density may not be a credible military force.

Based on the political analysis he has received, Gorbachev may be banking on NATO's inability to react quickly and coherently to his proposals. NATO can ensure the defence of Europe at 50% of current ready force levels if it adopts the Soviet model described above - that is, if NATO adopts terrain fortification in-depth, manned by cadre forces with rapid mobilization potential, large reserves, and a mobile counter-attack force in-depth backed up by modern nuclear weapons. To this must be added an investment in technology applicable to new weapons and intense research into their effective application in battle.

But such a reform would be painful; it would require a modification of forward defence, the acceptance of fortification and deployment in depth, the re-allocation of resources, and the adoption, for example by the UK and the USA of a cadre/mobilization system for at least part of their forces, and it implies a reduced US and UK deployment in Germany. It also means that the 50% reduction in deployed strength would not give a 50% reduction in defence budgets.

Gorbachev may assess that NATO is incapable of making this institutional adjustment. But without such an adjustment, reduction in forces in Europe will be de-stabilizing, not stabilizing, and will contribute to a Soviet military advantage.

TECHNOLOGY AND ITS IMPACT ON THE FUTURE BATTLEFIELD: THE POLITICAL AND ECONOMIC IMPLICATIONS.

KEN BROWER.

Introduction.

Since World War Two the capabilities of weapon systems in terms of range, hit probability and lethality have improved dramatically because of advances in technology. But have these advances in technology changed the nature of the battlefield, the balance between platforms and anti-platform weapon systems, and the rate of mobility on the battlefield? Will future battlefields be similar to those of today, or will they will unrecognizable to today's military leaders? How will future technology impact the international balance of military power and geopolitics? We must also ask what the Soviet perception will be of future changes in military technology and the impact this technology will have on future battlefields.

Over the last 40 years the Soviets have consistently lagged the Western alliance in the ability to mass-produce advanced technology electronic subsystems. Yet by carefully assessing the synergism between technology, tactics and operational art, by giving priority to excellence in conceptual design, and by cleverly prioritizing the application of electronics technology to certain vital elements of weapon systems, the Soviets have been able to deploy very high performance military systems, which by Western standards often use obsolescent technology. Do the Soviets believe that in the future they can continue to meet the standards required for military effectiveness with an inferior electronics industry research, development and production

infrastructure?

The Soviets have evolved a national doctrine, which determines how the entire nation is organized to conduct war. Soviet military thinking has always been based on the concept that, ultimately, success in war depends on the offensive use of military power. Rapid offensive actions require a level of mobility which today can only be provided by military forces built around armoured fighting vehicles, helicopters, aircraft and ships. Accordingly, the Soviets have mass-produced such platforms at a rate which often exceeds the output of all other states combined. If an enemy can discover a way to neutralize these mobile platforms, then the entire national military doctrine of the Soviet Union will have to be recast and decades of national investment will have been invalidated. Therefore, the potential impact of technology on the future battlefield is of critical importance to the Soviet Union. Any public postulations by the Soviets on the impact of technology on the future battlefield will be severely constrained by their perceptions of national security. However, past experience has shown that the Soviets react to first principles in a logical and predictable manner. Therefore, by assessing the impact of technology on the future battlefield from a standpoint of first principles one should be able to determine the conclusions that are being reached by the Soviet General Staff.

Weapon System Technology and the Battlefield, 1945-1990.

Over this period technology has dramatically improved the capabilities of the tank, the airplane, and the naval ship.

The representative 35-ton main battle tanks at the end of World War Two

had about 150mm of homogeneous armour plate for frontal armour protection, 25mm of top and bottom armour protection, and 50mm of side armour protection. Tanks carried 75 to 85mm semiautomatic rifled guns that could fire armour piercing high explosive (APHE) shells at a muzzle velocity of about 900m/s. These shells could penetrate the frontal armour of enemy tanks at a range of about 750 metres. Their fire control system provided a high probability of hit against an exposed stationary tank out to a range of about 750 metres, when the firing tank was also stationary. The fire control system provided only a negligible hit probability when firing against a moving target, or when firing on the move. Engaging point targets was virtually impossible at night. Illumination, provided by flares or white light searchlights was required for night fighting. Tanks were powered by gasoline or diesel engines which provided about 10kW/ton of power and drove through manual transmissions. Suspension systems depended on the mechanical spring, therefore road wheels could only deflect a total of about 250mm above or below their normal position. Tanks had cross-country speeds of only 15-25km/hr, and maximum road speeds of about 50km/hr.

The representative 55-ton main battle tank of 1990 has special layered compound and or/external explosive reactive armour. Over the frontal arc the tank has protection equal to about 800mm of homogeneous armour plate against shaped charge projectiles and protection equal to about 400-600mm of armour against kinetic energy projectiles. However, the top, bottom, and side armour protection of tanks has not changed significantly since 1945. Tanks generally mount 115-125mm semiautomatic smooth bore guns that can fire sub-calibre, fin-stabilized kinetic energy projectiles (FSAPDS) at a muzzle velocity of about 1600m/s and full bore fin-stabilized shaped charge or high explosive shells at about 1,000m/s. The FSAPDS (fin-stabilized armour piercing discarding sabot) ammunition can penetrate about 400-500mm of homogeneous armour plate at a range

of 1,000m. The fire control systems of modern tanks provides a high probability of hit against a moving target out to a range of 1,500m or more, even when the firing tank is travelling cross-country. When firing from a static position, a modern tank can effectively engage exposed static point targets out to a range of 3,000 to 4,000m. At night, using passive electro-optical observation and fire control systems, tanks can detect and engage targets at ranges of up to 2,000m. Tanks are now powered by diesel or gas turbine engines which provide about 20kW/ton of power and drive through automatic transmissions. Suspension systems now provide about 500mm of vertical deflection. Thus, the tanks of 1990 can travel across country at speeds of up to 40km/hr with maximum road speeds of about 80km/hr.

The representative fighter/attack aircraft at the end of World War Two had a maximum gross take-off weight of about 4 tons and a thrust to weight ratio of about 0.3. Their maximum speed was about 760km/hr and their maximum altitude about 12,000m. These aircraft could deliver about 1 ton of ordnance on target over a range of 300 kilometres in clear weather with an air-to-ground accuracy of about 40 mils. Air-to-air armament consisted of 12.7-20mm cannon with a maximum effective range of 500m. Air-to-air engagements could only take place in visual flight conditions.

The representative fighter/attack aircraft of 1990 has a maximum gross take-off weight of 20 tons and a thrust to weight ratio in combat of about 1.10. Its maximum speed is about 1,700km/hr and its maximum altitude can reach 20,000m. The aircraft can deliver about 4 tons of ordnance on target over a range of 1,000km in all weather conditions with an air-to-ground accuracy of about 10 mils. Air-to-air armament includes up to 8 missiles, some of which can attain a range of 40km or more. Air-to-air engagements can take place under any

weather conditions.

The representative World War Two destroyer displaced about 2,500 tons, had a top speed of 35 knots and a range of 3,000 n.mi. at 18 knots. Its high frequency active sonar and over-the-side anti-submarine weapons had an effective range against submerged submarines of less than 2km. Its search radar could detect aircraft at a range of about 50km and surface ships at a range of about 30km. The destroyer's main battery of 127mm guns could engage aircraft at 10km and ships at 15km. The probability of hit of each shell fired was very low.

The current destroyer displaces about 8,000 tons, has a top speed of 32 knots and a range of 6,000 n.mi. or more at 18 knots. Its towed passive and low frequency active sonar, anti-submarine helicopter, and anti-submarine missiles can be used to detect and attack submarines at ranges of 50km or more. Its electronic equipment includes electronic warfare systems and data links that can provide information on targets that are over the horizon. Its surface-to-surface missiles can engage ships or shore targets at a range of up to 1,000km, and its battery of surface-to-air missiles can reach out up to 80km. Its 127mm gun mount can fire guided projectiles against surface or shore targets, and it is equipped with unique point-defence gun mounts which fire at a very high rate and which have extremely accurate fire control systems that can acquire and track both radially inbound missiles and outbound shells.

Therefore, the size and performance of military platforms has vastly improved over the last 40 years. But what of anti-platform weapons systems?

In World War Two the primary direct-fire anti-tank weapon was the anti-tank gun, either towed or mounted on a specialized chassis. These guns

generally had about the same performance as the guns of main battle tanks and therefore were limited in performance beyond a range of about 750m. From 1943 onward infantry were also equipped with short range (100m or less) launchers for crude shaped-charge weapons which could penetrate about 3 times their diameter of armour plate. Mines were also major threat to tanks. Today, shaped-charge man-portable anti-tank guided missiles can penetrate about 7 times their diameter in armour plate and can be fired against moving targets out to a range of 2,000m in all weather conditions. Heavy anti-tank guided missiles with ranges of up to 4,500m are mounted on armoured vehicles. Guns fire fin-stabilized armour-piercing discarding sabot rounds that can penetrate most practical levels of conventional armour out to a range of over 5,000 metres. All types of mines still remain a threat and versions now exist that can be detonated by the acoustic, thermal, or magnetic signature of a tank. Mines can also be sited off-route for side attacks. Guided shells and missiles and submunition technologies are also beginning to provide artillery and aircraft with a significant anti-armour capability, because they attack the thin top armour of tanks.

Aircraft can be engaged by a variety of guided surface-to-air missile systems with ranges of up to 150km that travel at speeds of up to Mach 6 and are capable of manoeuvring at 15 "G" or more. Anti-aircraft guns fire pre-fragmented proximity-fused ammunition and are controlled by computerized fire control systems tied to radar and/or electro-optical tracking systems.

Ships can be engaged by Mach 2 sea skimming over-the-horizon guided missiles that perform terminal manoeuvres to counter point defence systems, by long range homing torpedoes capable of over 50 knots, and by accurately delivered conventional ordnance that has 20 to 30 times the lethality of

comparable World War Two systems.

Thus, while platforms have dramatically improved in quality, so have anti-platform weapon systems.

Recent combat in the Middle East (1956, 1967, 1973 and 1982) has shown that, from war to war, there have been only limited perturbations in the platform/anti-platform weapon system balance. The nature of the Arab-Israeli middle eastern battlefield has not changed from comparable World War Two battlefields with similar force-to-area densities, rates of advance, and levels of attrition.

To illustrate this fact it is interesting to look at the armour/anti-armour and aircraft/anti-aircraft balance, and the impact of tanks and air power on these Arab-Israeli wars. In 1956 the Arab and Israeli forces were basically equipped with a limited number of surplus World War Two weapon systems. Land combat during the Suez Campaign was highly reminiscent of brigade level combat during World War Two and was dominated by infantry assaults on fortified positions. Armour-versus-armour combat was limited, as was the impact of air power on the land battle.

In 1967 the tank and aircraft achieved dominance over anti-tank and anti-aircraft weapon systems. Israeli tanks could suppress Arab anti-tank guns using high explosive ammunition at ranges at which Arab anti-tank guns could not hit and penetrate tanks with armour-piercing ammunition. Arab infantry formations were equipped with inadequate numbers of short range, ineffective anti-tank weapon systems. Therefore Israeli tanks proved able to penetrate Arab defensive positions relatively quickly and at low cost. Twelve of 21 Israeli brigades

which saw combat in 1967 were fully armoured or mechanized units. Israeli aircraft first destroyed Arab aircraft on the ground in a massive pre-emptive strike on 25 soft airfields. Arab ground-based air defence systems lacked the capability and density to counter Israeli aircraft effectively, which subsequently wreaked havoc on exposed Arab logistic supply vehicles.

By 1973 the Arab armies had been extensively re-equipped with the Soviet AT-3 Sagger anti-tank missile system and RPG-7 anti-tank rocket launcher. The shaped-charge warheads of these weapons could penetrate the thickest armour of Israeli tanks. Israeli tank units lacked the firepower needed to suppress dispersed, man-portable Arab anti-tank systems. Therefore, the 19 deployed Israeli tanks or armoured infantry brigades could no longer penetrate Arab defensive positions relatively quickly, nor at as low a cost, as they had in 1967. In 1973 numerous Arab surface-to-air missile and gun air defence systems were also deployed in depth along the Suez Canal and Golan Heights. These mutually supporting systems included a diverse mix of radar, electro-optical and optically guided guns and missile systems, supplemented by massed small arms fire. Israeli aircraft could no longer loiter nor make multiple-pass attacks on targets. Because of this the lethality of each IDF/AF attack sortie declined significantly. Furthermore, a significant percentage of sorties had to be dedicated to air defence system attrition.

By 1982 Israeli had developed tactical and technological counter-measures to the anti-tank and anti-aircraft weapon systems they faced in the 1973 war. The eleven Israeli tank divisions of four brigades were provided with vastly increased suppressive firepower. Their tanks were equipped with reactive armour and behind-armour protection systems that reduced the lethality of shaped charge weapon systems. The IDF also equipped itself with a unique mix of electronic

warfare systems and weapon systems that allowed it to suppress surface-to-air missile systems. Using advanced avionics systems and precision guided munitions its aircraft were then able to attack ground targets from altitudes above the effective range of the numerous small arms, light gun and man-portable AA systems deployed by the Arabs, which the Israelis could not suppress.*

Thus the impact of the tank and the airplane on the 1956 battlefield was limited, in 1967 it was decisive, in 1973 their effectiveness was vastly reduced, and in 1982 their effectiveness was re-established. Israeli losses and casualties were as follows:

Campaign	Estimated Israeli Brigade-Days of Combat	Arab Tank Losses	Israeli Personnel Fatalities	Israeli Personnel Casualties per Brigade - Day of Combat	Israeli Personnel Casualties per Destroyed Arab Tank
1956	20	120	185	9.3	1.6
1967	65	1,100	750	11.5	0.7
1973	299	2,300	2,700	9.0	1.2
1982	40	450	260	6.5	0.6

* It is interesting to note that, despite their proven efficacy against low flying aircraft, (persuading the pilot to abort his mission, inflicting damage difficult to repair, and actually downing aircraft) small arms and low level air defence forces are rarely, if ever, included in operational analysis models of FGA vs AA efficiency simply because of the difficulty of quantifying the data.

Campaign	Israeli Sorties	Aircraft Losses	Israeli Aircraft Losses per 1,000 Sorties
1956	1,896	15	7.9
1967	3,400	40	11.8
1973	11,000	102	9.3
1982	1,500	1	0.7

This data shows that over the last 40 years of Arab-Israeli fighting there have been only limited oscillations in the technological balance between platforms and anti-platform weapon systems. In the Middle East the overall nature of battle on the ground and in the air did not change significantly from 1956, when armies were equipped and organized along World War Two lines, to 1982, with armies equipped and organized on the most modern lines.

The Role of Infantry.

It is interesting to compare the results of the Arab-Israeli wars with the results of the recent Iran-Iraq war. The Arab-Israeli wars were wars between forces dependent on platforms and anti-platform weapon systems. By comparison the ground battles of the Iran-Iraq war were dominated by conventional infantry combat.

The fragment generating capacities of armies has vastly increased since 1870. Even by then it had become obvious to German strategists that the offensive use of infantry against prepared defences that were unsuppressed was not a militarily attractive option. History has shown that the ability of offensive fire to suppress defensive anti-personnel weapon systems has varied

during the last 100 years as weapons systems technology and command and control has evolved. The effectiveness of direct infantry assault over the last century has therefore varied with the relative adequacy of offensive suppressive fire, and with: (a) the impact of terrain; (b) the force-area ratio; (c) the numerical balance of forces, and; (d) the willingness of the attacker to absorb casualties. Therefore, the effectiveness of infantry has varied considerably since 1870.

An analysis of available data can only lead to the conclusion that the ability of defensive forces to generate fragments using automatic weapons, grenade launchers, mortars, mines and artillery has today outstripped the ability of pre-emptive or suppressive fire power to suppress those defences to the degree required to permit conventional infantry to attack dismounted in open terrain at reasonable cost. If this conclusion is correct, the correlation of forces should have dramatically shifted against conventional infantry formations. The Iran-Iraq war is the first time that this modern defensive anti-personnel fire power has been put to the test in open terrain.

In the Iran-Iraq war it was shown that infantry could not overcome the defensive capabilities generated by modern weapon systems. The offensive capability of infantry in exposed terrain in the Iran-Iraq war has been shown to be far less than the capability of infantry under similar circumstances in the Western Desert during World War Two. The rate of attrition and rates of advance achieved by infantry formations during the Iran-Iraq war were often comparable to those experienced during the static phase of World War One.

Establishing the Trends.

This data illustrates the fact that the short term contest between platforms and anti-platform weapon systems is characterized by oscillations in the balance. These oscillations often result in platforms or anti-platform weapon systems achieving short-term dominance. The period of the oscillations is shortest during wartime when the time between technical innovations is foreshortened. It tends to lengthen during peacetime as the military research and development process is slowed and, more importantly, as the push toward tactical and operational innovation is stopped by bureaucratic inertia and "trades union mentality" in military institutions. This pendulum of short-term oscillations can last for decades. However, over a much longer period certain weapon systems lose their pre-eminence and are replaced by completely different systems. Illustrations of this are the ship of the line, the battleship, the aircraft carrier, and the cruise missile submarine.

The long life cycle trends are often obscured by the short-term oscillations. It is vital for military to establish the difference between these and to establish funding and research and development priorities accordingly.

It is the ability of the Soviet General Staff to conduct these types of assessments, and to determine the nature of such trends, that has enabled them to maintain tactical-technical parity or even superiority over NATO countries, despite the fact that NATO forces are based on a superior technological infrastructure.

Evolving State-of-the-Art Technology and the Battlefield Beyond 2000.

Today's most modern technology has begun to have a significant affect on the nature of battle. The Iran-Iraq war has already illustrated the impact of modern fragment-generating weapon systems on the offensive capability of infantry in exposed terrain. This war proved that the offensive capability of dismounted infantry in open terrain, even when supported by suppressive firepower, was all but negated by the advance of technology during the 1960s and 1970s. Additional technology is also emerging that will have a great impact on the battlefield: night and bad weather vision technology; advances in fire-control systems for guns and missiles; terminal homing for all types of munitions; increased shell and missile velocity; increased munitions lethality; developments of advanced armour and behind-armour survivability technology; and developments of data acquisition and dissemination systems and all types of command and control systems. No defence force which has been fully equipped with all these new technologies has yet been exposed to combat. What will these existing technologies therefore mean for the future of battle?

Today close battle generally remains tied to the line-of-sight provided by the human eye, aided by optical systems, thermal sensors or radar systems. This line of sight depends on terrain and environment. Currently, weapon systems have evolved for the sea, air, and land battle that have started to extend the range of the close battle. This process is most noticeable in the sea and air battle where terrain and environment have the least impact on the ranges at which targets can be detected, classified and tracked. Therefore, modern air forces are being equipped with ever more effective beyond-visual-range (BVR) air-to-air missiles and stand-off air-to-ground munitions. Naval forces are being equipped with over-the-horizon anti-ship and anti-aircraft missile systems

and long range anti-submarine sensors and weapon systems. Nevertheless, up to now, air-to-air, air-to-ground, ground-to-air, naval, and ground battles in the Middle East, the Iran-Iraq war, South-East Asia, and in the Falklands have occurred largely across line-of-sight distances.

Today, weapon systems are slowly evolving that are beginning to impact on the range of close combat for the ground battle too. These weapon systems include guided mortar and artillery munitions and "smart" artillery rocket systems, as well as long range anti-tank weapon systems. The result will inevitably be an extended close battle which has an ever increasing range that is not limited by the direct line-of-sight from the weapon launcher to the intended target.

The process of evolving towards an extended close combat ground battlefield will be dramatically impacted by the introduction of hyper-velocity munitions and shells. These hyper-velocity weapons will dramatically increase the range of engagement and reduce the time of flight of all munitions. Electromagnetic or electrochemical guns and hyper-velocity missiles will provide ranges that are order of magnitude greater than those of today. The kinetic energy of the resulting projectile will also be greater than can be countered by any practical level of passive protection which can be provided to armoured fighting vehicles. These future technologies, combined with the guided munition and C3I technology which is already evolving today, clearly suggest that in the long term the balance between mobile platforms and anti-platform weapon systems which has existed throughout the 20th Century will shift dramatically in favour of the anti-platform system.

The use of these decisive long range weapon systems will depend on

acquiring target data. This process can be called the "information battle". Therefore, as never before, the need for electronic superiority (in order to deny the enemy the ability to acquire data and to provide data to friendly forces) will become important in the land battle. The balance between platforms and anti-platform weapon systems in the ground battle will therefore depend on achieving superiority in the information battle. Such superiority will not be robust. It will be vulnerable to the counter-measure, counter-counter-measure cycle. Technical surprise, which can work to the advantage of the attacker or defender, will also be more attainable, since it will relate to computer software or a new electronic chip rather than to new tactics or wholly new weapon systems.

Conclusion.

From a Soviet perspective, this forecast of the impact of technology on the future battlefield, based as it is on first principles, is not a happy one. Future technology will provide a robust advantage to anti-platform weapon systems that promise to neutralize the effectiveness of surface ships, aircraft, helicopters and armoured fighting vehicles. The effective use of very long range, lethal, indirect fire, anti-platform weapon systems, will depend on an information advantage derived from electronic systems. This technology will significantly reduce the probability that an attacker can maintain a high tempo of offensive. It could also significantly reduce the impact of strategic, operational, or tactical surprise. It will most certainly make technological surprise a vital element for success on the battlefield, and surprise will be achieved in the information battle. Therefore, this forecast concludes that the investment sunk in high technology offensive platforms can be neutralized by future technology. It suggests that current Soviet operational and tactical

concepts will be invalidated by the march of technology. And, most significantly, it suggests that the most vital element in future warfare will be superiority in the information battle, which depends on electronic technology and software, the weakest areas of Soviet economic development. Recognizing this reality, the Soviets will attempt to delay the onset of this technological revolution. Hence one of their prime reasons for opposing the U.S. Strategic Defense Initiative, which they consider to be impractical, is the potential value of the spin-off technology to the air, sea, and ground battle, where they have foreseen its effectiveness.

Weapon systems have long lifetimes. Seven to ten years are required for research and development in peacetime. Once deployed, aircraft remain in service for about twenty years, armoured fighting vehicles for thirty years or more, and naval ships for up to forty years. Therefore, procurement decisions taken today will inevitably have a long lasting impact on a defence establishment. Consequently, all defense ministries today have to make a fundamental decision on whether to invest in basic research or to invest in research, development and deployment of proven platforms or anti-platform weapon systems. This decision will not be vital if the technology of the given systems were to remain undeveloped, and if, therefore, no major oscillations in the platform versus anti-platform balance of technology are expected during a weapon system's long lifetime. But is is a vital decision at a time of rapid technological advance in order that a technological revolution can be anticipated which will upset that delicate balance.

This problem of decision-making is further complicated by the fact that the near term balance between platform and counter-platform technology seems now to favour the platform. This will be evident in event of another Arab-Israeli

war. The IDF may be the leading techno-tactical force in the world. It has enhanced-blast weapons, precision-guided rocket artillery systems with advanced warheads, passive protection systems for its specialized fleet of armoured fighting vehicles, night vision technology, air-to-ground stand-off munitions, electronic warfare systems, and command, control, communications and intelligence systems that its potential enemies largely lack and/or do not understand. Therefore, Israel may be able to inflict a decisive tactical defeat on technologically and tactically outclassed Arab defence forces. The danger is that analysts will see this as a great victory for mobile platforms versus anti-platform weapon systems. Their conclusion will be, correctly, that the battlefield of the 1990s reflects the experience of previous Twentieth Century battlefields, except that at the tactical level casualties will be incurred at a more rapid rate than heretofore, that the close battle is expanding in range, and that commanders have an improved ability to influence lower level combat by selectively applying technologies that are "force multipliers". Consequently, there will be a tendency for defence forces to seek to procure for tomorrow equipment which the Israelis had yesterday. Unfortunately, such procurement decisions will come a decade too late. The planners will be reacting to a short-term oscillation in the balance between platform and anti-platform weapon systems and ignoring the real long-term trends.

There is, therefore, good reason to conclude that, during the 1990s, defence forces should reduce procurement rates of new platforms which may become wholly obsolete long before they have reached the end of their useful lives. Resources might better be spent on basic research and product improvement of existing platforms, as Mr Gorbachev seems to be suggesting that Soviet procurement policy should be. For example, will the British Army be better off in the year 2005 with five hundred tanks that are five to ten years old, or with

five hundred relatively new product-improved tanks that are forty years old, either of which have been made all but useless by the long range hyper-velocity and stand-off weapons that will have matured by the year 2005? An European planner might ask if these radically new weapons have to be American, or if R&D funds are spent in the 1990s, can they be British, French, Swedish or Swiss?

At present the techno-tactical correlation of ground forces in Europe favours the Soviet concept of mobile warfare based on advanced platforms. Reactive and compound armour have significantly reduced the threat that small and medium shaped-charges pose to armoured fighting vehicles, thereby dramatically improving the ability of armoured forces to penetrate prepared defences. Reactive armour, combined with advanced compound armours, provides tanks with reasonable survivability against more capable direct-fire weapons over the frontal arc. Top-attack weapons are not yet a statistically significant threat.

However, it is certain that in the long term the ground force commander will be able to deploy long range indirect-fire weapon systems that can hit and destroy armoured fighting vehicles and other platforms. The ever expanding depth of the battlefield will make it impossible for the attacker to suppress defensive weapons systems adequately by pre-emptive suppressive fire. The ability of these weapons to strike the soft top of vehicles or to generate overmatching kinetic energy will make it impossible for vehicles to be protected passively to defeat such weapons. The close battle will be continuously expanded in depth and will probably reach distances of 20-50km or more. The ability of the defender to fire at great distances could dramatically reduce the importance of surprise as the defender would not necessarily need to deploy to defend. Thus the long term correlation of forces in Europe will work against

the Soviets, if current trends in military technology are allowed to continue.

Another interesting ramification of this potential dramatic change in the balance between platforms and anti-platform weapon systems is the impact of military technology on geopolitics. At present military power has been disbursed around the world at a rapid rate. In conventional military terms the super powers can no longer guarantee to project force sufficient to overwhelm smaller countries. The superpowers' forces are numerically inferior and, at best, only marginally more technically effective than the forces which can be deployed by countries which previously had negligible military potential.

The postulated revolution in military technology which looms on the horizon can radically change the local military balance between force projecting superpowers and Third World states, only if the transfer of this evolving technology into the Third World is closely controlled. If such technology is not randomly and prematurely transferred it may become true once again that "we have the Maxim Gun and they have not", although in this case, 'Maxim Gun' may turn out to be a superiority in the formation battle, rather than simply in firepower.

The evolution of advanced technology weapon systems will inevitably have a major impact on the roles and missions assigned to the air force, army, and navy and their various combat arms. Funding and manpower will have to be readjusted. For example, funds now allocated to the air force for close air support may have to be reallocated to the artillery arm of the army. Countries that lack a strong general staff will find it difficult to make such major changes to their order of battle and funding allocations. The Soviet Union, which has such a strong general staff, may be able to understand the implication of these new

technologies better, even if it is less able to mass produce them.

Twentieth Century man may be on the verge of a true revolution in military art and science because of advances in technology. In the years before World War I, Sandhurst graduates still practised forming a square against Zulus. They took this mindset to the battlefield of 1914 where whole generations of their manpower were massacred in the maelstrom caused by barbed wire, automatic weapons, and fused artillery. Hopefully, the military leadership in the 1990s will be more open minded and far sighted than their contemporaries a century earlier.

Papers with PM

FILE KK

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary

24 March 1989

Thank you very much for sending me the papers. They will be an invaluable part of the Prime Minister's preparation for the meetings with Mr. Gorbachev and I know that she will be most grateful to you and to Ken Brower.

(C. D. POWELL)

C. N. Donnelly, Esq.

KK

From: C N Donnelly

SOVIET STUDIES RESEARCH CENTRE
The Royal Military Academy Sandhurst
Camberley Surrey GU15 4PQ

Telephone: { Camberley (0276) 63344 / Camberley Military } Ext 2346

Charles Powell Esq
PS to PM

Dear Charles

Please find enclosed 3 papers; my summary + projection of events relating to Gorbachev's military policy + probable arms control + disarmament proposals; a synopsis of that, with apologies for the poor quality of typing; and a paper by Ken Brower on technology + its impact on future battle and procurement.

This last is most important as it provides for a reasoning why, for military reasons, Gorbachev needs to do what he is doing. My paper builds on the earlier one I sent you, it assumes a degree of background in the subject.

I am also enclosing a map of exceedingly poor

(but typically Soviet) quality, showing how the Soviet forces in Germany were organised after the war (for many years). It is from the Feb 89 Soviet Military History Journal which is the main operational analysis magazine of the General Staff.

It reinforces our own understanding of what we think Soviet force structuring will probably become. We should expect these structural changes very rapidly - within a year or two. The implications are that it will enable Gorbachev to offer really important cuts in force strength + present what to a layman will appear a really defensive posture. If we are right, it will enable him to make quite an impressive offer at some high-visibility function in the near future.

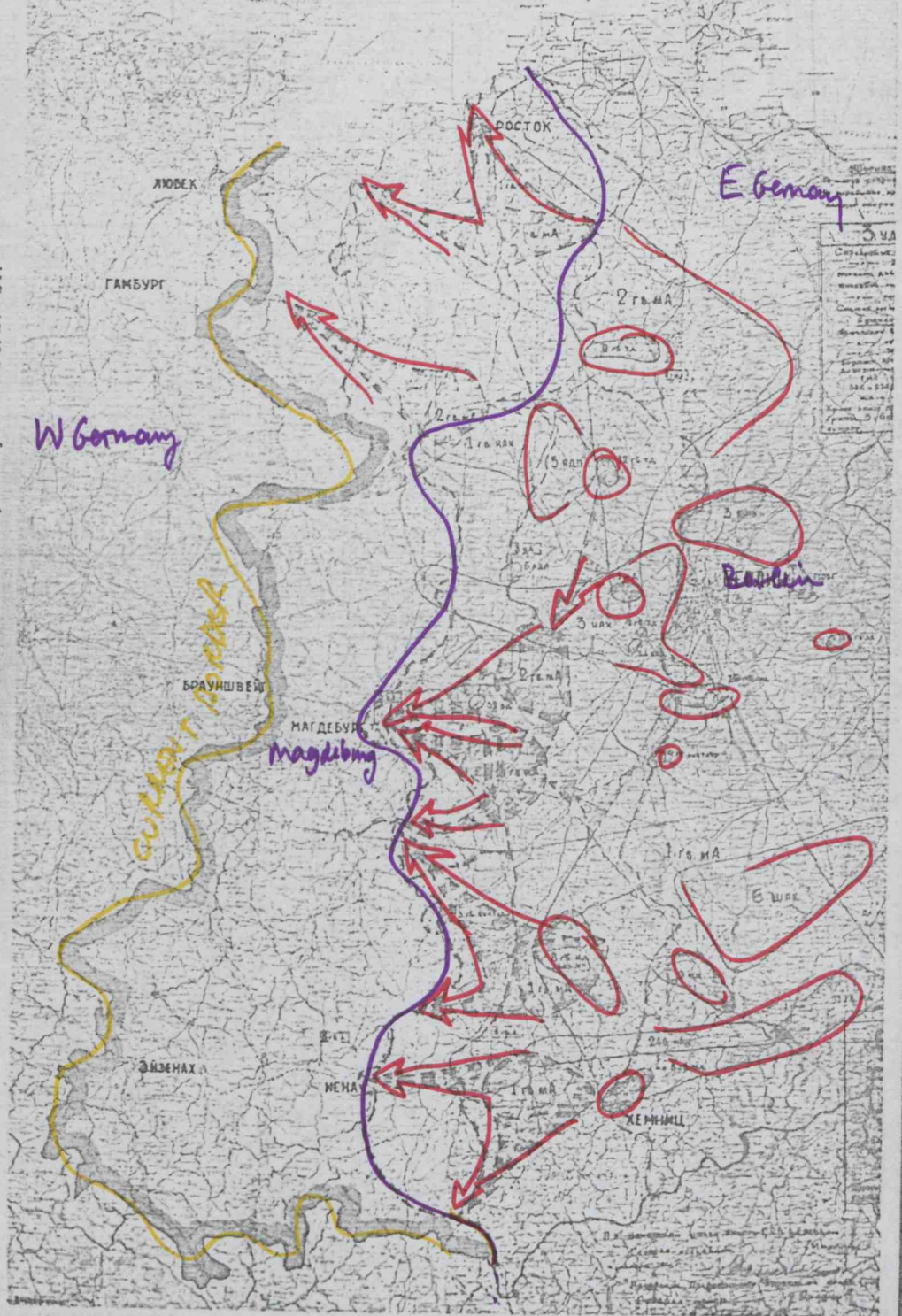
I hope you enjoy Aspen!

Very Really

Chris

Приложение

к оперативному плану боевых действий войск Группы



Оперативный план Группы советских оккупационных войск в Германии публикуется на с. 27–31.

BALTC. 1950

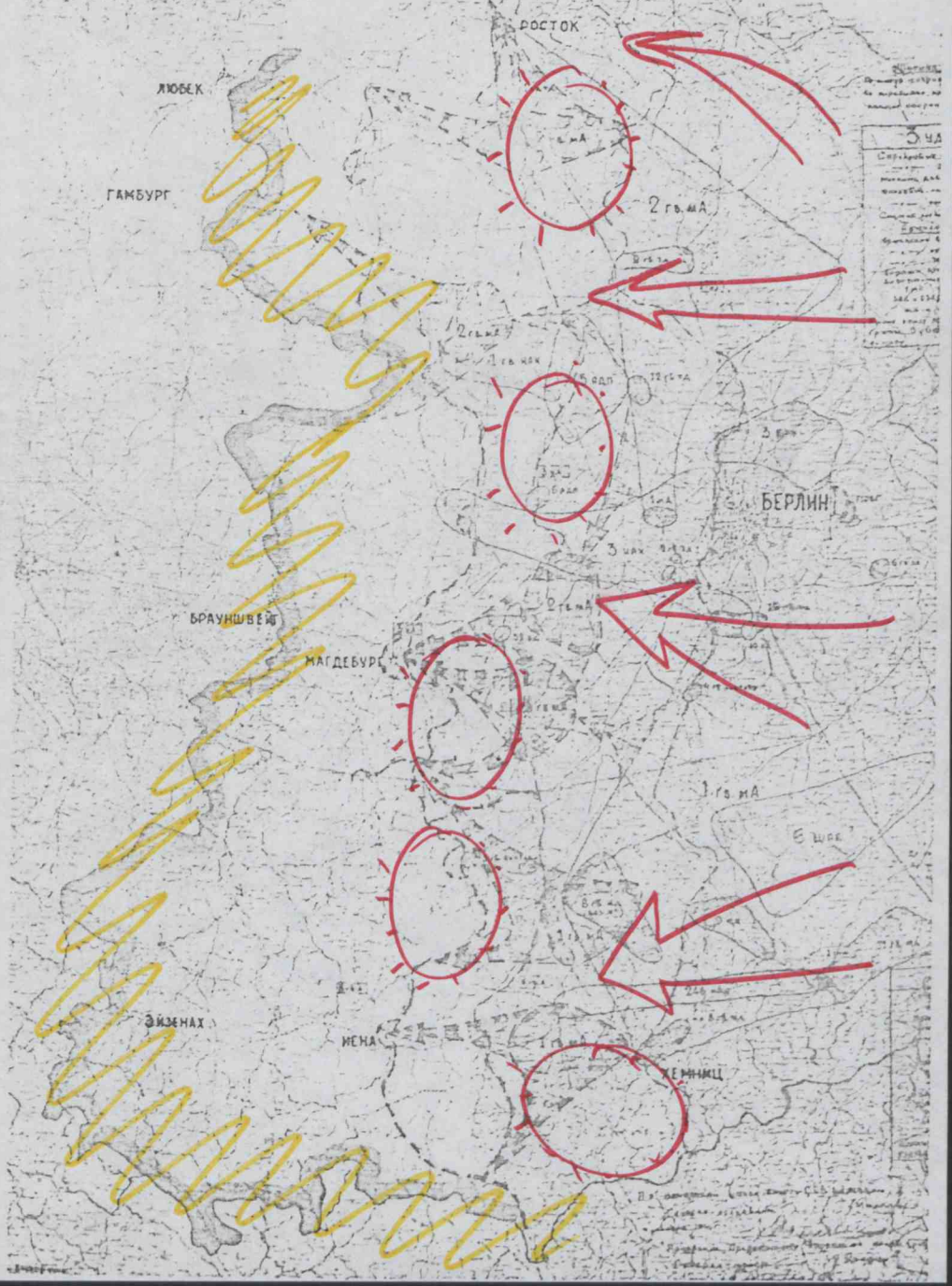
GSFG - Early 1950's

Forward line of defences

Areas of Deployment + combat operations axes

Приложение
к оперативному плану боевых действий войск Группы

1990 г. РТО.



Оперативный план Группы советских оккупационных войск в Германии публикуется на с. 27–31.

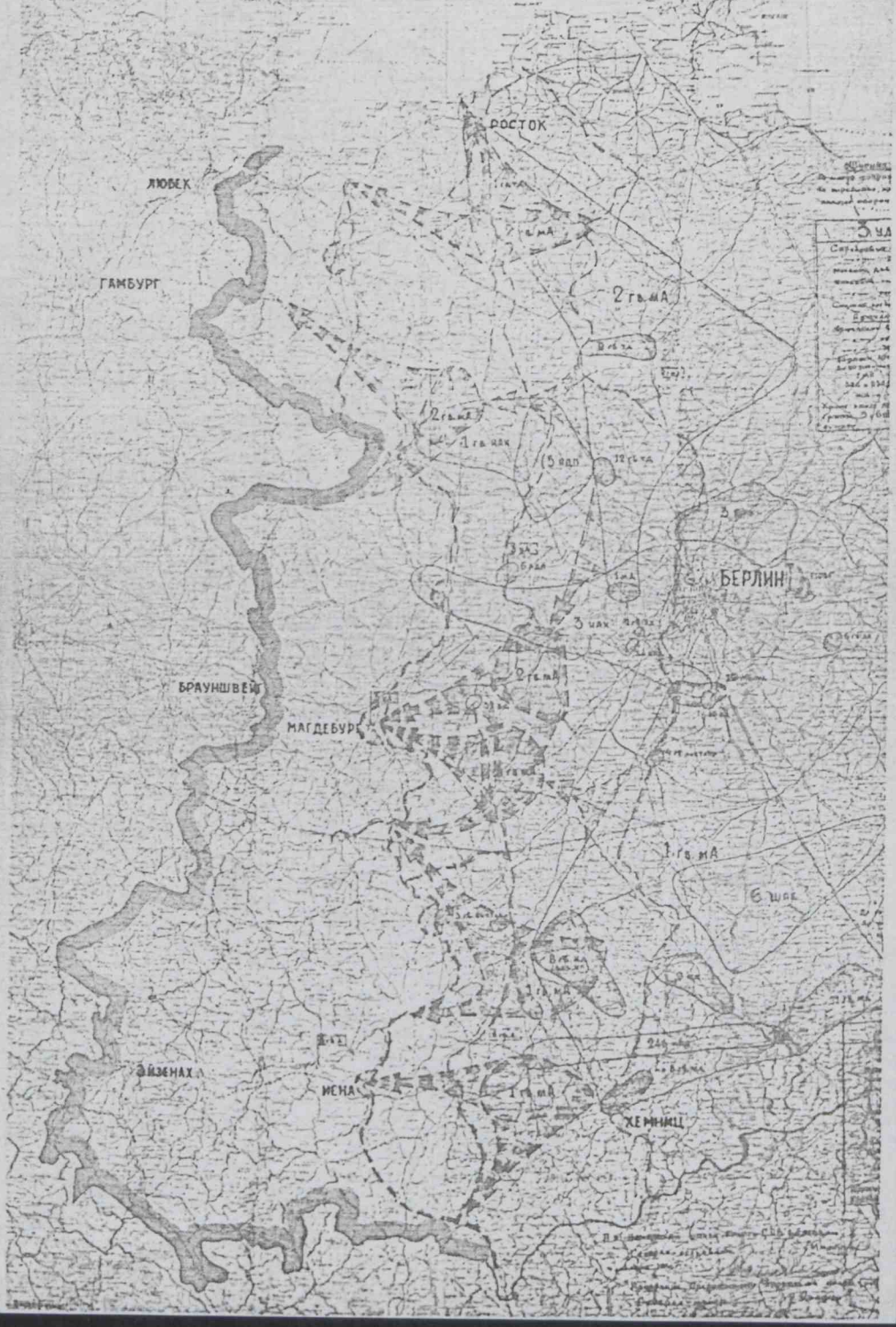
Application of the theory to 1990

E German covering force
(Border Cds)

Prepared fortified regions
(CEC + Soviet)

Counter attack mobile
forces (Corps)

Приложение
к оперативному плану боевых действий войск Группы



Оперативный план Группы советских оккупационных войск в Германии публикуется на с. 27–31.