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CIVIL DEFENCE COMMITTEE

BLACKOUT AND CAMOUFLAGE

Note by the Secretary

Attached is the Greek Delegation's reply to  
Questionnaire AC/23(CD)-D/6 on "Blackout and Camouflage".

(Signed) P. ANNINOS

Palais de Chaillot,  
Paris, XVIe.

BLACKOUT AND CAMOUFLAGE

I. BLACKOUT DURING THE LAST WAR

Security lighting (Permanent reduction in intensity).

1. Street lighting: Blue painted lamps, lower-voltage lamps, masked lamps and total extinction, where possible, were used in Greece during the war. Lighting should be invisible to aircraft flying at 500 m.

2. Traffic lights, lights on obstructions, street shelters etc. were masked or reduced (coloured bulbs, luminous and white paint).

3. Lights on vehicles: In Greece vehicles were allowed to use masked lights of a special type (small bulbs covered by a black piece of waterproof material with a slit in the middle).

4. Lights inside buildings: No light displayed inside a building was permitted to be visible from any outside point (windows etc. were covered and the light intensity reduced).

5. Exterior lighting for docks, marshalling yards etc. Lighting restrictions were imposed in such a way as to make possible work and circulation. In harbours lamps were masked and the ground painted black in order to prevent reflection. Extinction of shipping lights was imposed. Relaxation of lighting restrictions was allowed inside marshalling yards etc.; windows and openings were carefully covered to prevent light being visible from outside.

In industrial premises lighting was reduced and special masked lamps were placed near each machine.

II. EMERGENCY LIGHTING (total extinction of all but absolutely essential lights on receipt of a warning). Masked blue paint lamps were allowed only on street shelters, hospitals, railway stations, obstructions etc. Lighting should be invisible to aircraft flying at 150 m. The ground under the lamps was painted black in order to prevent reflection.

Effect on war production etc.

The effect of security and emergency blackout on war production and transport has been negligible.

Effect on morale.

The blackout had no bad effect on the morale of the population.

III. BLACKOUT IN RELATION TO THE EVOLUTION OF THE AEROPLANE

A blackout system enforced with success during the last war is not affected by:

(a) the increased speed and new climbing capacity of aircraft;

- (b) the progress made in the perfection of radar equipment;
- (c) on the other hand, the location of targets by the enemy pilot is still difficult in spite of the perfected instruments;
- (d) difficulties regarding supplies of blackout material would not prevent the enforcement of some improvised system of blackout. Of course, during the first 48 hours of operations the blackout may be very unsatisfactory. If war came in Greece before the necessary materials were available, blackout could not be enforced at least during the first days of hostilities.

IV. ALTERNATIVE METHODS OF BLACKOUT COMPATIBLE WITH WAR PRODUCTION, TRANSPORTS AND CIVILIAN MORALE. It would be advisable to set up an ad hoc committee to study and recommend new methods of blackout compatible with modern aircraft, intensive war production etc. In the meantime, we study in Greece practical means making possible the separation of lighting circuits from power circuits in the main cities. Special lighting circuits and portable lights are under study for use in ports and docks.

V. MAIN PRINCIPLES OF FUTURE BLACKOUT POLICY. A blackout as complete and widespread as possible should be enforced. General principles set forth in Chapter I, paragraph I should be applied. Light and reflection should be invisible to aircraft flying at 500 m. in order to render difficult detection of targets. In the case of mountainous and hilly countries like Greece blackout will hinder enemy planes from flying very low at night.

VI. RESTRICTIONS TO BE ENFORCED IN SPECIFIC CASES

- (a) Detailed restrictions for street lighting as set forth in Chapter I, paragraph (a) should be re-imposed in future war. Blue and red lights located on pavements in main streets, obstructions of any kind could facilitate traffic during emergency lighting.
- (b), (c) In general, the same system of blackout set forth above should be applied.
- (d) In important industrial premises special lighting circuits, switches etc. should be arranged, for security and emergency blackout.
- (e) As above.
- (f) Special lighting switches making possible absolute blackout in docks, where no work is done, on the receipt of an emergency warning.
- (g) The problem is still under study.

VII. STOCKPILING OF BLACKOUT MATERIALS

In spite of the existing difficulties in blackout materials, due to the extremely strained defence budget, blackout exercises carried out on 1st December (1952) in Greece proved rather successful.

Stockpiling being not envisaged under present financial circumstances, an inventory of the existing materials in the free market is now in process of elaboration. On the other hand, blackout expenses for private buildings are borne by the tenants. The question whether they will be invited to proceed as now to the stockpiling of the necessary materials, is still under consideration.

VIII. QUESTIONS FOR THE ALLIED MILITARY STAFF

- (a) What are the latest devices installed in aircraft for detecting and observing targets?
- (b) What data are provided by the experience gained by Allied Air Forces and by information received from non-NATO Air Forces as regards the possibilities offered by such devices with special reference to the expediency of imposing a blackout?  
(This should be read in conjunction with the question (a).)
- (c) When navigational aids are essential in order to reach any given medium or small target, to what extent will blackout affect the efficiency of the enemy?
- (d) To what extent the heat flash from atomic bombs (of above level explosion) will affect the various types of blackout material?
- (e) What kind of blackout materials are recommended for covering windows and openings, proper to resist the effect of heat flash from atomic bombs.

IX. ALLIED CONVENTION ON BLACKOUT

Such a convention would be not only desirable but absolutely essential, provided that the particular circumstances and economic possibilities, existing in each contracting country, would be taken into account.

X. CAMOUFLAGE DEFINITION

A. Experience in World War II.

- 1. Measures of camouflage and decoy targets were imposed during World War II for industries, military depots and other installations and the main utilities.
- 2. (a) The methods mainly used included: nets, trees and bushes, uniform painting in the vicinity of the targets, prevention of glare, construction of horizontal net covers and fog-concealment.

- (b) They were used for industries, fuel depots, power stations, military depots, naval bases, coastal fortification, bridges.

3. The application of such measures proved satisfactory, except for fog concealment, due to the existing winds which make necessary the use of mobile fog sources.

B. Value of Camouflage in the Future.

1. Because of the high speed and altitude applied in strategic saturation bombing, it is not expected that camouflage of targets within cities will have any effect, except for targets to be used by the enemy for navigational purposes and for locating ground zero. At the same time defectuous camouflage of individual targets within cities may rather give them away.

Camouflage, decoy and dummy targets should therefore be used for individual targets outside the cities, since they will be subject to accurate bombing. This is of importance for military targets near the front within the radius of the enemy tactical air force.

The use by the enemy of new methods (~~infra-red~~ telescopes, heat or target radiation guided missiles) should be carefully studied.

2. Ways and means of camouflage for each target area and for special pin point targets should be considered in connection with the local conditions and the available means of active air defence.

Because of visibility conditions in Greece, the importance of camouflage within cities protected by heavy AA artillery is negligible. The same applies to fog concealing. Camouflage and fog concealing should be used as follows:

- (a) Fog concealing for special pin point targets (such as ports, dry-docks, fuel depots), if they are within the city target area, and at night only, as far as weather conditions permit.
- (b) For special pin point targets of small dimensions outside the city target area (bridges, fuel or ammunition depots) if not protected by heavy AA artillery, we shall use either day and night fog concealment or:
- Concealment and disguise by changing shape, colour, shade and glare of the targets,
  - Concealment of the access roads to the target,
  - Erection of dummy targets in the vicinity of the real ones,
  - Camouflage by means of nets, trees or painting.

3. Our general views were given above. We further believe:

(a) Fog should be of a light grey colour.

(b) Colours should be selected in accordance with the vicinity of the target.

4. The types of targets were mentioned above. They include railroad and power stations at the outskirts of the cities.

C. Plans to be made in Time of Peace.

1. The problems in that field are essentially of a financial nature. However, an effort is made to prepare plans and accumulate materials so that camouflage may be effected within 48 hours. Instructions have been issued and the Local Civil Defence Authorities are working along their lines.

2. It is advisable that new buildings of industrial and military installations be constructed so as to facilitate camouflage and dispersal. Instructions are at present that terraces should be constructed for such buildings within cities instead of red brick roofs.

3. Camouflage plans will be implemented as soon as it appears that hostilities are inevitable, on the assumption that intelligence reports will be able to give such advance warning. For important military targets, such as fuel tanks, for which a 48 hours' advance warning is not sufficient, it is planned that certain preparatory work will start in the near future within the existing financial limitations.

D. Responsibility for Camouflage.

1. Industries and public services in general shall be responsible for the camouflage of their installations on the basis of a general plan prepared by the Civil Defence Authority.

2. This general plan will include guidance on:

(a) Target to be camouflaged.

(b) System to be used for each target.

(c) Combined method of camouflage for certain targets.

(d) Materials and manpower necessary for the completion of work within 48 hours.

Fog concealment remains the responsibility of the AA Artillery Command.

3. The plan will apply to industries and public services employing more than 50 persons, after invitation by the Civil Defence Authority.

4. The state authorities will assist private enterprises by issuing special instructions and making experts available. Consideration is being given to the question of state financial assistance to oil companies. The state authorities will be responsible for storing camouflage material, the cost of which will be borne by private enterprises.

E. Information to be sought from the Allied Military Staff.

Information should be sought along the lines of the questions in Chapter VIII above.

F. International Convention.

Yes, for the reasons set forth under Chapter IX above.