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THE DOD TNF S^3 THREAT HANDBOOK

The BDM Corp
7915 Jones Branch Drive
McLean, Virginia 22102

28 November 1980

Final Report for Period 1 December 1979–28 November 1980

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[redacted] This handbook has been designed to identify the elements of the NATO Theater Nuclear Force structure and the corresponding threat assets of the Soviet/Warsaw Pact forces. It is intended that the document serve as a basic reference book for government and contract personnel participating in the DoD TNF S^3 Program. The first three sections of this handbook describe the NATO TNF assets and Soviet/Warsaw Pact threats;

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5. TRADOC, The Soviet/Warsaw Pact Threat 1976-1985 and Beyond (U)

6. Soviet Threat to Air Forces (STAF) (U)

7. The Future of Warsaw Pact Air Forces: An Overview (U)

8. Communist World Weapon Effects, Selection and Requirements Handbooks (U)

9. Ballistic Missile Systems (Trends)-USSR (U)

10. Gun and Howitzer Systems (Current and Projected) -- Eurasian Communist Countries (U)

11. Non-Soviet Warsaw Pact Military Forces (U)

12. Warsaw Pact Attack Scenario Against Western Europe, Annex 1 Attack from the Basic Posture (U)

13. Chemical and Biological Warfare Capabilities - USSR (U)

14. USAREUR Intelligence Estimate - 1977 (U)

15. The Warsaw Pact COMINT Threat (U)

16. A Guide to the Combat Characteristics of Atomic Weapons and to the Means of Anti-Atomic Protection (U)

20. Abstract (Continued)

the final sections provide three employment scenarios: no warning, short warning, and moderate warning.

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PREFACE

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This Threat Handbook was prepared by The BDM Corporation for the Defense Nuclear Agency (DNA), under contract number DNA001-79-C-0058-P1 for use in the DoD Theater Nuclear Forces Survivability, Security, and Safety (TNF S^3) Program. The purpose of the Handbook is to provide a detailed introduction to potential Warsaw Pact and terrorist threats to US theater nuclear forces. It is intended that the document serve as a basic reference book for government and contractor personnel participating in the TNF S^3 Program. It is also intended that the handbook be supplemented by continuing discussions and "tailoring" of threat materials as the Program progresses.

The material in this handbook was derived from references cited in the bibliography, conversations with representatives of the intelligence community and meetings with personnel from numerous units in Europe which have a potential nuclear mission.

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LIST OF TABLES

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SECTION 1
[redacted] OVERVIEW

1.1 [redacted] INTRODUCTION

[redacted] General linkages can be identified between Warsaw Pact weapon systems and NATO Central Region Theater Nuclear Forces (TNF) systems as targets. However, it is impossible to provide a NATO force commander with a precise idea of how each of his TNF assets will be struck by those weapons at a certain time in a future war. This situation arises because of the way the Soviets view the problem of destroying NATO's theater nuclear forces. Simply stated, the Soviet tactical objective is to get the job done using any and all means available. General perspectives exist on efficient ways of applying weapons against targets (e.g., characteristics such as range limitations, CEP, lethality), but these perspectives are fluid, not absolute, since combat is a dynamic, not static, condition. Relationships between delivery systems and targets change as tactical movements occur. Limitation considerations, such as CEP and lethality, can be affected by more important factors such as attrition of the threat force and timing. CEP and lethality may become irrelevant if very few assets exist to do the job, or if only certain systems can do the job in time. Since the general focus is on getting the job done by all possible ways rather than on applying a mechanism wherein certain TNF targets are struck only by certain weapon systems (e.g., SCUD missiles used only against PERSHING), the application of a specific threat in a given situation becomes impossible to forecast.

[redacted] A Soviet source reinforces this point:

> "The presence of the enemy's nuclear weapons, which are the principal means of destruction and the basis of the combat power of his troops, causes a need for constantly combating means of nuclear attack by all available means and methods in a given situation.1/ (underline added)

1. [redacted] Reznichenko, V.G., TACTICS. Moscow, Voyenizdat, 1966 trans. FTD-MT-67-35 (NTIS: 1967), AD-659-928. p. 252.

[redacted]

[redacted]

[redacted] Furthermore, the Soviets view the need to destroy TNF systems as part of a dynamic battlefield situation in which the progression of tactical events will change the selection of a system(s) to destroy them. Since the progression of events involves time and the possibility of unanticipated consequences, the anticipated weapon system selection is time and event dependent. The following quotation stresses this time dependency as well as elaborating a range of weapon systems that might be used against a single enemy nuclear missile launcher in a hypothetical situation.

> "We will give one example (the figures are arbitrary - without regard for concrete models of armaments and combat equipment). Let us assume that in the course of an attack, a commander has obtained reconnaissance information about an enemy launcher which has occupied a launch position, and that it is possible to have the launch of a nuclear missile from it within 18 minutes from the time the reconnaissance data was received. This launcher can be destroyed by the fire of one of the artillery battalions, but they are moving and are able to open fire, let us say, in 20 minutes. It can be destroyed by the strikes of several fighter-bombers, but according to the conditions of combat readiness and the distance of the airfield at the given moment, they can deliver a strike in 22 minutes. It can be destroyed by a missile with a large-yield nuclear warhead from a launcher. In the given situation, let us assume its readiness for launch is in 16 minutes, but a small-yield nuclear burst is sufficient to destroy the enemy launcher. There is also a missile with such a warhead, but its launch is possible, let us assume, in 27 minutes. Let us assume that it takes one hour for a special detachment to move to the area of the enemy launch position to destroy the launcher, and that it takes two hours to drop an airborne team for the very same purpose. At the given time, the commander has no other men or weapons to destroy the enemy launcher. The commander's decision to destroy the enemy launcher with a nuclear missile by means of a strike by our

[redacted]

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large-yield nuclear missile in 16 minutes in this situation would be economically ineffective, but fully expedient, since the enemy missile could be destroyed before its launch only by our nuclear strike, albeit of excess yield."2/

[redacted] Although it might be concluded from these quotations that there are no guidelines for employment of weapon systems against TNF targets, this is actually not the case. The physical characteristics of Warsaw Pact weapons systems do provide general employment parameters, as do doctrinal writings. It is possible to study Soviet doctrine, assess force strengths, analyze weapons and munitions capabilities and arrive at logical (albeit general) conclusions. This document affords the user the opportunity to place himself in a selected position (i.e., Brigade, Division, or Corps Command, etc.) and be able to determine the probable threat(s) to his nuclear assets. An example would be placing oneself in the position of a PERSHING unit commander. By referring to pertinent sections of this document, one could determine the probability of PERSHING being acquired by Soviet target acquisition elements, the systems capable of reaching the PERSHING unit in a static case, the systems with CEPs of sufficient accuracies to achieve the probability of kill desired by the Soviets, and the overall importance the Soviets place on destroying this particular asset. The same procedure can be followed for other units/sites/systems and, combined with the scenarios provided in Section 4, will provide the user a good overview on "system-specific" threats.

1.2 [redacted] THE SOVIET/WARSAW PACT THREAT TO TNF IN GENERAL TERMS

[redacted] The threat to TNF is from air and ground forces as well as unconventional forces. While virtually every Soviet and Warsaw Pact weapon system poses a potential, although in many cases remote, threat to TNF,

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2. [redacted] Savkin, V. Ye., THE BASIC PRINCIPLES OF [redacted] TIONAL ART AND TACTICS (A SOVIET VIEW) (Moscow: 1972), trans, USAF (Washington: GPO, 1974), SOVIET MILITARY THOUGHT, No. 4., pp. 147-148.

[redacted]

[redacted]

this handbook concentrates on those which most prominently and realistically harbor the potential to cause immediate damage to the NATO nuclear arsenal.

[redacted] The ground force assets which threaten TNF consist of towed and self-propelled artillery, multiple rocket launchers, surface-to-surface missiles, and unconventional forces. The air threat comes from Long Range (LRA) and Frontal Aviation. The LRA includes bomber, reconnaissance, and ECM aircraft which are considered strategic forces. Frontal Aviation consists of the tactical air forces. Each Soviet Group of Forces (SGF) has a tactical air force composed of fighters, fighter bombers, reconnaissance aircraft, and helicopters. These forces belong to frontal aviation and are under the operational control of the ground forces group commander which they support.

[redacted] The various air and ground systems organic to these organizations are detailed in Section 2 of this handbook.

[redacted]

[redacted]

[redacted]

[redacted] NATO's TNF air assets consist of aircraft based in West Germany, the BENELUX countries, and the United Kingdom. Key elements which are critical to the TNF mission are nuclear weapon storage sites and airfields which house or would otherwise service TNF aircraft. These storage sites and air bases would be high-priority targets in a preemptive strike. The target value of the storage sites not located on airfields would diminish rapidly, since NATO forces would attempt to 'loadout' the warheads in these sites as expeditiously as possible. After the first 24 hours of conflict, these sites would not remain on the Soviet target list if the Soviets were unable to determine the current 'loadout' status of the sites. They would be engaged as targets of opportunity if it were determined that the 'loadout' had not taken place. Destruction/neutralization of airfields would continue to be a relatively high priority throughout a conflict.

[redacted] The TNF represents NATO's most important offensive and defensive asset. These forces currently provide adequate deterrence and will continue to do so for as long as their survivability and security remain credible. The TNF must be able to survive a preemptive strike and endure the conventional phase of any conflict without substantial attrition. The ability of the Soviets to severely degrade TNF by preemption, use of unconventional forces, or during conventional warfare is discussed throughout this handbook, as appropriate. Section 3 provides a discussion of NATO TNF systems, their characteristics and capabilities, and general statements of the threats expected to be employed against specific TNF elements.

[redacted] Command, control and communications elements, while key, are not specificaly addressed in this handbook.

1.4 [redacted] SURVIVABILITY AND SECURITY

[redacted] There are a myriad of factors affecting the survivability and security of TNF. Many systems are physically soft, such as the PERSHING, which could be rendered useless by small arms fire. On the other hand, artillery pieces are quite hard physically and would be most vulnerable in the areas of crew personnel and nuclear artillery projectiles, the latter

[redacted]

[redacted]

while still in their storage sites or during loadout. All systems can be destroyed if located in a timely manner by Soviet target acquisition systems and provided a suitable delivery system is available to attack. Since such threat delivery systems are known to exist, it is extremely important to reduce or disguise TNF system specific signatures. Factors affecting all TNF assets include: physical security, personnel reliability, ability of personnel to function in an active CBR environment, and adequate warning time to allow for protective and/or offensive operations. Ancillary equipment and facilities, while important to most TNF elements, are especially critical to air assets. A final area, not covered in depth in this handbook, is command, control and communications. Disruption of US and SACEUR nets would clearly be a priority objective.

1.5 [redacted] THREAT OVERVIEW

[redacted] Figure 1-1 provides an overview of threats to the TNF from peacetime posture through wartime. This figure does not indicate a precise description of how threats would change over time, but rather suggests a general perspective on likely TNF targets for the listed Soviet/WP threats based on the information obtained for this handbook. A brief explanation of the threat elements shown in the figure follows.

1.5.1 [redacted] Terrorist Threat

[redacted] As indicated, terrorism is considered a peacetime threat. While terrorist activities cannot be discounted in wartime, they are considered highly improbable. Terrorist attacks in peacetime against the indicated TNF assets are considered plausible due to the publicity and sensationalism they would receive. The probability of a weapon actually being captured is quite low; the probability of a terrorist organization being able to activate a captured nuclear device is even lower. However, the mere capture attempt would have international implications.

1.5.2 [redacted] Special Operations (Unconventional) Threat

[redacted] Soviet special operations forces could operate in either a peace or wartime situation. Involvement in peacetime operations would most likely be during a period immediately preceding combat. These forces are

[redacted]

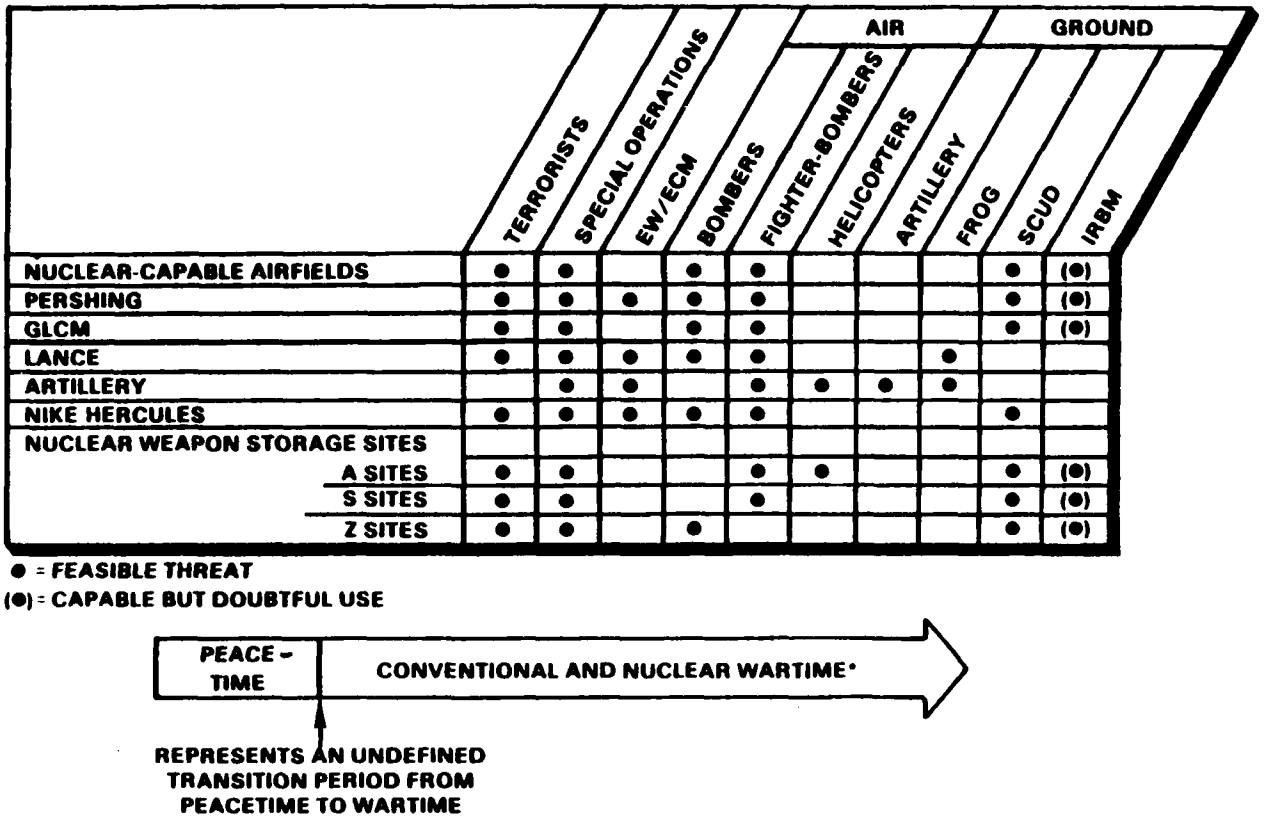

Figure 1-1. Threats to TNF.

well trained, equipped for a myriad of operations, and represent a very real threat to all TNF assets which are listed.

1.5.3 [redacted] Radioelectronic Combat (REC) Threat

[redacted] Soviet radioelectronic combat (REC) forces are capable additions to the overall combat element. Soviet doctrine stresses that REC is a weapon system that must be integrated with other weapon systems in the overall scheme of combat operations. The TNF systems marked in this category are those which are considered most susceptible to the REC threat. Efficient C^3 is essential for the effective operation of the TNF elements. Disruption or destruction, by or through REC, of the C^3 assets supporting these systems, would seriously hamper NATO's TNF operational capabiltiy.

1.5.4 [redacted] Air Threat

1.5.4.1 [redacted] Bombers. Bombers are primarily LRA assets capable of attacking NATO forces well behind the FEBA. As such, their logical place in the Soviet combat plan is to attack rear area targets which represent a significant threat to the Soviet war effort. Included in this category are NATO's long-range nuclear-capable missile systems, nuclear-capable aircraft, air defense sites, and key nuclear storage sites.

1.5.4.2 [redacted] Fighter-Bombers. Fighter-bombers are available to ground forces (through their attached tactical air army) and are capable of conducting strikes against all assets listed. Only "Z" sites are excluded here; the importance of these sites would induce Soviet planners to utilize LRA bombers against them very early in the conflict. While bombers and fighter-bombers are projected to overlap target coverage against other assets, such an expenditure against a well-defined, static target would not be in consonance with Soviet economy of force principles.

1.5.4.3 [redacted] Helicopters. Helicopter assets are best suited for missions against targets that are near the battle engagement zone. They would pose the most significant threat to NATO's nuclear-capable artillery. The ability of the helicopter to fly low, maneuver rapidly, and perform its own reconnaissance makes it ideally suited for this mission. In the initial stages of conflict, helicopters could also be used to attack "A" sites which would be in the process of loading out nuclear assets.

[redacted]

[redacted]

1.5.5 [redacted] Ground Force Threat

1.5.5.1 [redacted] Artillery. Soviet artillery provides fire support to maneuver forces and would engage any NATO assets within its range of fire. Counter battery fire against NATO's nuclear-capable cannon artillery will represent the major threat to NATO's field-deployed artillery.

1.5.5.2 [redacted] Surface-to-Surface Missile. The FROG SSM is a weapon of limited range and accuracy, capable of tremendous firepower through numbers alone. It is best suited, due to the limitations above and deployment doctrine, for attacking LANCE missile units and artillery units.

[redacted] The SCUD SSM has a greater range than does the FROG, which gives it far more utility against the critical targets it can engage. Included in this target set are NATO's long range nuclear-capable SSM systems, QRA aircraft and main operating bases, air defense elements, and nuclear warhead storage sites.

1.6 [redacted] SCENARIOS

[redacted] Section 4 presents three scenarios related to a NATO-Soviet/WP conflict in Central Europe. Each scenario characterizes a plausible set of assumptions and feasible Soviet actions/reactions regarding these assumptions. The three scenarios presented are summarized in the following subparagraphs.

1.6.1 [redacted] Bolt Out of the Blue

[redacted] This scenario, commencing from a static (peacetime) situation, would indicate the probable type and level of a Soviet/WP no-warning attack.

1.6.2 [redacted] 2/4 Scenario

[redacted] A short period of warning followed by a conventional attack led by massive air strikes against the NATO TNF is depicted.

1.6.3 [redacted] 7/14 Scenario

[redacted] A conventional attack optimizing joint utilization of threat ground and air assets is presented.

[redacted] After each scenario development, specific Soviet/WP threat systems are applied against specific TNF elements in a manner considered most probable within the parameters of each given scenario.

[redacted]

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1.7 [redacted] SUMMARY

[redacted] NATO has a sufficient variety of nuclear weapons and delivery means in Europe to escalate a conventional conflict to any degree of intensity at the nuclear level. Warsaw Pact (WP) leaders recognize this capability and the extraordinary difficulty of destroying most of NATO's nuclear weapons and delivery means. This destruction, nevertheless, remains a critical goal in their view and is a recurring theme in Soviet military literature. To accomplish this destruction, Warsaw Pact forces must rely on a complementary family of weapons sytems. In this way, the strengths of one type of weapon can offset or compensate for the shortcomings of another. Whether a Warsaw Pact attack is envisioned as occurring in the present day or sometime late in the 1980s, it is plausible to think of a situation in which all enemy weapon systems and forces are integrated to present the maximum threat to NATO's nuclear forces.

[redacted] In World War II, the Soviets suffered greater casualties than any of the other combatants involved in that global conflict. While the Soviets obviously do not fear armed struggle, it is reasonable to assume they would not initiate a war which would place their motherland at unreasonable peril. This handbook assumes that Soviet and Warsaw Pact planners -- given their numerical superiority and recognizing the danger of potential catastrophic losses in launching even the most successful nuclear attack -- would first attempt to destroy NATO's TNF assets by conventional means. The three scenarios which portray the Soviet/Warsaw Pact launching conventional attacks against NATO are driven by the above assumption and the fact that such scenarios are most practical for assessing and improving NATO's TNF S^3.

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SECTION 2

[redacted] ANALYSIS OF SOVIET/WP WEAPONS, FORCES, AND CAPABILITIES

[redacted]

2.1.1 [redacted] Conventional Munitions

2.1.1.1 [redacted] Overview. That the Soviets are committed to conducting a war utilizing conventional munitions cannot be denied. Analyses of conventional munitions produced for use by Soviet military forces over the years verify this commitment. Although the character of war has changed over the last century--chemical weapon use in World War I and nuclear weapon use in World War II--conventional munitions continue to be required. Chemical and nuclear capabilities have, however, greatly influenced the types and capabilities of conventional munition design and development.

[redacted] The Soviets possess a wide assortment of conventional munitions which are available to support a theater war. This study examines only those munitions which, when mated with their respective delivery systems, affect directly the survivability, security, and safety of NATO's theater nuclear force. An overview of Soviet conventional capability is provided in Figure 2-1.

[redacted]

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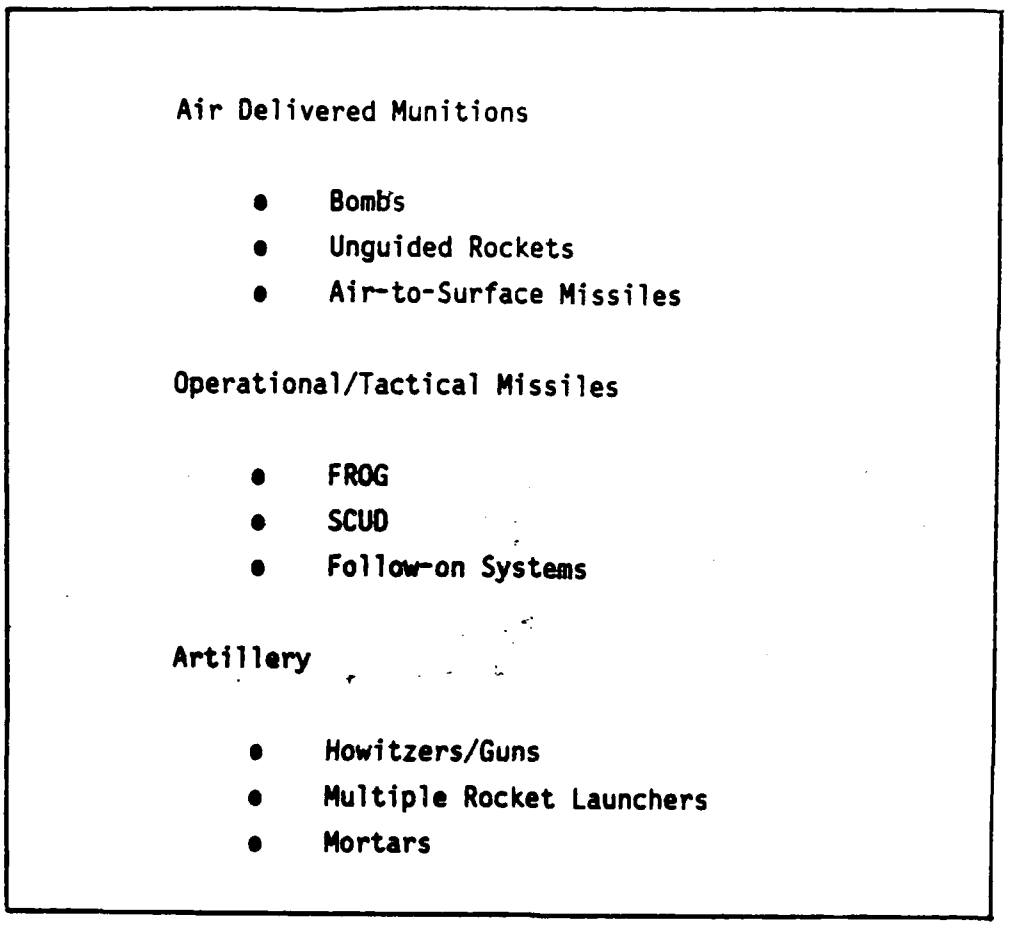

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[redacted] Figure 2-1. Soviet/WP conventional munitions.

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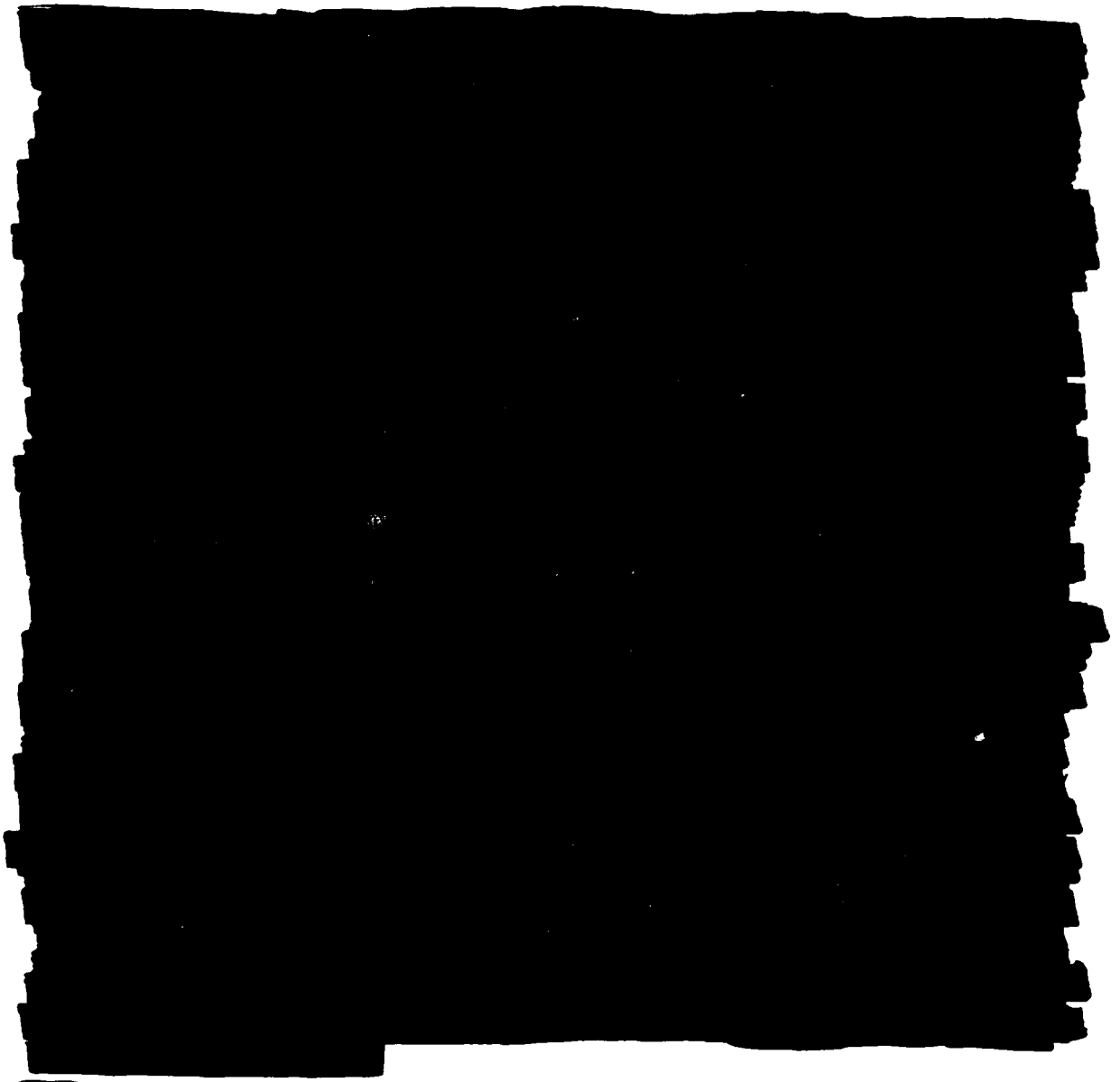

[redacted] The self-propelled systems were designed to be capable of keeping up with the movement of ground force maneuver units. This capability for rapid deployment and movement offsets, to some degree, the shorter range of these systems.

[redacted]

[redacted]

[redacted] Caliber of weapons range from 85mm to 203mm for howitzers, 120mm to 160mm for mortars, and 140mm to 240mm for MRL.

2.1.1.4 [redacted] Effects of Soviet/WP Conventional Munitions. The effectiveness of conventional weapons 2/ is influenced by a number of interrelated factors that can be grouped under three major areas: weapon, target, and allocation. The interplay of factors included in these three groups determines the ammunition expenditure in a given situation:

(1) Weapon factors: Type and caliber, firing technique, munition type, fuzing, and accuracy.

(2) Target factors: Type, posture, location accuracy, range.

(3) Allocation factors: Target priority, weapon availability, and results desired.

[redacted]

[redacted] One of the most useful concepts in determining the effectiveness of a conventional munition round under specific conditions is that of lethal area (A_L). Although expressed in units of area, A_L is not a true

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2. [redacted] This section treats the effects of ground-to-ground artillery ordnance in detail. It is derived from a DIA publication, GUN AND HOWITZER SYSTEMS (CURRENT AND PROJECTED) - EURASIAN COMMUNIST COUNTRIES (U), Confidential. For a similar discussion of the effects of air-to-surface weapons, the reader should consult JTCG/ME, JOINT MUNITIONS EFFECTIVENESS MANUAL -- AIR-TO-SURFACE WEAPON EFFECTIVENESS, SELECTION AND REQUIREMENTS (BASIC JMEM (A/S) (U), Confidential. For a discussion of the effects of specific Soviet air-to-surface weapons, see the DIA publication COMMUNIST WORLD WEAPON EFFECTIVENESS, SELECTION, AND REQUIREMENTS HANDBOOK (U), Secret/NF.

[redacted]

[redacted]

physical area, but is rather an integral over a target or weapon-centered plane of the probability of damage for a specific weapon-target combination.

[redacted] The formula for computing a lethal area is:

$$A_L = \int P_K(a)\, da$$

KEY

- A_L = Lethal area
- $P_K(a)$ = probability of incapacitation or kill in "da"
- da = differential area

In practice, lethal area is calculated as a finite sum of small weighted areas:

$$\boxed{A_L = \Sigma_A\, P_K(a)\, \Delta a}$$

Δa = a small area in the target plane

[redacted]

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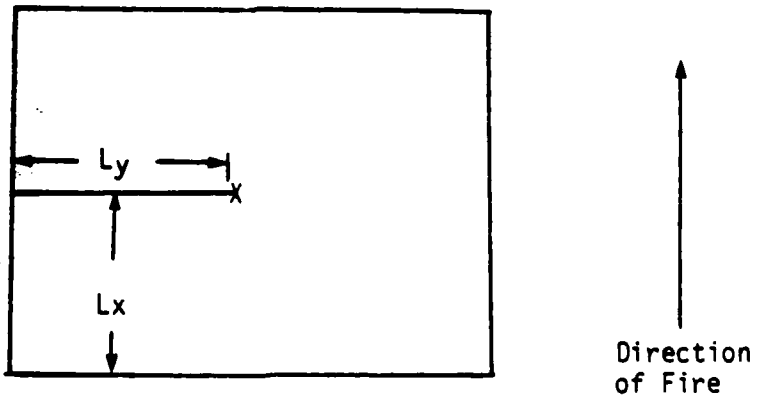
[redacted]

Material Damage. The effects of conventional ammunition against specific types of targets are described in Soviet writings in terms of corrected target dimensions. For conventional munitions, the area is assumed to be a rectangle of length $2L_x$ along the axis parallel to the direction of fire, and of $2L_y$ perpendicular to this axis. Lethal areas are determined on the basis of experiments, and a corrected target dimension is assigned so that the area of the corrected targets equals the lethal area.



Examples of corrected zones of destruction are given in Figures 2-5 and 2-6.

[redacted]

	r (m)	Corrected Destruction Zones for Weapons in Weapon Pits (m^2)		Casualty Effect Radii Against Armored Targets & Trucks (m)				Effective Lethal Area (m^2)								
								15° Impact Angle				30° Impact Angle				No Angle Given
Guns		Guns	Mortars	Lt Tk 25-30mm	SPG, SPMort 12-15mm	APC 7-8mm	Trucks	Med Tk	Lt Tk	SPG	Truck	Med Tk	Lt Tk	SPG	Truck	APC
85	1.0	68	36	--	--	--	1.5	--	--	--	80	--	--	--	60	ND
100	1.2	74	41	--	0.25	0.5	2.0	60	30	45	90	40	20	30	70	40
122	1.5	83	48	0.5	0.75	1.0	3.0	60	40	55	100	40	20	40	80	80
152	2.0	100	61	1.0	1.25	1.5	3.5	60	45	65	124	40	20	50	100	ND
Mortars																
120	1.2	74	41	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
160	2.2	107	72	1.0	1.25	1.5	4.0	24	30	40	100	--	--	--	--	ND
240	3.0	138	92	2.0	2.5	3.0	ND									
MRL																
140	1.4	80	45	0.5	0.75	1.0	ND									
240	2.5	118	75	2.0	2.5	3.0	ND									

R = 3.65 guns
R = 2.40 mortars

Assumed Target Sizes

	Width	Length	Height
SPG	2.0	6.1	2.0
Lt Tank	2.5	4.0	2.0
Med Tank	3.5	6.4	2.5
Truck	2.2	6.4	2.7

ND = No data; r = the lethal radius of a shell burst outside of a weapons pit; R = weapons pit radii assumed for calculation purposes.

Figure 2-5. Casualty effects against guns, mortars, armored vehicles and trucks.

GUNS, HOWITZERS, & GUN HOWITZERS	FALL ANGLE (DEGREES)	TROOPS IN OPEN STANDING FRAGMENTATION EFFECTS			TROOPS IN OPEN PRONE FRAGMENTATION EFFECTS			TROOPS UNDER COVER EFFECTS OF BLAST WAVE & FRAGMENTATION		
		WIDTH M	DEPTH M	AREA M²	WIDTH M	DEPTH M	AREA M²	M²	LENGTH OF TRENCH M	TRENCH M²
85MM	20-40	28	10	280	19	7	130	ND	11	ND
100MM	30	31	13	400	22	9	200	20	16	3
122MM	20-50	40	20	800	24	13	310	20	24	4
152MM	20-50	43	22	950	26	14	360	50	36	4
203MM	20-50	56	25	1400	35	17	600	75	100	5
MORTARS										
120MM	60-80	56	28	1570	39	19	740	30	24	3
160MM	60-70	63	36	2270	41	21	860	65	43	ND
MRL										
M-14 (140MM)	30	—	—	850	—	—	600	30	13	ND
M-24 (240MM)	ND	ND	ND	ND	ND	ND	ND	116	50	ND

ND INDICATES NO DATA

Figure 2-6. Personnel casualty effects.

[redacted]

The number of rounds required against a specific type of target is determined by the equation:

$$N = K \frac{(E'x \cdot E'y)}{(S \cdot \tau)}$$

N is the number of rounds assuming optimal dispersion. K is a coefficient determined as a function of the expected percentage of destruction desired. τ is a coefficient accounting for dispersion and shell lethality. E'x and E'y are the range and bearing errors for a particular method of fire preparation and target size. S is the corrected zone of destruction of the target. Figure 2-7 gives the Ex and Ey for two calibers of artillery weapons:

$$E'x = Ex \sqrt{1 + 0.152 \frac{0.5\Delta}{Ex}^2}$$

Δ = target depth (meters)

$$E'y = Ey \sqrt{1 = 0.152 \frac{0.5\ F}{Ey}^2}$$

F = target front (meters)

[redacted]

[redacted]

[redacted]

RANGE, KM	CHARGE	PREPARATION ERRORS				DISPERSION			
		ONE BATTERY		3 BATTERIES		ONE BATTERY		3 BATTERIES	
		E_x	E_y	E_x	E_y	B_x	B_y	B_x	B_y
		152-MM HOWITZER							
4	6	54.3	25.8	52.8	24.7	13.4	6.1	20.7	9.6
6	4	67.4	27.6	63.9	26.1	19.2	7.9	28.9	11.9
8	3	80.3	31.2	75.9	29.5	25.0	9.6	36.3	14.0
10	1	94.9	37.1	88.9	35.1	29.9	11.7	42.6	16.7
12	FULL	114.6	46.1	108.8	43.8	36.7	14.9	51.4	20.1
		152-MM GUN HOWITZER							
4	12	53.1	25.9	50.9	24.9	12.5	6.0	19.5	9.4
6	12	67.3	28.9	63.8	28.2	22.4	9.2	32.5	13.4
8	10	77.7	31.2	72.7	29.2	27.9	11.1	39.2	15.7
12	4	110.1	42.2	100.8	39.8	37.7	14.8	52.6	20.2
16	FULL	146.9	56.6	137.7	52.4	50.6	19.2	70.1	26.6
		130-MM GUN							
4	4	66.9	26.2	63.3	25.5	11.2	4.2	16.6	7.0
6	4	68.8	27.8	66.2	26.8	14.5	5.8	23.1	9.3
8	4	78.2	30.6	74.8	29.3	19.8	7.6	29.5	11.7
12	4	105.9	42.1	101.6	40.4	27.5	11.1	40.7	16.3
16	2	139.7	56.8	132.5	48.1	42.8	15.3	61.0	22.2
20	1	176.8	61.3	167.1	58.8	54.9	19.1	79.6	27.6
24	FULL	219.8	77.4	207.1	73.2	68.7	24.2	98.7	34.8

E_x AND E_y ARE ERRORS IN RANGE AND BEARING RESPECTIVELY AS A RESULT OF PREPARATION.

B_x AND B_y ARE ERRORS IN RANGE AND BEARING RESPECTIVELY RESULTING FROM DISPERSION.

[redacted]

[redacted] Figure 2-7. Characteristics of errors reduced to two groups (in meters) when firing with one or three batteries.

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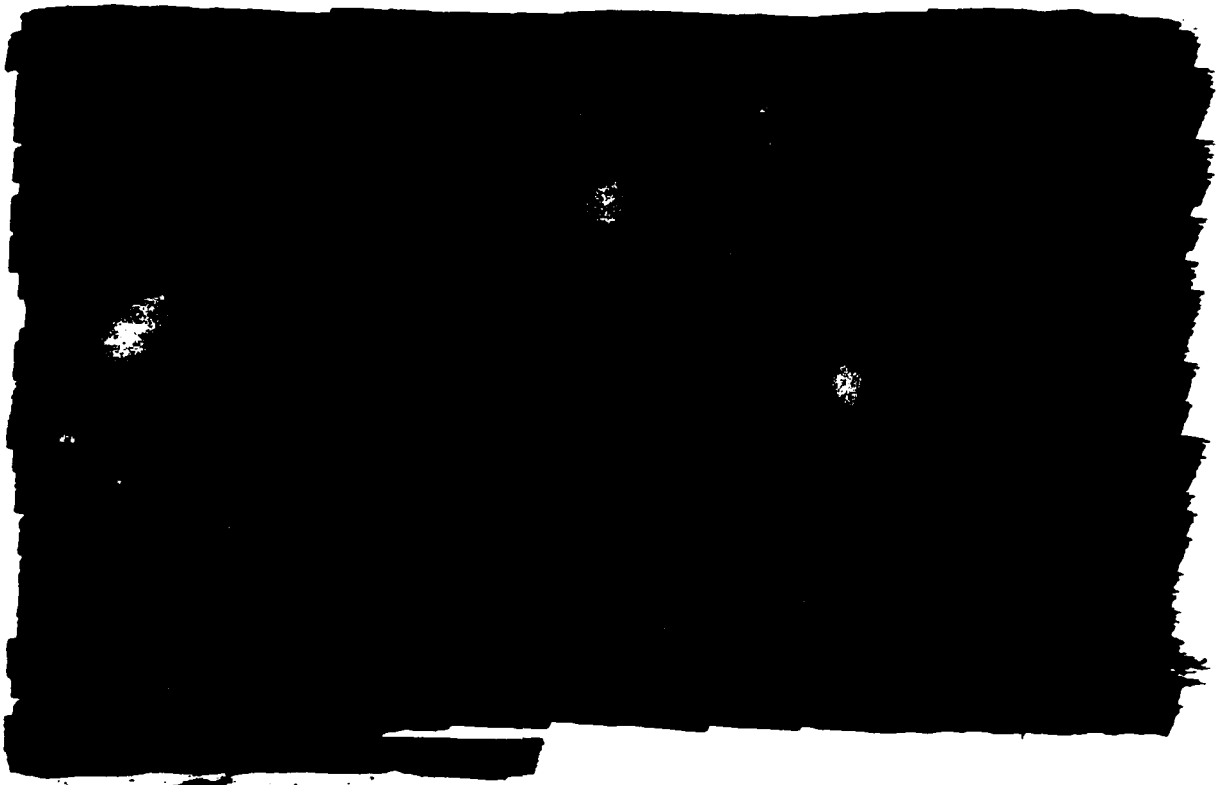

2.1.2.4 [redacted] Effects of Soviet/WP Chemical Munitions. The effects of chemicals on humans depend on the toxic qualities of the agent, the dose absorbed, the rate of absorption, and the route by which the agent enters the organism. Toxic agents may enter the body through the skin, eyes, lungs, or gastro-intestinal tract. For a given agent absorbed under a single set of conditions, the effect is proportional to the dose absorbed. Thus, it is possible to define for each agent certain characteristic doses: the dose which, under given conditions, will cause death in 50 percent of individuals exposed (the 50 percent lethal dose, or LD 50), or the dose which will cause 50 percent incapacitating casualties (ID 50), or the dose which will have no appreciable effect. Such doses are usually expressed as milligrams of chemical agent per kilogram of body weight, or in milligrams of agent (with reference to a healthy adult of average weight).

[redacted] For purposes of comparison and evaluation, lethal dose (LD) is expressed differently in the case of gases, vapors, and aerosols absorbed through the respiratory passages. The absorbed dose depends on the agent's

[redacted]

[redacted]

concentration in the air, on the subjects' respiration rate, and on duration of the exposure. The effect, then, is a function of the concentration (C in milligrams per liter) and the exposure time (T in minutes). This is called the dosage or CT factor, certain characteristic values of which (such as the LCT 50) are used in particular situations for quantitative estimates of the effects produced. The lethal concentration over time of the agent that produces 50 percent fatal casualties is expressed in milligram minutes/liter (mg.min/l).

[redacted]

Figure 2-13 shows the estimated contamination pattern which is typical of the laydown of chemical agents. The long axis of the pattern is the direction of the wind, blowing at 3.2 kilometers per hour.

[redacted]

One other effect from a chemical attack causes additional casualties. For a period ranging from one to three days after the liquid nerve agent is dispersed, additional casualties could be caused by the secondary vapor hazard created by agent evaporation from the impact area. The area

[redacted]

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covered by the secondary vapor can range from three to five times the original contaminated area at lesser concentrations.

[redacted] The principal lethal Soviet chemical agents are shown in Figure 2-14.

[redacted] Nerve agents directly affect the nervous system and are highly toxic in both liquid and vapor forms. Whether they are absorbed through the skin or inhaled, the effects on the human body are similar. The nose runs, there is tightness of the chest, breathing is difficult, and excessive sweating, drooling, nausea, vomiting, dimness of vision and convulsions occur, followed by death. The vapor is readily absorbed by the eyes and by tissues of the body. Most nerve agents act quickly when inhaled, with some symptoms developing within one to two minutes. The agents act more slowly when penetration is by absorption through undamaged skin. The greatest portion of the Soviet chemical agent inventory is thickened Soman, a nerve gas which is the most lethal Soviet agent.

[redacted] Blister agents affect the eyes and lungs and blister the skin. Some types are painless, others sting, and still others cause the formation of welts. They may appear as colorless to dark brown, oily, liquid droplets, but are normally invisible in vapor form. Blister agents are effective even in small quantities and produce delayed casualties. A drop of mustard-type agent the size of a pin head can produce a blister one inch in diameter. Blister agents which come in contact with the eyes will produce marked effects such as redness or inflammation and often cause temporary blindness. Mustard-type agents are quickly absorbed through the skin. Reddening of the affected area may appear at any time up to about 12 hours after contact depending on the degree of contamination. Blisters may appear in a day or less following the reddening. Inhalation of blister agents will cause serious damage to tissues in the mouth, nose, throat, and lungs.

[redacted] Blood agents usually are disseminated as vapors or gases and enter the body by inhalation. They affect the circulatory and respiratory systems by preventing body cells from using the oxygen carried by the blood. After inhaling a high concentration of blood agent, a man may become unconscious and die quickly.

Page 47 was deleted

[redacted]

[redacted]

[redacted] Lung, or choking, agents usually are disseminated as gases and enter the body by inhalation. They affect the respiratory system by damaging the lungs and, in extreme cases, by causing them to fill with fluid. Lung agents produce coughing, choking, tightness in the chest, nausea, headache, and watering of the eyes. Delayed effects (occuring two to four hours after exposure) usually follow a period during which the individual experiences no initial effects. The delayed effects include rapid and shallow breathing, painful cough, discomfort, fatigue, shock, and frequently death.

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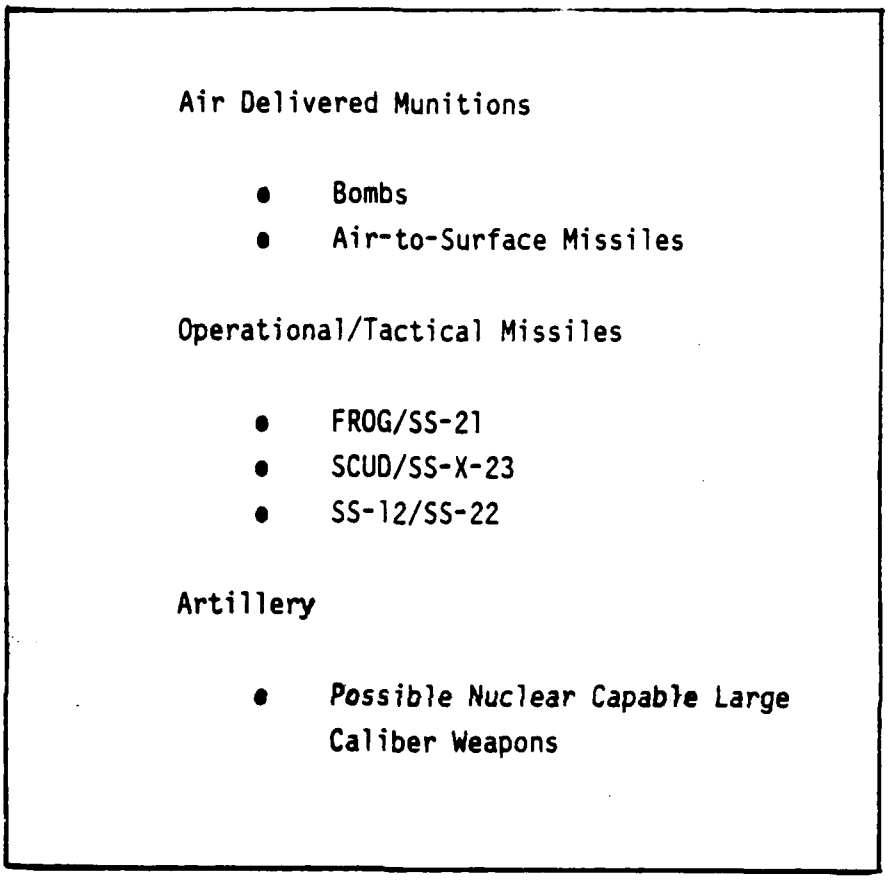

[redacted]

[redacted] Figure 2-18. Soviet nuclear delivery systems.

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2.2 [redacted] THE TERRORIST THREAT 8/

[redacted] International terrorists in the 1970's continued to perform acts of kidnapping, hostage taking, bombing, hijacking, and assassination. Over 5,000 incidents of international terrorism have been recorded since 1970 and were committed by terrorist organizations such as the Japanese Red Army, the IRA, Palestinian groups, Basque or Croatian separatists, and others. Indeed, international terrorism increased throughout the 1970s and probably will prevail into the 1980s as well. Terrorism can be described as the use of actual or threatened violence to gain attention and to create fear and alarm, which in turn will cause people to exaggerate the strength of terrorists and the importance of their cause. Since groups that use terrorist tactics are typically small, the violence they practice must be deliberately shocking. Terrorist attacks are usually carefully planned to attract the attention of the news media.

[redacted] It would be erroneous to confuse terrorist groups with Soviet/WP unconventional warfare units. Some terrorist groups may receive some covert backing and support from WP countries, but are not under their control. In contrast to unconventional warfare, which has physical destruction as a primary goal, terrorism seeks a psychological result. A terrorist's tactics are a mode of political expression, and his immediate goal is to influence his "audience" through the use or threat of violence; this, in turn, affects the audience's political behavior. The terrorist threat to TNF is a major concern to NATO planners in peacetime. Conversely, Soviet/WP special operations teams would not threaten TNF until a decision had been reached to initiate general hostilities in Europe.

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8. [redacted] Consult a recent BDM product, NUCLEAR WEAPONS SECURITY AND TERRORISM [redacted] DRAFT FINAL REPORT (BDM/W-79-204-TR-S, April 1979, SECRET), for a thorough and wide-ranging analysis of this subject.

[redacted]

[redacted]

[redacted] Until recently, governments which were harmed by terrorist groups underestimated the threat which the groups posed and generally misunderstood their sophisticated modus operandi. Time and time again, terrorist groups have demonstrated meticulous attention to detail, a high degree of compartmentation and security, and elaborate cover arrangements to enable their members to masquerade as ordinary law-abiding citizens. Terrorist groups have repeatedly demonstrated their fanatical motivation and determination to undertake assignments with a high degree of risk. A sophisticated underground arms-smuggling network is flourishing in West Europe in support of many of these groups.

[redacted] It is only in the last decade that terrorism has developed a significant international dimension, featuring linkages among groups from various nations. As early as 1970, representatives of guerrilla/terrorist organizations from Argentina, Bolivia, Brazil, and Uruguay met to discuss a joint operations strategy. More recently, IRA connections with the Basque separatist movement ETA and the Palestinian fedayeen have been reported. The Lod Airport massacre made clear to all the link between the PFLP (Popular Front for the Liberation of Palestine) and the Japanese Red Army. This cooperation does not necessarily indicate a worldwide terrorist conspiracy network, but does imply a strong feeling of solidarity among terrorists. Significantly, the quality of training available to a terrorist group can be enhanced markedly through its contacts with other such organizations. One net effect of this collaboration is that countering terrorism at the international level has become increasingly difficult.

[redacted] The terrorist groups with the most extensive patronage and backing stand the best chance of mounting a successful peacetime attack on TNF targets. Such support has contributed greatly to these groups' overall capabilities. Cuba and North Korea are well-known training centers, and it is estimated that thousands of terrorists have "graduated" from courses in each country. Libya, having contacts with groups as diverse as the IRA and Filipino Moslem activists, provides money, arms, training facilities, and refuge. The Algerian Police Academy has offered sophisticated and professional training to terrorist groups from abroad. Moreover, the People's

[redacted]

[redacted]

Democratic Republic of Yemen (South Yemen) has provided Arab, German, and Japanese terrorists a place to seek refuge, to plan, and to train for the next mission. By the mid-1970's practically every known German terrorist had picked up some training in fedayeen camps in Jordan, Lebanon, Syria, or Iraq. Those terrorist movements which do not enjoy the benefits of such sponsorship are not likely to pose a credible threat to TNF.

[redacted] If a terrorist band were to stage a raid on any TNF target, chances are fairly good that the group would be multinational. The most spectacular terrorist operations in recent history have been pointedly multinational. For example, in 1975 the Latin American terrorist "Carlos" led a team of two Germans and three Palestinians to kidnap ten Arab oil ministers at Vienna's OPEC headquarters. Several prominent hijackings have been staged by multinational groups. Recently, both German and Italian terrorist couriers commuted regularly between the two countries to perfect plans to abduct Aldo Moro.

[redacted] Several trends in international terrorism suggest that TNF installations in Europe would be plausible targets for a terrorist attack. One trend has been the "opening" of Western Europe as a theater of terrorist activity. In particular, the FRG is a crossroads of terrorist groups from the Middle East and other areas. It is likely that Western Europe will remain a stage for terrorist operations--whether by emerging European groups or by Arab terrorists--throughout the 1980s. Another trend is the acquisition by terrorist groups of increasingly sophisticated weapons which can facilitate an assault on a TNF storage site. Extremist groups are known to have used RPG-7s, SA-7s, and a variety of portable yet highly destructive homemade weapons (such as the IRA's pocket-sized incendiary bombs). US facilities will continue to be attractive targets, particularly those which can be struck with a maximum chance of success, such as the relatively small "A" sites. The "nuclear" issue has become a focus for intense debate in Europe. A terrorist assault on a TNF installation in Europe could generate sympathy from other extremist groups and possibly even from radical anti-nuclear activists.

[redacted]

[redacted]

[redacted] For the near term, however, nuclear power plants or other nuclear industry facilities would be more likely targets than weapons storage facilities. Many opponents of expansion of the nuclear industry argue that criminals and political extremists constitute a threat to nuclear facilities, that grave breaches of security have occurred in this country and abroad, and that considerable amounts of strategic nuclear material are unaccounted for. Adequate controls, they argue, cannot be provided without seriously threatening a democratic society. Nuclear proponents argue that such concerns are exaggerated. They point out that the US nuclear industry has functioned for over two decades without terrorist attacks, that no security breach has seriously endangered the public, and that all accountable nuclear material is still in the system. However, most of these people agree that better security is needed.

[redacted] Over the past decade, terrorists have taken aim at progressively more critical targets, and NATO planners are aware of terrorist capabilities to strike at TNF. NATO's Europe-wide state of alert, ordered by Brussels headquarters barely a month after Aldo Moro's assassination, was prompted by an explicit warning from West German security officials of possible terrorist plans for nuclear blackmail: raids on storage sites, hijacking of raw materials, occupation of nuclear plants, or kidnapping of NATO nuclear specialists, to name a few possibilities.

[redacted] To date there have been no terrorist attempts to obtain nuclear weapons. A great deal of contemporary research on terrorism is concerned with this likelihood, however. The possiblity that criminals, political extremists, or individual lunatics might steal a nuclear weapon from a storage site has generated increasing public attention and concern. The worldwide attention that possession of even a small nuclear weapon would bring must have been considered by some terrorist organizations. The plausibility of a terrorist-posed nuclear threat is central to the current national and international debates on nuclear energy. If the Three Mile Island nuclear reactor incident could hold the headlines for an extended period of time, though there were no casualties, what could a terrorist threat to detonate a nuclear weapon accomplish?

[redacted]

[redacted]

[redacted] The primary attraction to terrorists is not necessarily the fact that nuclear weapons could enable them to cause mass casualties, but rather that any terrorist action associated with the words "atomic" or "nuclear" automatically generates fear in the public's mind. Nuclear power, whether in the form of peaceful energy or weapons, is the most potent and, to many people, the most sinister force known to mankind. Any terrorist action associated with nuclear energy or weapons would be assured of widespread publicity. It would instill fear and create alarm, which is precisely what terrorists hope to achieve. Incidents in which terrorists have deliberately tried to kill large numbers of people or cause widespread damage are relatively rare. Terrorists generally prefer to create spectacular media events rather than mass casualties. This may explain why many terrorist groups have not used chemical, bacteriological, or conventional explosives in ways that would produce mass casualties.

[redacted] As there have been few incidents concerning nuclear facilities, and none involving terrorists, the closest analogies to nuclear theft have been armed robberies carried out by well-organized teams of thieves with specialized ski s and equipment, terrorist seizures of buildings, small commando raids on defended targets, industrial sabotage and symbolic bombings. Unfortunately, terrorists have an unusually good record of success in such operations. While most common criminals are not successful, terrorists succeed in most of their operations and have a success rate of about 95 percent in their kidnapping attempts.

[redacted] The problems associated with breaching a nuclear weapons storage site are largely a matter of tactics. It is no longer implausible that political extremists might attack a nuclear storage site. It could be done if they possess the necessary weapons and training and are willing to take the risks. Given the support offered by radical Arab states or by other terrorist groups, political extremists today can acquire the necessary resources.

[redacted]

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[redacted] Indeed, almost any type of terrorist activity is more likely to succeed than an attempt to steal a nuclear weapon. Moreover, if the ultimate objective for the terrorist group is to gain possession of a nuclear weapon to threaten or to use for bargaining, then the group would have to steal the delivery means (whether it be an artillery piece, missile launcher, etc.). as well as the release mechanism such as the PAL in order to present a credible threat. In all, this would appear to be a highly improbable--if not impossible--mission for even the best-equipped and most highly-trained terrorist units.

[redacted] The actual theft of a nuclear weapon from a NATO storage site is probably considered by some extremist groups to be the "grand slam" of terrorist operations, but a terrorist group may seek a less ambitious objective. Such an objective could be a hit-and-run type of commando attack on a TNF installation, followed by an anti-nuclear or anti-NATO media barrage. Another objective could be the capture and physical occupation of a storage site, perhaps leading to an attempt to destroy some weapons at the site. In either case, the media would be sure to respond with compelling attention; this, in turn, could trigger the public hysteria which the terrorists probably desire. To a terrified public such an attack still could be construed as "nuclear blackmail".

[redacted] Recent terrorist activity trends further indicate that some groups probably would aim their sights lower than an actual theft of a nuclear weapon. Most terrorist activities in 1977, for example, were not of the spectacular, high-risk, or technologically sophisticated variety. Instead, most were low-risk endeavors such as bombings, arson, and murder. In effect, terrorist groups appeared more willing than before to select operations which stood a fairly high chance of success. This would suggest that well-protected TNF targets probably would not be as susceptible to terrorist attack as would be comparatively small storage sites.

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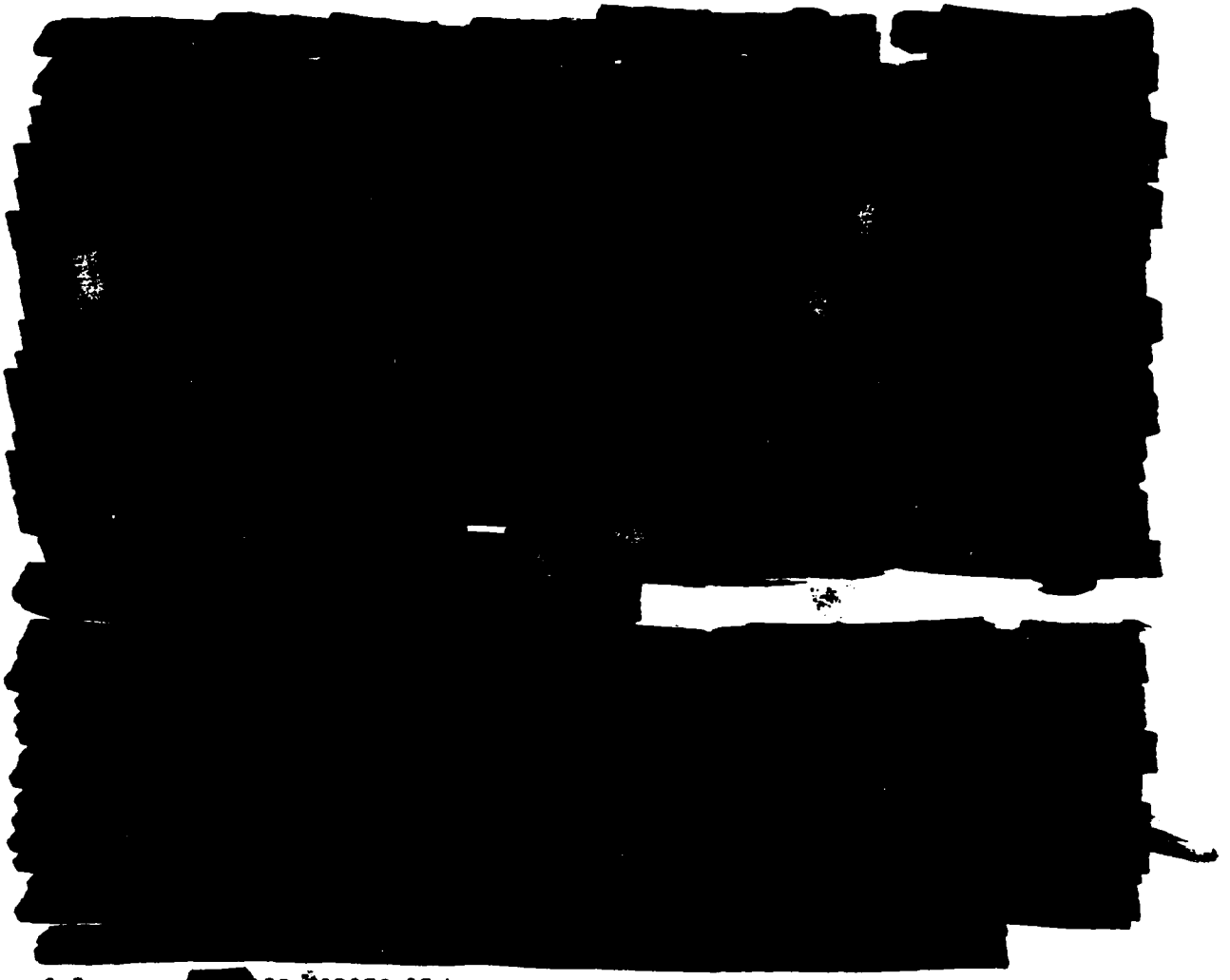

2.5 [redacted] AIR FORCES 15/

2.5.1 [redacted] Overview

[redacted] The Soviet Front commander, in addition to ground forces under his command, always has at least one air army subordinate to him. This air army, also referred to as frontal aviation forces, is augmented, when

15. [redacted] The primary sources for this section are technical reports prepared for DIA by USAF's Foreign Technology Division (FTD). These sources are all listed in the table of references at the back of this report. Order-of-battle (OB) information on bomber aircraft was taken from the THEATER AIR WARFARE STUDY (U) by Air War College, SECRET/NF. Similar information on tactical aircraft was obtained from a semi-annual OB table generated by CIA's Office of Strategic Research (OSR).

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required to accomplish specific Front objectives, by elements of Long Range Aviation (LRA). LRA is a subordinate command of the Soviet Air Force.

[redacted] Frontal Aviation forces include helicopters, fighters, fighter-bombers and support aircraft. LRA is composed primarily of medium and heavy bombers. Figure 2-28 shows disposition of Soviet aircraft in East Germany.

[redacted]

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2.6 [redacted] AIRBORNE FORCES

2.6.1 [redacted] Overview

[redacted]

[redacted] Soviet airborne forces pose a threat to NATO TNF in any future conflict. Soviet doctrine clearly states that airborne troops may be employed against nuclear forces: "In the last war, airborne troops were used chiefly for support of ground troops in defeating enemy groupings, while now they must also perform independently such missions as capture and retention or destruction of nuclear missile, air force, and naval bases, and other important objectives deep within the theaters of military operations." 17/

[redacted] While the Soviet airborne capability is indeed impressive, it is unlikely that their transport aircraft would be able to penetrate NATO airspaces unscathed, especially in the early days of a conflict. The loss of a single transport bearing airborne forces would be a significant one. In order to ensure a high probability of success for airborne troops, Soviet aviation must markedly degrade NATO air defense during initial strikes. Another potential capability limitation which must be considered is the demand on aerial logistics support.

[redacted]

17. [redacted] Sokolovskiy, V. D., Marshal. MILITARY STRATEGY Third Edition. Moscow: 1968, p. 293.

[redacted]

[redacted]

[redacted]

Strategic airborne assault operations may involve one or more airborne divisions. Strategic objectives may be at considerable depth and could include seizure of air bases, seaports, or other targets vital to the success of theater operations. Over the past decade, the Soviets have demonstrated the ability to drop an entire division. Division-sized units were dropped in the Dvina maneuvers (1970) and in the exercise Yug (1971).

[redacted] Operational airborne assault operations involve up to division-size forces (though more commonly regimental-size forces) up to depths of 300 kilometers in support of a Front offensive. Potential missions include destroying enemy nuclear delivery means, securing bridgeheads, airlanding on river crossing sites, seizing other key terrain, leap-frogging contaminated areas to exploit the results of nuclear strikes, and encircling enemy forces.

[redacted] Tactical airborne assault operations involve regimental to battalion-sized units against forward-deployed enemy forces. Tactical missions are essentially the same as operational missions, but the size of the force and the depth of deployment are reduced.

[redacted] Special purpose airborne assault operations are conducted by company-sized or smaller airborne forces organized as reconnaissance or raid groups. Likely missions include reconnaissance and other intelligence collection, destruction of nuclear delivery or nuclear storage means, disruption of C^3 and logistics sites, and general rear-area harrassment.

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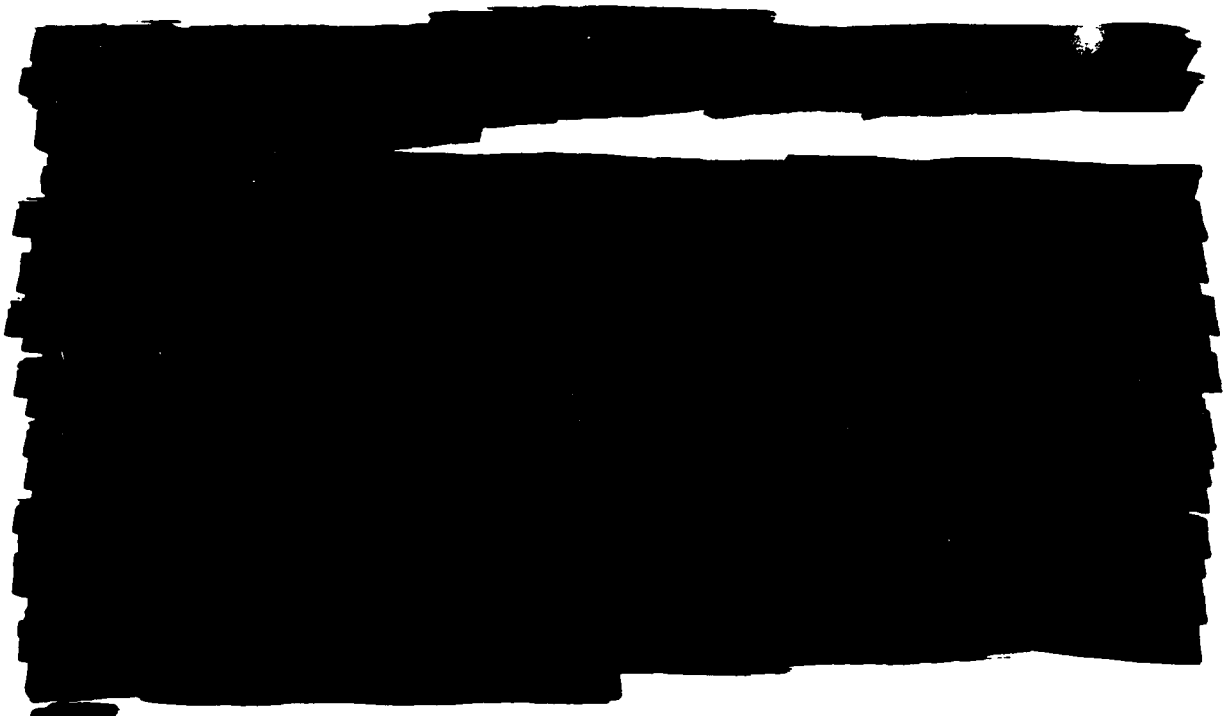

[redacted]

The airborne divisions each have three regiments of about 2,000 men. Total strength of each airborne division, including artillery and support personnel, is about 8,500 men. Airborne divisions have SAGGER and SWATTER ATGMs, RPG grenade launchers, and a fairly good air defense capability with ZSU-23-4 AAA guns and SA-7 SAMs. Although airborne troops are essentially foot-mobile once dropped or landed, they have air-droppable UAZ-69 jeeps, GAZ-66 trucks, BRDM reconnaissance vehicles, and BMD armored fighting vehicles, which have replaced ASU-57 and ASU-85 self-propelled guns.18/

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18. [redacted] See USAITAD, SOVIET ARMY OPERATIONS for a description of the TO&E of airborne divisions.

[redacted]

[redacted]

2.6.4 [redacted] Principles of the Parachute Assault

[redacted]

Command, Control and Reconnaissance. Extensive planning and coordination are necessary between the control headquarters, the airborne force, and supporting aviation in order to integrate the airborne assault into other forces' plans and operations and to ensure fire support, reconnaissance, air defense, and other support.

[redacted] At the airborne unit level, preparation for the operations may include planning sessions and briefings, using terrain mockups, aerial photographs, or sketch maps. A typical order by an airborne commander will include the plan of action on the drop zone (DZ), the units designated for defense of the DZ, reconnaissance missions, the direction of attack, company missions, and employment of antitank and antiaircraft weapons.

[redacted]

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[redacted] The detailed planning of airborne operations requires intensive reconnaissance before the assault. The following are objectives of specific reconnaissance missions: selection of suitable primary and alternate DZs; determination of the nature, composition, and strength of enemy forces in or near the DZ area; and determination of terrain, condition of the road network, and of obstacles in the planned area of operations.

[redacted] Reconnaissance is primarily carried out by air. Clandestine agents, long range patrols, and air-dropped reconnaissance teams may also be used. Reconnaissance activities to deceive NATO defenders may be conducted outside the area of proposed operations (including dropping of parachutist teams.)

[redacted] Flight routes are selected to avoid enemy SAM/AAA units and air defense interceptors and to reach the objective(s) as quickly as feasible. If the commander of an airborne regiment, or higher unit, enroute to assigned DZs receives information that the situation near the DZs has changed to endanger his mission, he may switch to one of the alternate DZs. His decision is reported to the next higher commander without delay.

[redacted]

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[redacted]

[redacted] Available Soviet tactical airlift capability places distinct limitations on the use of airborne forces. This capability is sufficient to airlift the assault elements of two airborne divisions in a single lift.

2.7 [redacted] GROUND FORCES

2.7.1 [redacted] Overview

[redacted] The Soviet Front commander, through his subordinate armies and divisions and his own organic support forces, has three types of SSM and a large range of artillery weapons of assorted calibers, both towed and self-propelled, available to threaten the NATO TNF. Figure 2-32 portrays the basic subordination of Soviet SSMs and artillery.

[redacted]

2.7.2 [redacted] Surface-to-Surface Missiles 20/

[redacted] Figure 2-33 illustrates comparative maximum ranges of Soviet SSMs from selected garrisons in East Germany and Western USSR which directly threaten the NATO TNF. Descriptions and capabilities of these systems are given below.

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20. [redacted] Key sources of information on Soviet SSMs are a PSR (Pacific-Sierra Research Corp.) study entitled ASSESSING THE CONVENTIONAL THREAT TO NATO THEATER NUCLEAR FORCES (U), SECRET/NFD/FRD; ODDR&E, A COMPARISON OF U.S. AND SOVIET TACTICAL NUCLEAR WEAPONS SYSTEMS (U), SECRET, and DIAs BALLISTIC MISSILE SYSTEMS (TRENDS)-USSR (U), SECRET.

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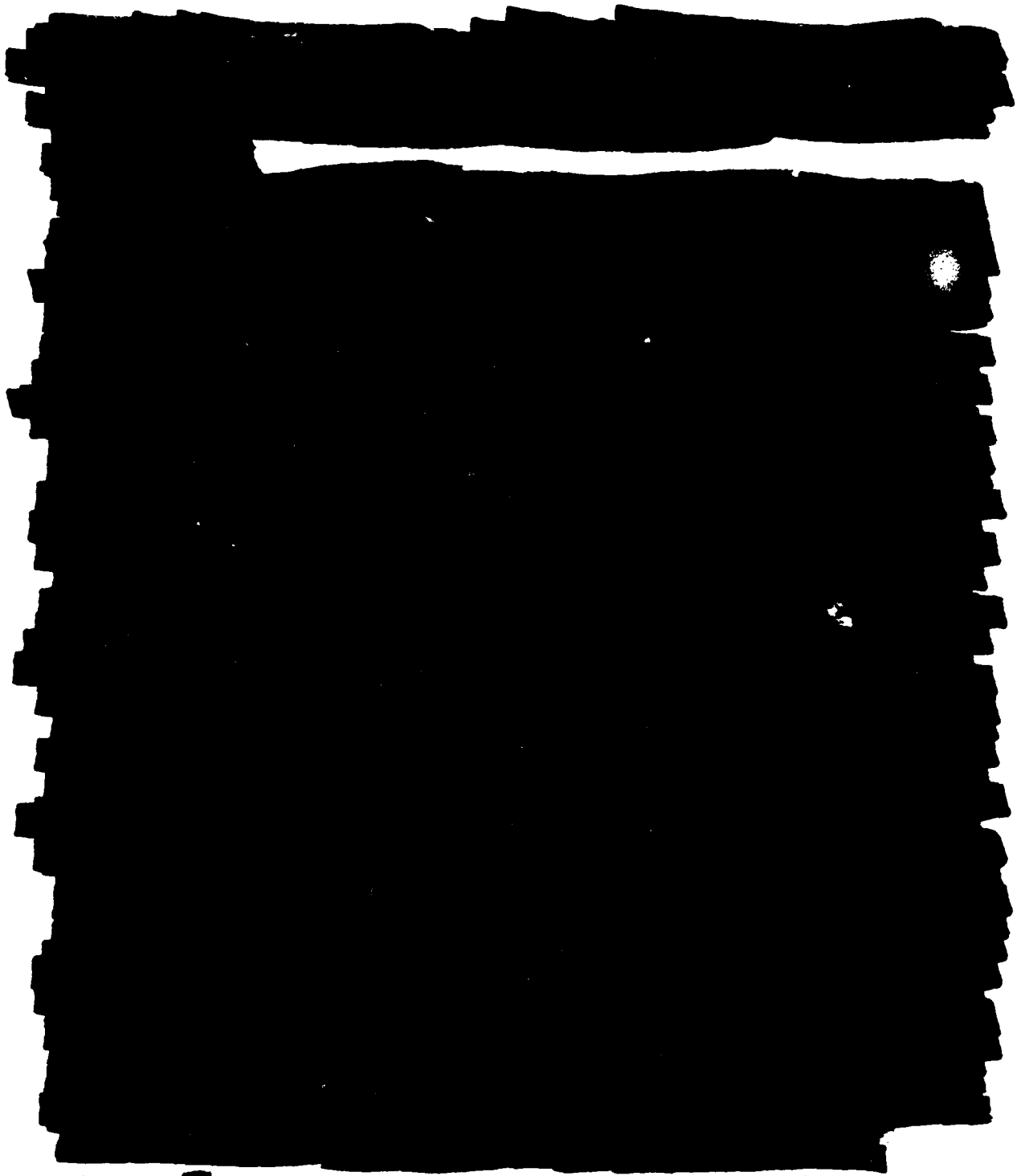

2.7.3.8 [redacted] Summary. Figure 2-36 summarizes the capabilities of the primary artillery threats to NATO TNF.

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2.8 [redacted] MARGINAL SOVIET/WARSAW PACT THREATS TO NATO TNF

2.8.1 [redacted] Overview

[redacted] The systems described below, through range limitations, deployments, or age, are considered more of a direct threat to NATO conventional forces than to the TNF. However, the battle situation, at some point in time, may expose the TNF to some of these systems.

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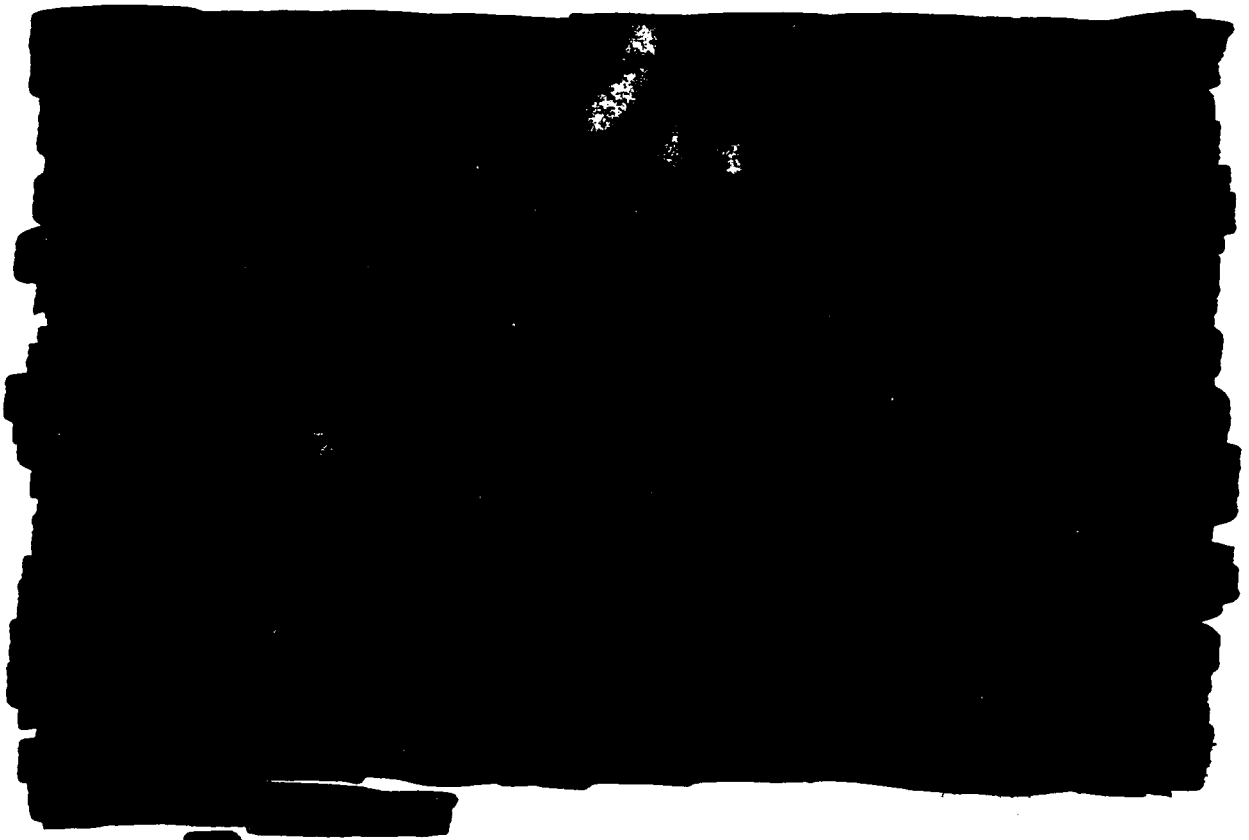

2.8.3.2 [redacted] Other Multiple Rocket Launchers. In addition to the BM-21 and RM-70, Warsaw Pact forces may employ older, less sophisticated MRLs. Depending on the tactical situation, these other MRLs may also be marginal threats to TNF, for massive rocket barrages have long been an integral part of Warsaw Pact offensive doctrine. The 140mm, 16-tube BM-14 is found in Soviet airborne units and with other Warsaw Pact forces; it is a towed system with a maximum range of 9.8 km. The 240mm, 12-tube BM-24 is used by several Pact forces; it usually is mounted on a ZIL-157 truck chassis or an AT-S tracked vehicle and has a maximum range of 10.2 km.

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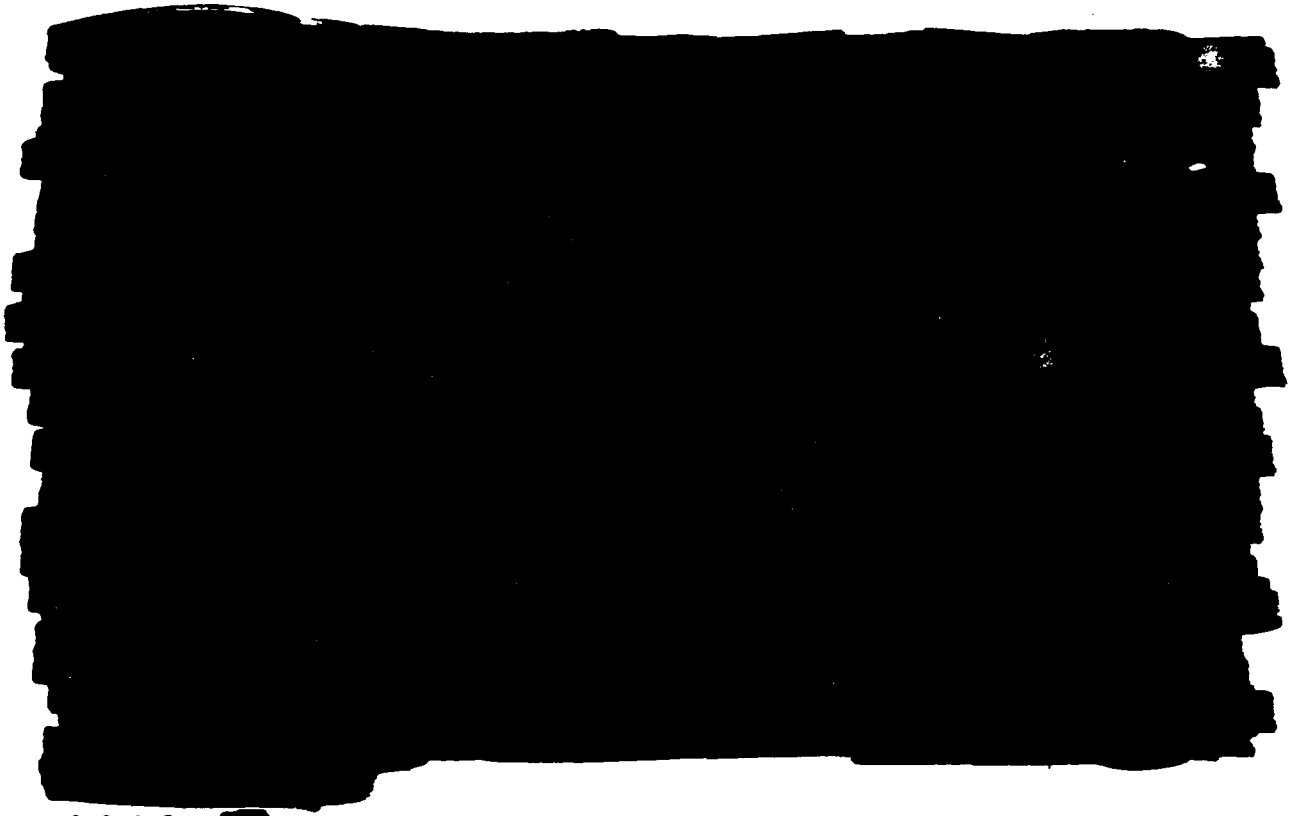
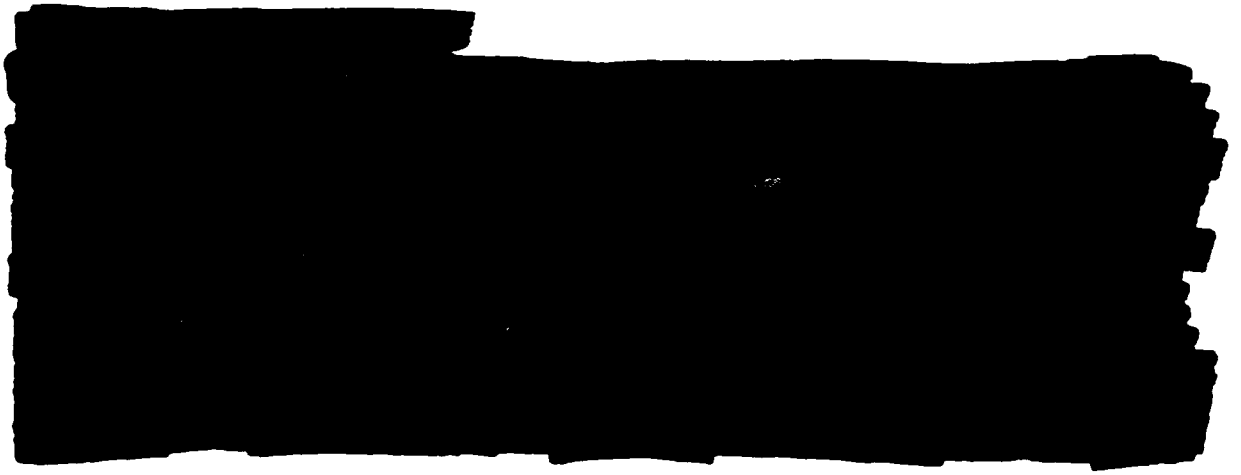


2.8.3.5 [redacted] 122mm Field Gun D-74. The D-74 was also first observed in 1955 and may still be serving with some WP units in Central Europe. It has one of the longest ranges of any Soviet-built artillery pieces -- about 24 km. A distinctive feature of the D-74 is its circular firing jack, which allows the gun to be swung in a 360° arc without changing its firing position.



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2.8.4.2 Ballistic Missile Submarines. Of the various missile submarines in the Soviet inventory, the ones most likely to be used against targets in Europe would be the obsolescent Golf-class diesel boats. First built in 1958, the G-class is the only Soviet SSB (diesel powered ballistic missile submarine). Some 20 remain in service, eleven G-II models with three SS-N-5 SLBMs each (1,210 km range) and nine G-I models with three SS-N-4 SLBMs each (565 km range). Both SLBM models carry a single 1-2 megaton warhead. These submarines are not considered "strategic" launcher systems under the terms of the SALT (Interim) Agreement.

[redacted] Since 1976, six G-class submarines have been deployed in the Baltic Sea, the first ballistic missile submarines to operate there. Their wartime mission can only be to strike critical NATO targets. Firing from a submarine near a Soviet base such as Liepaja, the SS-N-5 SLBM can reach almost any TNF target in the FRG. In addition, in the Soviet Northern Fleet there are four H-II SSBNs (Nuclear Powered) carrying the SS-N-5 missile. These, too, are likely candidates for attacking peripheral "operational-strategic" targets.

[redacted] Because of the continuing introduction of long-range Delta-class submarines, older classes of Soviet ballistic missile submarines (SSBNs), such as H-class boats, could eventually become available for missions other than strikes against the US. Such other missions might include strikes against theater targets in Europe or in China. At present, however, only the G-class submarines appear to threaten NATO TNF.

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SECTION 3

SOVIET/WARSAW PACT THREATS AGAINST NATO TNF SYSTEMS

3.1 GENERAL

This section outlines NATO TNF systems, provides a brief explanation as to why these systems would be attacked, and presents the operational attack modes that the Soviet/Warsaw Pact could employ against these elements.

NATO TNF elements addressed include nuclear-capable airfields, the Ground Launched Cruise Missile (GLCM), the PERSHING missile system, the LANCE missile system, nuclear-capable cannon artillery systems, the NIKE HERCULES air defense missile system, and nuclear weapons storage sites.

Soviet/Warsaw Pact operational attack modes include Special Operations (SO) teams, application of radioelectronic combat (REC), air attack, and ground attack. Detailed Soviet/Warsaw Pact force capabilities have been addressed previously in Section 2.

Specific applications selected from this section are employed in the scenarios developed later in this report.

3.2 NUCLEAR-CAPABLE AIRFIELDS

3.2.1 Overview

Soviet military literature reflects the high regard which Warsaw Pact planners have for NATO tactical aviation forces.1/ These forces, according to doctrinal writings, pose the paramount threat to Pact maneuver units and are the major obstacle to these units attaining their wartime objectives. In view of the importance credited to NATO tactical aviation, nuclear-capable airfields in Western Europe stand among the highest priority TNF targets. Nuclear-capable airfields and associated storage sites located in the Central Region are shown in Figure 3-1.

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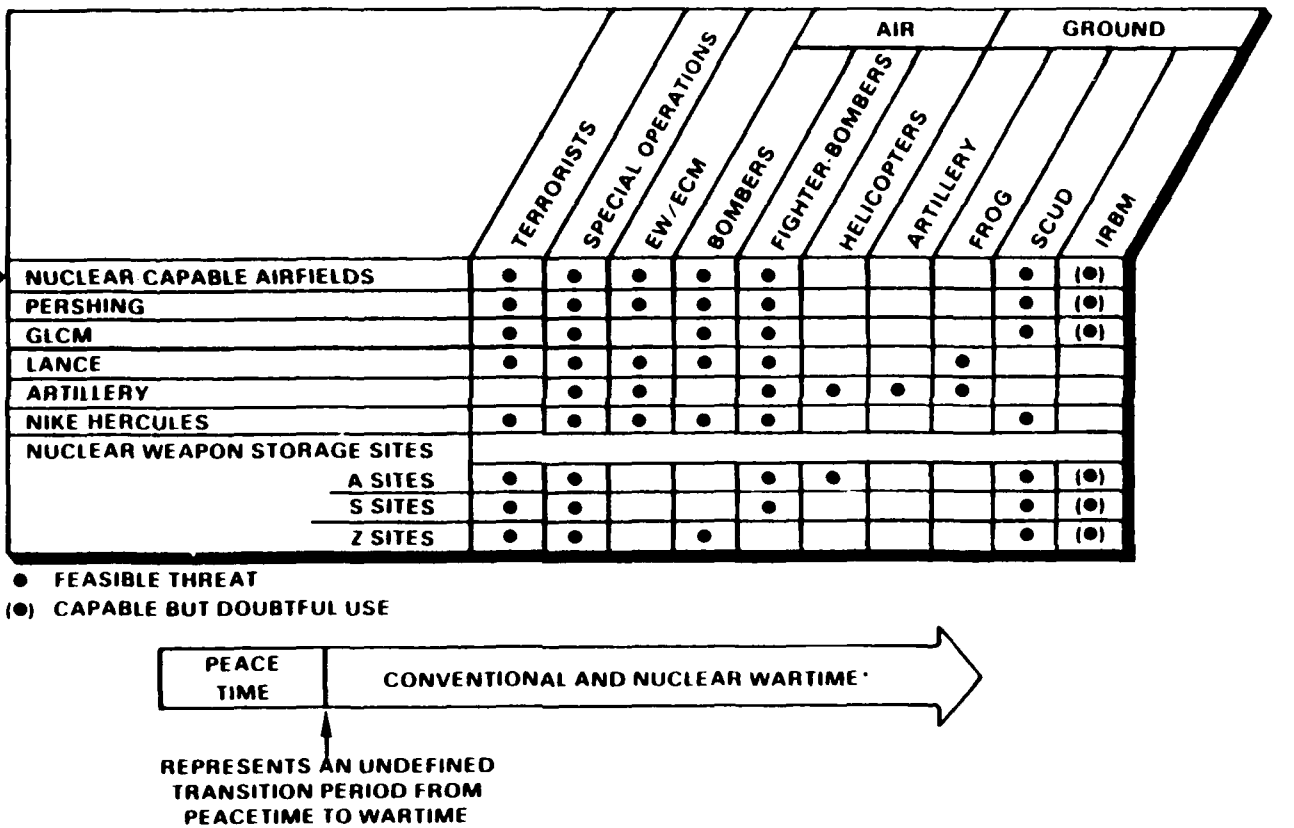

[redacted] Figure 3-2. Threats to nuclear-capable airfields.

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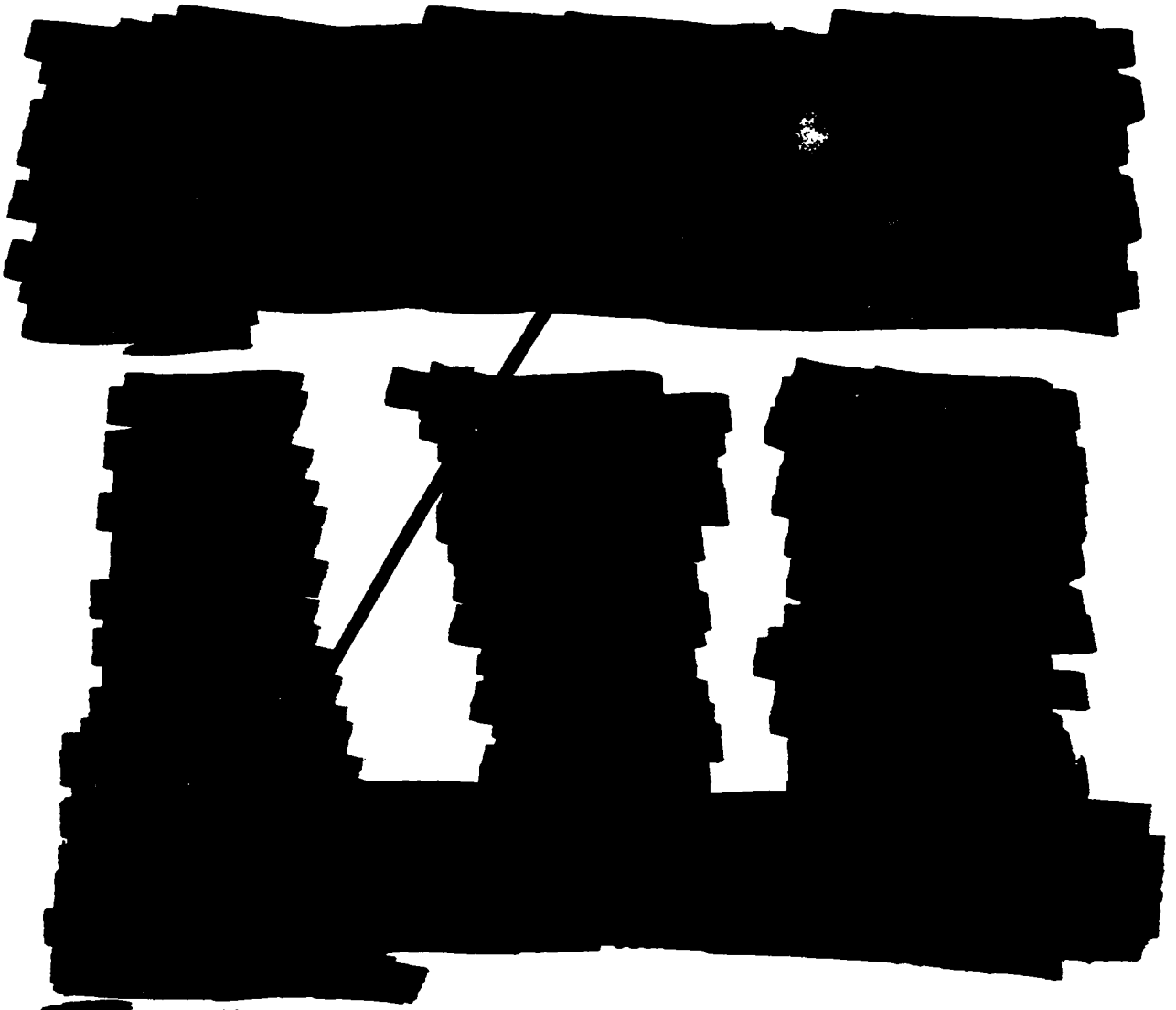

MOB-based GLCM units are expected to receive a level of security protection equal to that currently provided to aircraft at USAFE MOBs. QRA flights would receive extra security commensurate with that provided QRA aircraft. When deployed, perimeter security would approximate that provided PERSHING units in the field. Exact procedures have not yet been determined, but in the UK 220 military personnel from the British armed forces will be assigned to assist US forces in guarding the bases which house the GLCM.

Figure 3-3 depicts the expected threats to GLCM. It is not clear at this time what EW/ECM threats would be applied against GLCM.

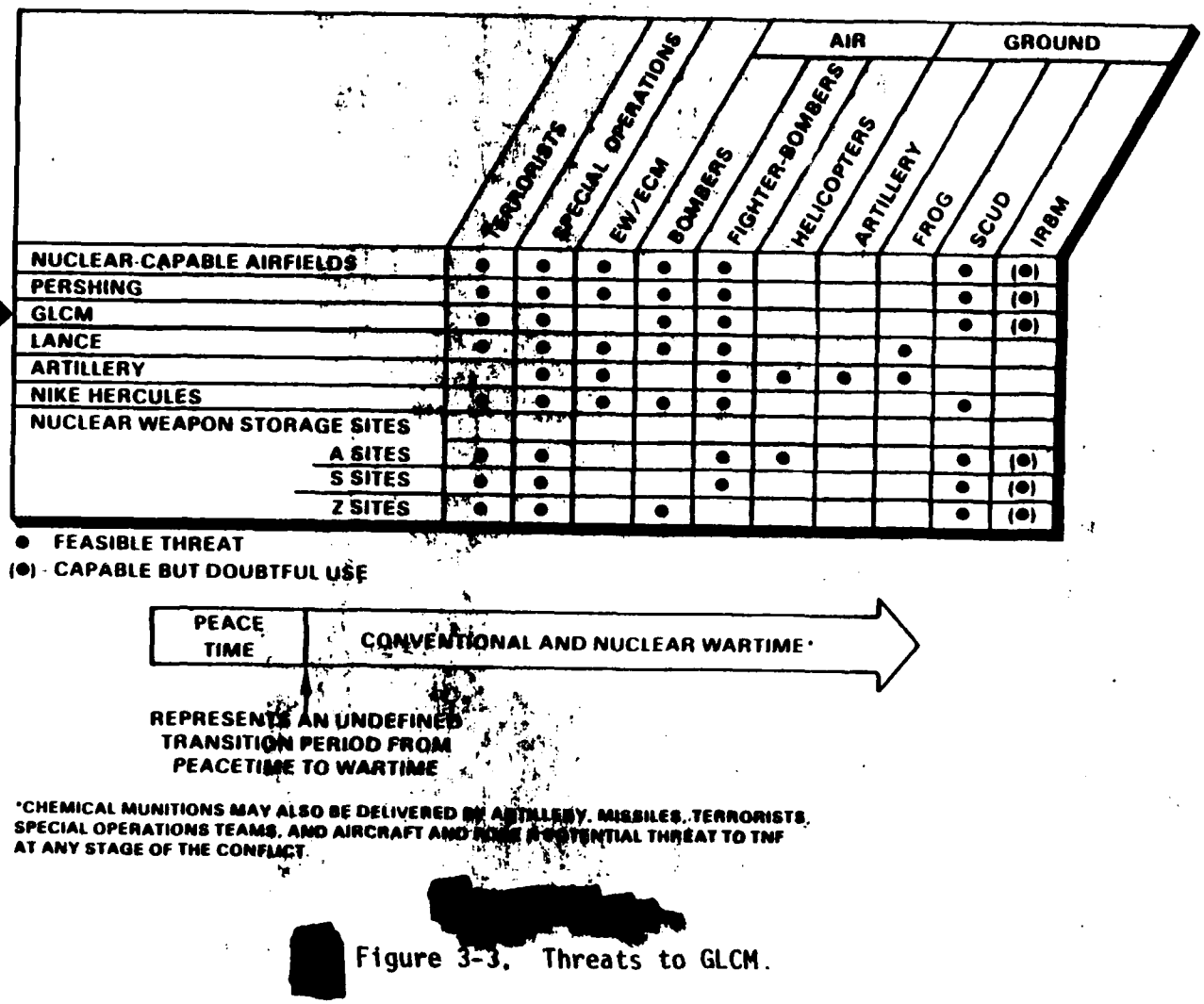

Figure 3-3. Threats to GLCM.

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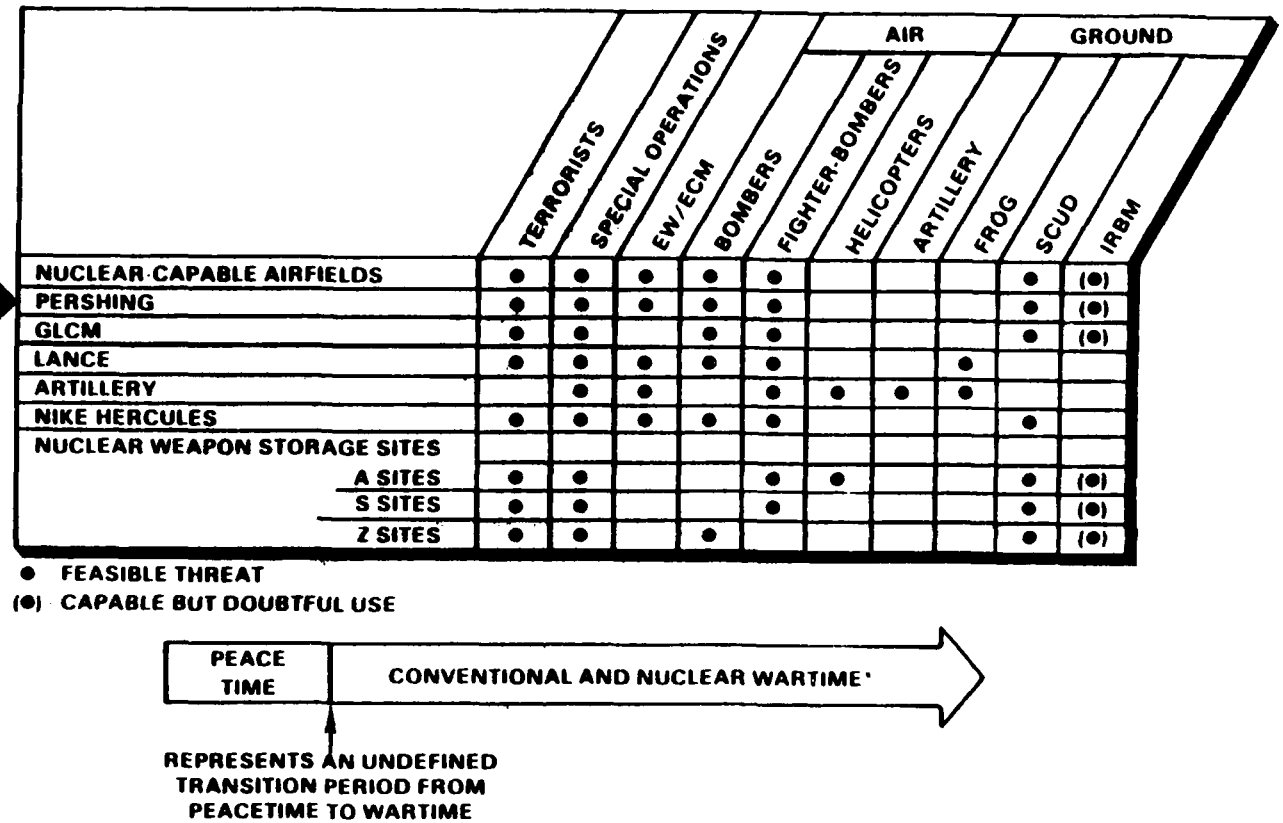

(U) *CHEMICAL MUNITIONS MAY ALSO BE DELIVERED BY ARTILLERY, MISSILES, TERRORISTS, SPECIAL OPERATIONS TEAMS, AND AIRCRAFT AND POSE A POTENTIAL THREAT TO TNF AT ANY STAGE OF THE CONFLICT.

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[redacted] Figure 3-5. Threats to PERSHING.

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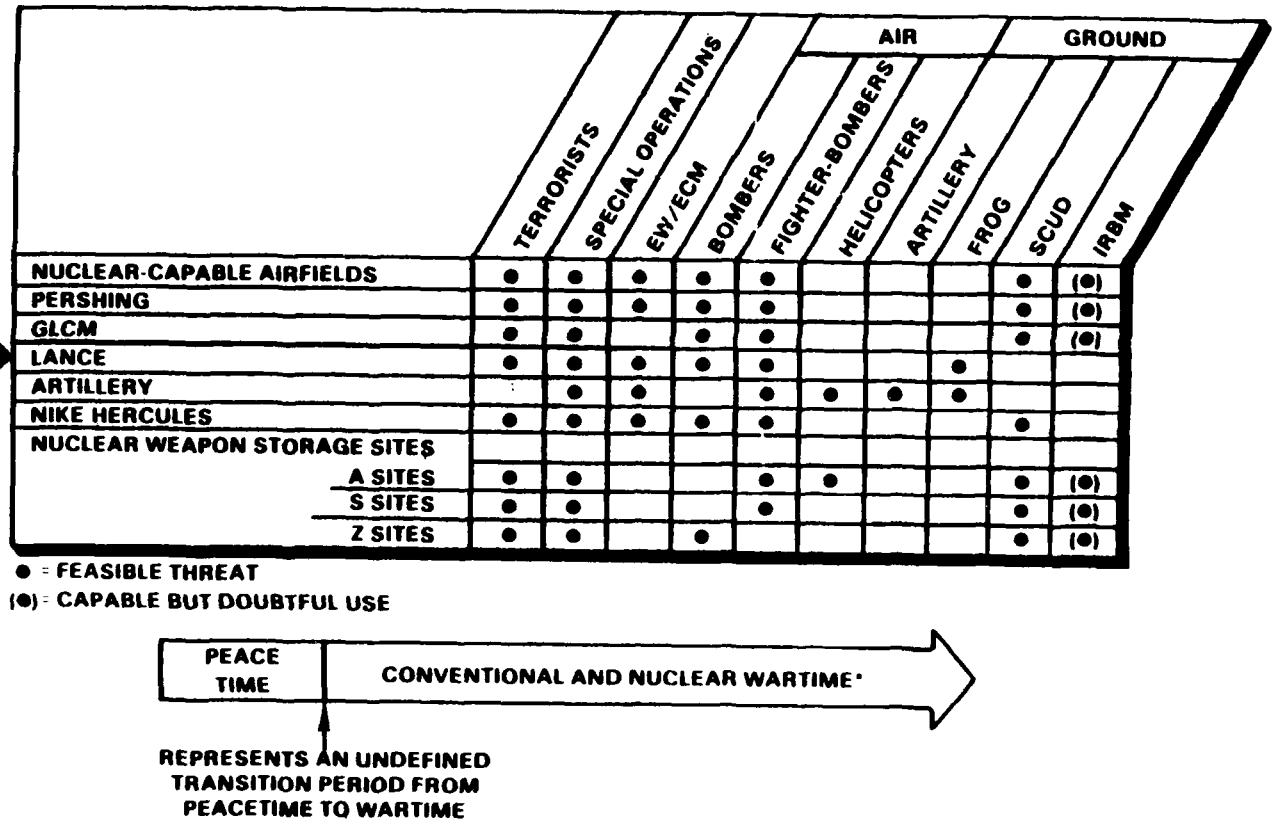

(U) *CHEMICAL MUNITIONS MAY ALSO BE DELIVERED BY ARTILLERY, MISSILES, TERRORISTS, SPECIAL OPERATIONS TEAMS, AND AIRCRAFT AND POSE A POTENTIAL THREAT TO TNF AT ANY STAGE OF THE CONFLICT.

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Figure 3-7. Threats to LANCE.

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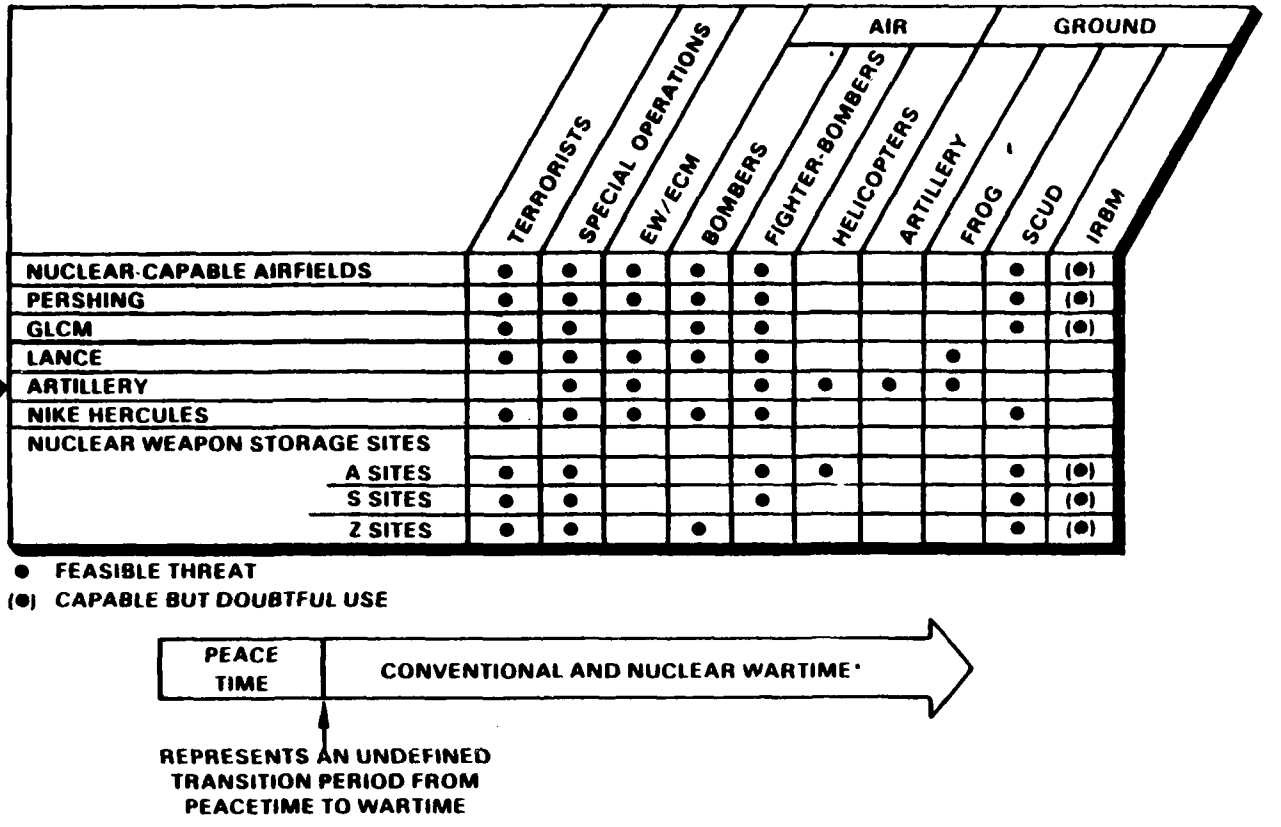

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Figure 3-8. Threats to artillery.

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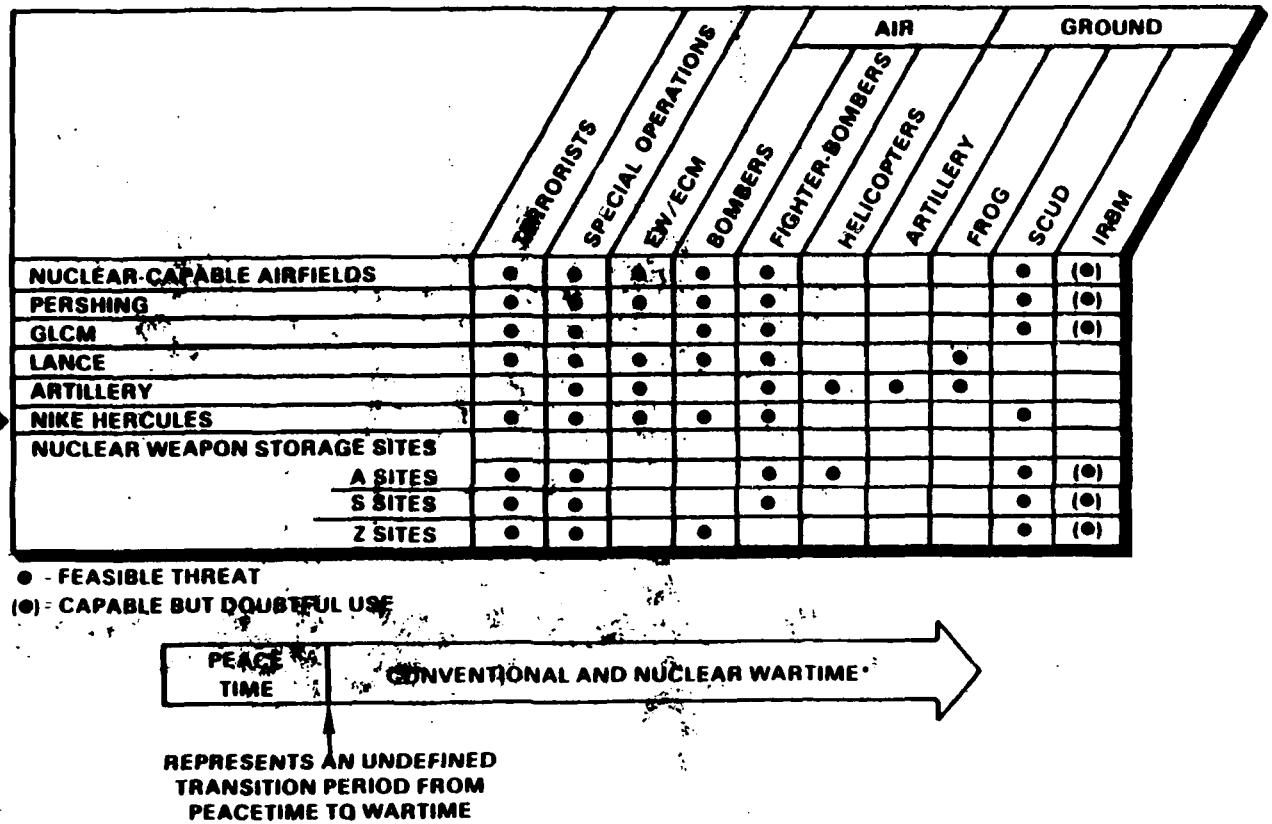

(U)*CHEMICAL MUNITIONS MAY ALSO BE DELIVERED BY ARTILLERY, MISSILES, TERRORISTS, SPECIAL OPERATIONS TEAMS, AND AIRCRAFT AND POSE A POTENTIAL THREAT TO TNF AT ANY STAGE OF THE CONFLICT.

Figure 3-12. Threats to NIKE HERCULES.

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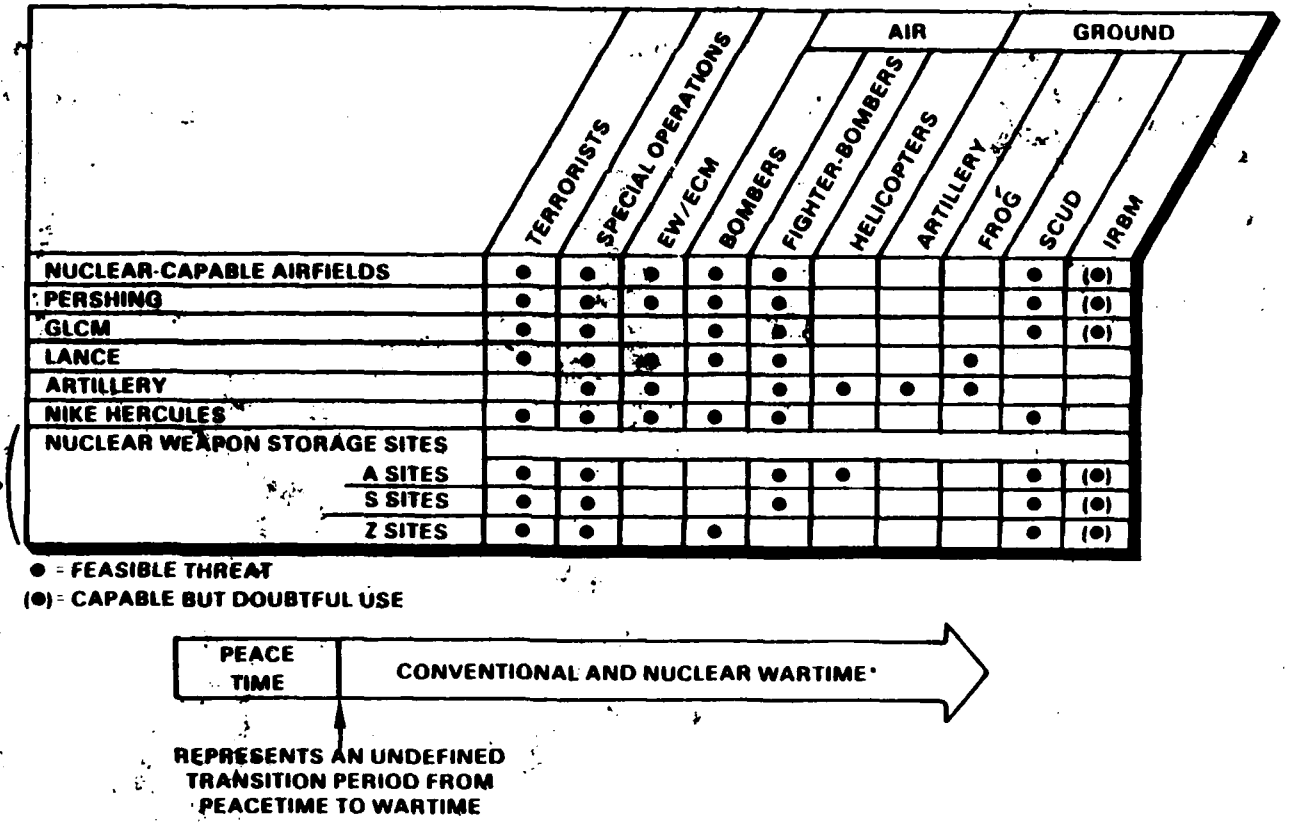

(U) *CHEMICAL MUNITIONS MAY ALSO BE DELIVERED BY ARTILLERY, MISSILES, TERRORISTS, SPECIAL OPERATIONS TEAMS, AND AIRCRAFT AND POSE A POTENTIAL THREAT TO TNF AT ANY STAGE OF THE CONFLICT.

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[redacted] Figure 3-16. Threats to nuclear weapon storage sites.

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SECTION 4

[redacted] WARSAW PACT ATTACK SCENARIOS

4.1 [redacted] WARSAW PACT ATTACK CHARACTERISTICS AND OBJECTIVES

4.1.1 [redacted] Introduction

[redacted] The purpose of this section is to establish for the reader how the Warsaw Pact would employ its ground and air attack assets against NATO TNF in order to capture strategically located objectives along the North Sea coast and the French border. To accomplish the purpose, three Warsaw Pact attack scenarios will be developed which will illuminate differences in tactics that might be employed against NATO under differing conditions. Implicit in understanding the development of these scenarios is the fact that there are players and conditions which will remain the same throughout the scenarios. The second purpose of this section is to identify those aspects of the attacking Warsaw Pact forces which do not change as a result of the mobilization times considered.

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