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Defence Operational Analysis Establishment

MEMORANDUM 7108

Land Battle in the Central Region of ACE

Tactical Nuclear Weapon Requirements and Effects

(Title: Unclassified)

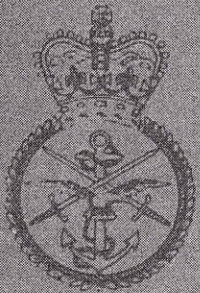
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DEFENCE OPERATIONAL ANALYSIS ESTABLISHMENT
MEMORANDUM 7108

LAND BATTLE IN THE CENTRAL REGION OF ACE
TACTICAL NUCLEAR WEAPON REQUIREMENTS AND EFFECTS

by

W.A. Lemmer

(The pages in this document are numbered
(i), (ii) and 1 to 32.)

This memorandum represents the author's
views, which are not necessarily those
of the Establishment.

Project 147
(Joint)

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Project in C.D.R.

Serial No. CR 748/80

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SUMMARY and CONCLUSIONS

S.1. This paper considers some of the consequences of introducing ground-to-ground tactical nuclear weapons into a land/air battle. The study formed part of the NATO Central Region Study, DOAE Project 147*, which was an analysis of land/air operations in the Central Region of Allied Command Europe (ACE).

S.2. The use of nuclear weapons was considered in the context of a general war in Europe. Estimates have been made of the number of tactical nuclear warheads needed by NATO to halt a Warsaw Pact (WP) attack in the Central Region of ACE for various times of nuclear release with no nuclear response by WP. Corresponding estimates for WP to defeat the NATO defence have also been made. An assessment has been made of the effect of a nuclear exchange on the course of a land/air battle. Estimates for various times of nuclear release have been made of the civilian casualties that would be likely to occur in a nuclear exchange between NATO and WP forces.

S.3. NATO required between 500 and 900 tactical nuclear weapons of various sizes to halt the conventional WP attack in the Central Region of ACE. The variation within this range depended on the time of nuclear release. These figures were calculated on the assumption that nuclear weapons were not used on reserve forces in the rear. For nuclear release times H+12 to H+36 the number of weapons needed increased as the WP committed more forces to the attack and for later nuclear release times, decreased as the WP force suffered casualties in the conventional battle. The yields of the tactical nuclear weapons needed were approximately 35% low yield, 45% medium yield, and 20% high yield.

S.4. NATO has the capability to deliver 550 weapons in a first salvo. Because the distribution of nuclear systems between Corps did not match the distribution of targets between Corps areas of responsibility, NATO could only make effective use of 390 to 450 weapons.

S.5. It could take 12 to 24 hours to deliver the number of weapons required in Paragraph S.3 unless:

(a) 1(BE), 1(BR), and 2(GE) Corps receive additional support from systems such as SERGEANT;

or

(b) HONEST JOHNS are allowed to fire into adjacent Corps areas of responsibility.

* DOAE Report 7005; *Second Report on NATO Land /Air Studies* (TOP SECRET)

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(ii)

S.6. The WP forces required between 200 and 700 tactical nuclear weapons of various sizes to render the eight NATO Corps ineffective. The number of weapons within this range decreased as the time of nuclear release was delayed, because the longer the conventional battle lasted, the nearer the WP came to defeating the NATO forces by conventional arms. If the nuclear exchange had started after H+36, the WP could have rendered the NATO forces ineffective with one salvo, but up to a nuclear release time of H+36 they would have taken between six and twelve hours to deliver the required number of weapons.

S.7. The average military casualties per nuclear strike for NATO and WP derived from the analysis was 0.3 of a battle group.

S.8. In a nuclear battle in the Central Region of ACE where between 1100 and 1400 nuclear weapons were used and

- (a) there was no evacuation of civilians
- and
- (b) nuclear strikes were assumed to avoid large towns

there would be approximately 1,000,000 civilian casualties in a population at risk of approximately 7,000,000. On average, 800 casualties would result from each nuclear strike.

S.9. If only the arithmetical aspects of the battle are considered, then under the assumptions made in the analysis:

- (a) NATO forces in the battle area would be in a worse position after a nuclear exchange than before it.
- (b) NATO forces would be in a worse position after a nuclear exchange than if the battle had continued with conventional weapons.

Thus the use of nuclear weapons under the circumstances described in this paper is not to NATO's benefit.

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- Evaluation
- Nuclear
- Land
- Warfare
- Tactic
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- Civil
- Casualty

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DOAE Memorandum 7108; *Land Battle in the Central Region of ACE - Tactical Nuclear Weapon Requirements and Effects*; by A. Lemmer

Tactical nuclear weapons have been imposed on conventional land warfare situations derived from the DOAE Central Front Game.

Estimations have been made of:

- (a) The number of warheads required to halt a Warsaw Pact attack in the Central Region of ACE, and to render NATO defences ineffective.
- (b) The civilian casualties likely to occur in a tactical nuclear weapon exchange.

An assessment has been made of the effect of a tactical nuclear weapon exchange on the course of a land/air battle.

KEYWORDS

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Land
Warfare
Tactic
Weapons
Military
Civil
Casualty

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