



General Principles of Civil Defence in India

Published by
Directorate General Civil Defence
Ministry of Home Affairs
Government of India
Jaisalmer House, 26 Mansingh Road, New Delhi

2003

**GENERAL PRINCIPLES
OF
CIVIL DEFENCE IN INDIA**

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PREFACE

In view of the significant changes in the threat perception and varied scientific and technological advancement during the last few years, the revision of GPCD had become a necessity. Consequently GPCD has been revised and updated by a Committee after 33 years keeping in view the experience gained during the last many years. The present version of GPCD does not include the list of equipment which is being revised and will be circulated separately.

My thanks to the members of the Committee S/Shri K.M. Nandyal, Director, NCDC, DD, Jadhav, Addl. Controller of Civil Defence, Mumbai (since retired), Dr. P. Ravindran, ADG (EMR) Union Ministry of Health and Family Welfare, Rajendra Singh Kachawa, SSO (CD), Rajasthan, and D.K. Chaturvedi, Dy. Controller (CD), Uttar Pradesh (since retired), for revising the booklet. Thanks also to Lt. Col. (Retd.) J.R. Kaushik, ADG (CD) and Sh. G.S. Gaur, JSO (CD) of the office of DGCD for doing the ground work in preparing the new draft and to Shri C.S. Sundhan, APO (Publication and Co-ordination) of DGCD office for getting it published in an excellent manner. Thanks to the Vijay Stationary Mart, 18 Palika Palace Annexe, Panchkuian Road, New Delhi-110001 also for printing this booklet in a short time with good set-up and paper.

Your suggestions for improvement in the booklet are most welcome.

Jai Hind.



(B.L. VOHRA)

Director General of Civil Defence
Ministry of Home Affairs
Government of India

New Delhi

6th December, 2003

PREFACE TO THE FIFTH EDITION

A reprint of this handbook has become necessary as the copies of the previous edition have been exhausted. Opportunity has also been taken to bring the handbook up-to-date with the latest instructions issued on the subject.

Any comments and suggestions for effecting improvement in the handbook are welcome and will be gratefully acknowledged.

(LT. GEN. R.N. BATRA) P.V.S.M.
Director General of Civil Defence
Ministry of Home Affairs
Government of India

New Delhi

Dated the 15th January, 1970

PREFACE TO THE FOURTH EDITION

With the depletion of the stock of third edition of this handbook published in November, 1962, it has become necessary to bring out its fresh edition. The handbook has been revised in the light of the experience gained in the organization, administration and training of Civil Defence personnel during the recent emergency. The "Secret" classification allotted to the handbook has been removed and it has been marked "For Official Use only". The changes in the scales etc. of Civil Defence services issued upto 1st of October, 1964 have been incorporated in this edition. Comments and suggestion for improving the handbook will be welcomed.

BISHAN CHANDRA
Deputy Secretary
Ministry of Home Affairs
Government of India

New Delhi
Dated the November, 1965

PREFACE TO THE THIRD EDITION

This edition has been brought up-to-date in the light of experience gained in scrutinizing the plans and the suggestions received from the State Governments from time to time. Some of the significant additions are the portions relating to unexploded bombs, Civil Defence in Railways, psychological warfare, duties of police and principles of co-ordination.

Further suggestions and comments will be gratefully acknowledged.

Deputy Secretary
Ministry of Home Affairs
Government of India

New Delhi
Dated the 7th November, 1962

PREFACE TO THE SECOND EDITION

In order to cope with the increased demand for the handbook it has become necessary to bring out a second edition. Advantage has been taken of this opportunity to revise the handbook in the light of comments and suggestions received so far. Some of the chapters have been written and the material rearranged. The scales of man-power and equipment have also been revised in certain C.D. services, while they have been introduced where they have been made to make the handbook as comprehensive as possible by addition of a few new chapters.

Further suggestions and comments will be welcomed.

L.G. MIRCHANDANI

Officer on Special Duty,
Ministry of Home Affairs
Government of India

New Delhi

Dated the 1st September, 1954

PREFACE TO THE FIRST EDITION

The object of this book is to assist the State Governments in planning and organizing Civil Defence measures for safeguards the Civil population against the effects of war. The need for them is not related to any belief that war is imminent. All the same, it is a matter of prudence to be forearmed with plans which can be put into effect at short notice so as to prevent avoidable injury and loss of life. Civil Defence therefore is nothing but a form of national life insurance.

This handbook is intended to deal with the broad aspects of the Civil Defence Organisation, and will be followed up by a series of other handbooks or manuals which will deal in greater detail with individual services of Civil Defence. It is considered desirable, however, to issue this handbook by itself, so as to assist the State Governments in taking initial action for the preparation of paper plans. While the State Governments may find it necessary to make modification in matters of detail on account of local considerations, it is requested that no basic deviation from the general principles should be made without consultation with the Government of India. Comments on any aspect affecting the general principles may, however, be communicated to the undersigned.

L.G. MIRCHANDANI

Officer on Special Duty,
Ministry of Home Affairs
Government of India

New Delhi

Dated the 1st November, 1951

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PART-I (SECTION 1)

BASIC PRINCIPLES AND THE ORGANIZATION

1.1 Measures for safeguarding the civil population against the effects of hostile attacks, whether by air or otherwise have become a necessary part of the Defence Organisation of every civilized country.

1.2 Air attack is designed :-

- (a) to dislocate war production by the destruction of industry and by attacks on the employees;
- (b) to dislocate the life of the community by damage to essential services such as power, light, water, sewage, communications by rail, road, inland waterways, telephone and telegraph and by impeding the supply of essential commodities such as food and fuel;
- (c) to shatter the morale of the people both by (a) and (b) above and also by direct attack on them;
- (d) to facilitate the operations of hostile ground forces by causing panic and confusion in the rear of the defending armies.

1.3 Air attack affects every aspect of the life of community and thus it must be the duty of the Government to devise measures for minimising its effects. Civil Defence therefore is the sum total of all measures which are intended to minimise the effects of air raids. The main objects of civil Defence are :

- (i) to save life;
- (ii) to minimise damage to property; and
- (iii) to maintain continuity of production.

1.4 It follows that measures necessary for Civil Defence (as distinguished from active defence) are an extension of the peacetime functions of the Government to suit war conditions and that the responsibility for each subject to Civil Defence should be placed on that Department of the Government which administers a similar subject in peacetime, e.g.

The Health Department – Responsible for emergency hospitals organisation.

The Public Works Department – Responsible for design and execution of protective works.

The Education Department – Responsible for Civil Defence in educational establishments, museums, libraries, art galleries and archaeological monuments.

1.5 This principle should be observed throughout the administration. The Commissioner, District Magistrate and Sub-Divisional Officer respectively are the ultimate authority for Civil Defence in the Division, District and Sub-Division. All communications from the Government regarding Civil Defence matters should be sent to or through the District Magistrate, or failing this, copies should be sent to him for information as he is responsible for the proper organisation and functioning of the Civil Defence Services even though a separate Controller may have been appointed. In certain cases it may be found more convenient to have an "autonomous" Controller i.e. one who works directly under Government. The above officers require additional assistance if they are to discharge their added responsibilities. The same applies to the other district officials such as the Civil Surgeon and the Executive Engineer (P.W.D.).

1.6 While each Department is responsible for policy and technical direction of Civil Defence, measures must be devised co-ordinate departmental activities so as to harmonise with one general plan and to prevent gaps or overlapping.

1.7 Some of the ways by which co-ordination may be achieved are :-

- (a) assessment of needs of the different agencies/departments so as to ascertain the overall picture;
- (b) definite allocation of responsibility to the various agencies or departments participating in the scheme;
- (c) consultation among the various agencies/departments concerned e.g. by setting up co-ordination committee;
- (d) settling details of procedures in advance so that no difficulties arise at the time of implementation of the plans.

All local C.D. plans must therefore be co-ordinated with those of Cantonments, Port Trusts, Railways, Industrial Establishments, etc. Besides there should be complete co-ordination at the Central, the State, the District and the local levels.

The Home Department under the Home/Chief Secretary is the normal co-ordinating authority in a State Government. It may be necessary for the State authorities to appoint a Director of Civil Defence activities in a State. A Commissioner in his division, a District Magistrate in his district and a Sub-Divisional Officer in his sub-division will be the normal co-ordinating authorities in their respective spheres. Except in the case of Commissioners who will exercise their control in the same way as they do in respect of their normal functions, co-ordination should be secured by regular periodic meetings, weekly if possible,

of the officers responsible for each section of the Civil Defence plan. For this plan to operate effectively, particularly in the event of invasion/air attack, it is essential that it should be co-ordinated with the military plans for active defence, and it is most important that the appropriate Military Commander should be constantly consulted by the State Government, Commissioner, District Magistrate and Sub-Divisional Officer in their respective spheres. He should, therefore, be invited to attend or send a representative to the periodic meetings. Every effort should be made by each of the Civil Officers mentioned above to keep the appropriate Military Commander, no matter how junior in rank he may be, informed of the measures proposed to be taken in an emergency and to see how far he can assist the Military Commander and how far he can count on assistance from him.

1.8 Position of District Magistrate or corresponding officer in Presidency Towns :-

The District Magistrate is the representative of Government in his district. Very wide powers are delegated to him in an emergency and these may reach the stage of delegation of all the executive powers of Government.

In any case he has inherent powers as the representative of Government, and experience has shown that after a raid he must take charge generally and act on his own responsibility. He must, therefore, be prepared for this.

Where a civil district contains more than one town where Civil Defence measures are considered necessary the District Magistrate can both be "Controller" in the headquarters town as well as be generally responsible for the whole Civil Defence organisation of the district. In any case he must accept the latter responsibility.

In outlying towns it is necessary to put the Sub-Divisional Officer in a position analogous to that of the District Magistrate as stated above; similarly departmental officers in such towns, Assistant Surgeons, P.W.D. Engineers etc., should be placed in a position in which they can act freely in an emergency, subject to the general supervision of the Commissioner, District Officer or Sub-Divisional Officer as the case may be.

Every contingency cannot be foreseen and more important than the exact formal delegation of powers is the assurance of approval and support from above if officers have to act with strength and conviction. A chart showing the organisation of the C.D. Services in a town is given at page 11.

1.9 The Civil Defence legislation will be sufficiently elastic to enable the constitution of a Civil Defence Service for a whole district with the District Magistrate as Controller, or to divide the district and constitute even a single factory into an area. Local circumstances must govern the decision in each case. Making the Civil Surgeon responsible for the Hospital and Casualty Services, and corresponding P.W.D. Officers for heavy Rescue and so on is strongly recommended.

1.10 **Co-ordination Committee** – At appropriate time it will be advisable to set up Area Co-ordination Committees to which the representative of Central Government Department, Defence Services, Port Trust, Railways, Public Organisations, Industrial Units, etc. may be nominated. All these units are normally expected to have independent C.D. Organisations which are then co-ordinated with local C.D. Organisation. The co-ordination may be in particular be useful in the following matters :-

- (a) Mutual aid and reinforcement arrangements,
- (b) Disposal of unexploded bombs,
- (c) Training Facilities,
- (d) Warning arrangements, and
- (e) Utilisation of manpower, equipment and training facilities, etc.

These committees will help in ignoring out many differences and resolving dead-locks which may otherwise hamper planning.

PART-I (SECTION 2)

GENERAL

1.11 Arrangements for Civil Defence designed to minimise the effect of air attacks are inter alia as follows :-

- (a) The prevention and control of panic by prior education, training and organisation.
- (b) Training of Civil Defence personnel.
- (c) Securing collection of damage reports, control and deployment of C.D. Services and provision for alternative means of communications.
- (d) Placing Fire Service on war footing and recruitment of whole-time and part-time auxiliary fire-men, watching for fall of incendiary bombs and control of fires in incipient stage; providing and developing alternative sources of water supplies for fire fighting purposes.
- (e) Rescue of casualties trapped under debris.
- (f) Report and control of incidents affecting the fire and rescue services.
- (g) First-aid of air raid casualties, transport to establishments capable of providing appropriate treatment.
- (h) Provision of Welfare facilities such as :-
 - (i) Care of homeless-establishment of Rest Centres and housing and billeting organisation.
 - (ii) Information and guidance on essential matters.
 - (iii) Evacuation of people in an orderly manner from target areas to safer zones.
 - (iv) Ensuring the supply, storage and distribution of essential foodstuffs and measures for emergency clothing and feeding of civilian population.
- (i) Disposal of the dead and identification thereof.
- (j)
 - (i) Provision of air raid shelters.
 - (ii) Protection of Government buildings against air attacks generally.
- (k) Mobilization of transport-requisitioning of vehicles required for Civil Defence Services, control and issue of petrol, oil, lubricants, spare parts and repair facilities for C.D. vehicles.

- (l) Earmarking and requisitioning of premises required for Civil Defence purposes.
- (m) A co-ordinated and controlled Warning System and dissemination of air raid messages to authorized recipients and the public.
- (n) Lighting restrictions and other legal provisions necessary for fulfilment of Civil Defence objectives.
- (o) Protection of articles and objects of art and culture of national importance.
- (p) Removal of debris, also repairs of slight damaged houses and demolition of dangerous constructions.
- (q) Special measures for the protection of Essential Services and industries of vital importance, repair arrangements for quick restoration thereof.
- (r) Earmarking of hospitals, provision of emergency beds, medical and nursing staff.
- (s) Measures for emergency sanitation and provision of alternative supply of water for drinking, cooking, washing and sanitation.
- (t) Dispersal of industry and/or warehouses for essential commodities.
- (u) Reconnaissance, collection and disposal of unexploded bombs.
- (v) Static Camouflage of vital targets.
- (w) Salvage and custody of valuables.
- (x) Procurement, distribution, care, maintenance, accounting and inspection of C.D. equipment.
- (y) Care of animals.
- (z) Mutual aid schemes for reinforcing the local resources and co-ordination between different local authorities.
- (aa) Publicity and public co-operation.
- (ab) Panic-prevention and control.

1.12 (a) Nature of conventional weapons has remained the same albeit they have greater accuracy now. Though a limited number of advanced weapons like Precision Guided Missiles (PGMs) are available with our adversaries, they are likely to be used only against very important in-depth, strategic targets. The enemy is likely to rely more on the conventional weapons. Potential adversaries in all probability will attack military targets; however, some of the weapon may still spill over to the civilian areas. Likely damage will be due to fire, explosion, shock, sharpnel and chemical agents.

Available inputs indicate that majority of weapons used by potential adversaries would still be general purpose 500 and 1000 pounder bombs. However, collateral damage expected would be less because of greater accuracy due to modern air ring systems. In view of the damages likely to be caused, there is a definite need to upgrade communication systems, improve capability to provide faster medical relief through mobile medical teams, heliborne medical teams etc.

High Explosive Bombs- (b) The most effective weapon used by modern air forces is the High Explosive (H.E.) Bomb. Apart from bombs designed for use against heavily protected objectives, high explosive bombs consist usually of a relatively thin steel case containing a charge of high explosive mixture and fitted with a fuse and exploder. When the fuse operates, the explosive mixture inside the bomb is converted into hot and highly compressed gases which burst the bomb case.

(c) The smaller high explosives are Anti-Personnel (A.P.) Bombs. The fragments from these bombs are projected outwards at a tremendous velocity and keeping very close to the ground constitute a great danger to human beings in the open through doing little or no damage to buildings.

(d) General Purpose (G.P.) Bombs used in a general air bombardment weight from about 100 lbs. upwards but the use of a larger number of bombs each exceeding 500 lbs. in weight is unlikely. The flight of the bomb after its release from the aircraft is steadied by means of a tail fitted with vanes or fins and the explosive charge is detonated by a fuse which operates when the bomb hits a hard surface, or at a set interval afterwards. An instantaneous fuse causes a bomb to explode immediately on impact with the ground or other hard surface. A normal delayed-action fuse introduces a brief interval between impact and explosion. This interval which varies according to the fuse setting is usually from a fraction of a second to a few seconds and so gives the bomb time to penetrate deeply into the building or the ground before exploding. The normal delayed-action fuse should not be confused with the long-delayed fuse which may introduce a long time interval between impact and explosion, sometimes a period of hours or even days. The object of these "long-delayed" or "time" fuse is to cause inconvenience and danger to the Civil Defence Services as well as to the public, after the raid itself is over. The damage caused when such a bomb explodes is exactly similar to that caused by a bomb fitted with a normal delayed-action fuse.

1.13 The Standard of Protection-Thickness of four and half feet of reinforced concrete cover would be necessary to give protection against a direct hit by bombs.

To provide such protection on a large scale economically impossible but fortunately the changes of a direct hit are relatively small. Much damage can be averted and many

lives saved by the provision of protection against the lateral effects only of a bomb i.e. against blast and splinters. Blast is the shock wave transmitted through the air when an explosion occurs and its effect varies according to the nearness of the explosion, size, the charge and weight of the bomb, and nature of surroundings, etc. Fragments of the bomb case (splinters) are projected outwards at a velocity of some 4,000 feet per second.

As already stated it is impossible to construct large number of buildings which will be proof against a direct hit; consequently the scale of protection aimed at is :

"Proof against the combined effects of a 500 & 1000 lbs. General Purpose Bomb exploding not nearer than 50 ft."

The table below gives the thickness of various materials needed to give this standard of protection :-

<u>Material</u>	<u>Thickness</u>
(i) Mild steel plate	1½ inches
(ii) Reinforced concrete	12 inches
(iii) Brickwork or masonry (in cement and mortar)	13½ inches
(iv) Unreinforced concrete	15 inches
(v) Ballast or broken stone	24 inches
(vi) Earth or sand	30 inches
(vii) Solidly stacked timber	36 inches

All buildings upto a considerable distance around the point of explosion will suffer damage of some kind; but it may be said that the majority of well-constructed pucca buildings especially those of "framed" construction, will not (provided openings and weak panels or adequately protected or strengthened), be seriously affected by the effects of a 500 & 1000 lbs. bomb falling in the close vicinity.

1.14 **Incendiary Bombs**—To cause numerous fires over a wide area may be enemy objective and this can be achieved by dropping a large number of incendiary bombs, possibly in conjunction with H.E. Bombs.

The following are the type of bombs which are likely to be used :-

1. The Kilo Magnesium Incendiary Bomb.
2. 4-lbs. Bomb—which has magnesium alloy body and thermite pellets as filling.
3. 30-lbs. Bomb—filled with rubber, benzole and some contents of white phosphorous.

4. 250-lbs. Bomb—filled with heavy oil or oil and petrol mixture and containing a small explosive charge to detonate the bomb.

The first two types of bombs will normally pierce through light roofings and start fires in the upper part of the buildings. It is therefore, essential to clear the upper floors of all movable inflammable material.

The latter two types are light case bombs and will in most cases burst on impact with little penetration effect and produce a very intense heat.

The above are the usual fillings of an incendiary bomb, but by varying the weight and proportion of these fillings, a variety of incendiary bombs can be produced. However there will be little change in the manner and method of controlling them.

1.15 **Unexploded Bombs**—The term 'unexploded bombs' also referred to as (UXBs) includes mines, High Explosive bombs, Anti-personnel bombs, shells, incendiary bombs, etc. of all types.

Detection and disposal of Unexploded Bombs are carried out in three stages, namely—

- (a) preliminary reconnaissance and confirmation of location and existence of UXBs;
- (b) allotment of priority for disposal; and
- (c) disposal.

All operations connected with the detection and disposal of UXBs on Army, Naval and Air Force establishment/property are the responsibility of the respective services.

In the case of UXBs reported to exist on civil areas, railways and ports, the Civil Defence Organisation concerned, will be responsible for the preliminary reconnaissance and confirmation of the location and existence of the UXBs.

The final disposal of unexploded bombs in civil areas will be the responsibility of the Bombs Disposal Unit organised and maintained by the Army authorities with the following exceptions :—

- (a) In the case of crashed aircraft or of bombs on Air Force property the responsibility of disposal will be that of the I.A.F.
- (b) The disposal of unexploded bombs, shells or mines below the High Water mark on the coasts and in all docks, harbour basins, waters adjacent to wharves, jetties and such water covered areas as affect the working or safety of vessels in navigable waters will be the responsibility of the Mine Disposal Clearance Diving Units of the Navy.

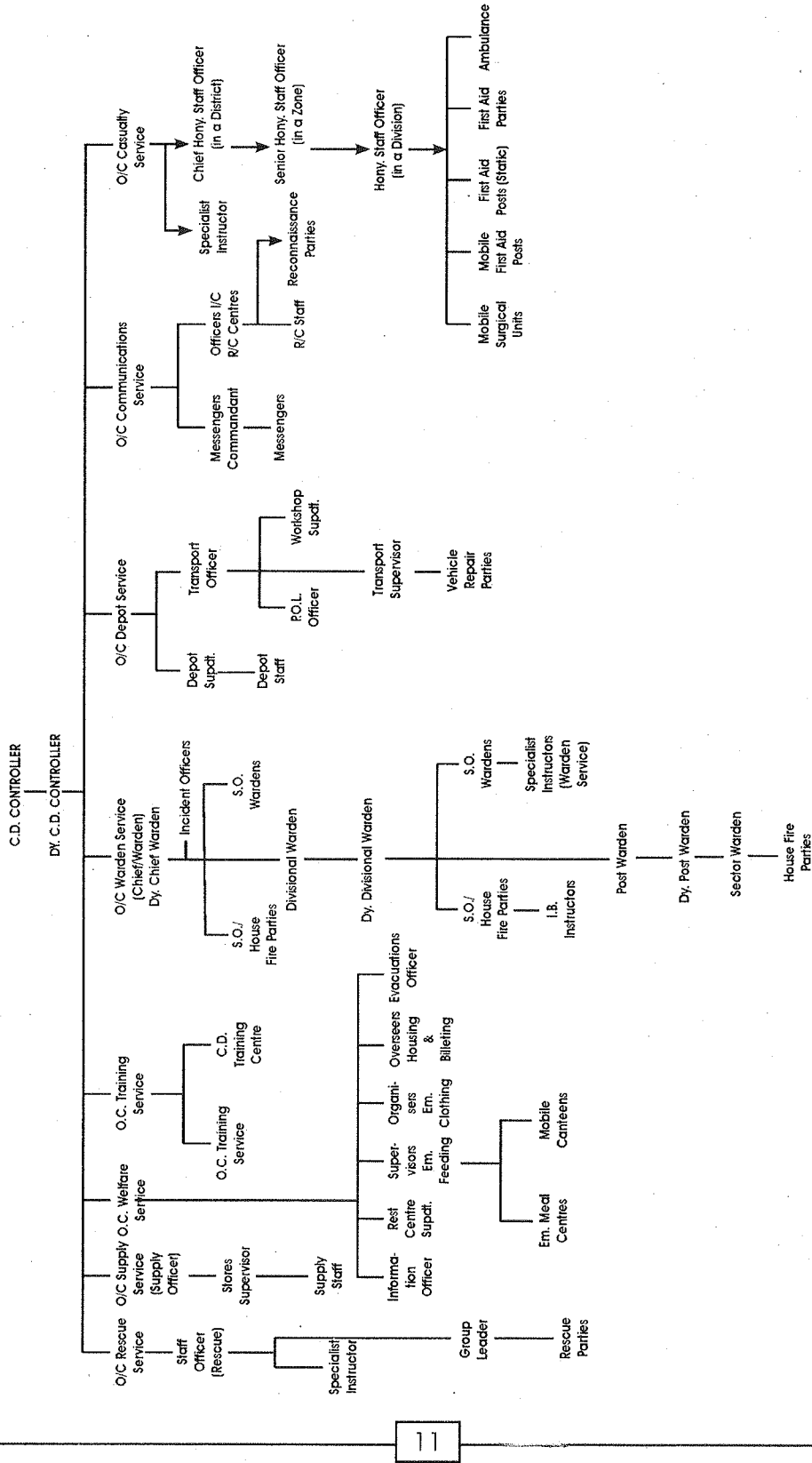
The State Governments are responsible for recommending the priority for the disposal of unexploded bombs which have fallen within their territory and will communicate the existence of UXBs and the priority accorded for their disposal to the local Divisional/Area Commander of the Armed Forces. In case of simultaneous demands from two or more State Governments according similar priorities for the disposal of UXBs in their respective areas, the local Military Division/Area Commander concerned with detailing the Bombs disposal units under his control for the disposal of the bombs, will be final authority to decide the order in which the UXBs are to be dealt with.

1.16 **Psychological Warfare**—Apart from the physical damage caused by High Explosives and Incendiary Bombs it is equally important to consider the damage caused to the mind. Once the mind is weakened and the "will to fight" is lacking, the war can be easily lost. No amount of physical superiority in arms or weapons can win a war if the 'Will to fight' is lacking. The main object of psychological warfare is to spread panic and lower morale. The importance of psychological warfare is therefore self evident. Its success though incalculable can be overwhelming and its failure can be fatal.

In the country like India which is not highly industrialised, Civil Defence will have to place more reliance on moral weapons, the qualities of mind, rather than the physical weapons. Ultimately all wars are won by bravery, heroism, courage and capacity to bear hardships and work more. One of the main objects of Civil Defence will be to maintain high moral to be able to face psychological disruption. Some of the ways by which this can be achieved by Civil Defence are :-

- (a) *Provision of adequate welfare services* — It will help to a great extent in softening the outraged feelings of people and hence make them less amenable to enemy propaganda;
- (b) *Efficient performance of their duties by Civil Defence* — It will restore confidence of people in the services, keep down the losses and deprive enemy of one of its chief arguments against local administration;
- (c) *Personal contact with masses* — The services, specially the Warden Service should be able to wield personal influence over people's behaviour;
- (d) *All round assistance of local leaders, Press etc. should be enlisted* — When people find that every one around them is hopeful, their hopes will also revive; and
- (e) *Training and self-reliance of people* — The instinct of self preservation is the highest instinct, which should be exploited fully. A self-relying man will take the losses coolly and stoically and is less liable to blame the authorities for everything.

C.D. SERVICES IN A TOWN



PART-II

DISTRIBUTION OF RESPONSIBILITY IN REGARD TO CIVIL DEFENCE SUBJECTS AMONG THE VARIOUS MINISTRIES OF THE GOVERNMENT OF INDIA

MINISTRY OF HOME AFFAIRS :

Civil Defence Organisation and planning.
Fire Services.
Civil Defence in Union Territories.
Issue of Handbooks, Manuals and other C.D. literature.
Civil Defence in Jails and Police Stations.
Technical advice on Civil Defence matters.
Co-ordination in matters relating to Civil Defence and progress reports.
Constitution of Civil Defence Service proper :-
Warden Service (including House Fire Service)
Depot Service (including Transport Service)
Training Service
Rescue Service
Casualty Service
Supply Service
Welfare Service (including plans for evacuation and care of the homeless)
C.D. Ambulance Training Organisation.
Civil Defence Legislation.
Provision of higher training or technical training in Civil Defence.
General Instructions.
Coordination of mutual aid schemes.
Identify discs.

Notification of casualties.

Lighting restrictions and aids to movements in darkness.

Control of regional Civil Defence Organisation.

Warning System.

Shelter Policy.

Liaison with Military.

Liaison with Railways.

General Administration Policy in consultation with other Ministries.

Allocation of Civil Defence Equipment, material, vehicles and administration of Central Stores Depots.

Overall responsibility for Civil Defence including policy planning, operational research, technical training, advice to the State.

Governments and co-ordination of Civil Defence Work on all India basis.

MINISTRY OF DEFENCE :

Civil Defence in Cantonments, Military aerodromes and Ordnance Factories.

Disposal of unexploded bombs and crashed aircrafts.

Appreciation and assessment of possible scale and area of attack prepared by Defence to be intimated.

MINISTRY OF LABOUR :

Civil Defence in factories, industries and public utility companies and their dispersal.

Maintenance of Labour.

Essential services (Maintenance) legislation.

War Injuries Schemes.

Manpower.

MINISTRY OF URBAN DEVELOPMENT AND POVERTY ALLEVIATION :

Technical advice on constructional problems.

Protection of Government Buildings.

Construction of shelters, trenches, etc.

Maintenance of Civil Aerodromes.

Control of building material.

Repair squads for emergency repairs, demilition and heavy Rescue.

Requisitioning of premises earmarked for Civil Defence.

Evacuation where necessary and provision of accommodation for offices when necessary as a result of an air attack.

MINISTRY OF HEALTH AND FAMILY WELFARE :

Emergency Hospital Organisation.

Public Health (Sanitation, lighting, water, gas supply, sewage and Conservancy).

Procurement and distribution of medical equipment and medicines.

Any other Local Self Government subjects.

Control of epidemics.

Casualty Service and training of personnel of the same.

Water supply.

MINISTRY OF SCIENCE AND TECHNOLOGY :

Issue the guidelines on Science and Technology aspects for preparation of Civil Defence plan in vital plants/installation and industries in each State/UT.

MINISTRY OF HUMAN RESOURCES DEVELOPMENT (DEPARTMENT OF EDUCATION) :

Civil Defence in Schools, Colleges & Universities.

Civil Defence in Archaeological Monuments.

Civil Defence in Art Galleries, Museums and Libraries.

Civil Defence in National Laboratories.

Advice, Research and Scientific problems relating to Civil Defence.

MINISTRY OF AGRICULTURE :

Procurement of Food Stuffs.

Civil Defence measures for food storage and distribution.

Advice to Farmers on protection of crops.

Care of animals.

MINISTRY OF ENVIRONMENT AND FORESTS :

Civil Defence measures for Forests.

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS :

Hiring and providing the transportation to the C.D. Services in an emergency.

MINISTRY OF CIVIL AVIATION :

Civil Defence measures for Civil aerodromes, All Air Lines and Air Transport needed for Civil Defence.

Civil Defence Organisation for Meteorological Organisations and Observatories including weather Services.

MINISTRY OF SHIPPING :

Civil Defence measures for Dockyards, Harbours, Ports, Roadways, Bridges and canals, Merchant ships and lighthouses.

Sea and Road Transport needed for Civil Defence.

MINISTRY OF COMMUNICATION AND INFORMATION TECHNOLOGY :

Civil Defence measures for posts and Telegraphs offices, wireless Stations, Overseas communication, Internet, Computers etc.

Civil Defence measures for the Telephone industry.

Air raid warning system including provision of communication facilities for Civil Defence.

MINISTRY OF HEAVY INDUSTRY & PUBLIC ENTERPRISES :

Dispersion of Industries.

Control of industries producing Civil Defence Equipment.

Control of Essential Supplies except Foodstuffs.

Civil Defence in undertakings such as Heavy Electrical Engineering.

Auto Industries, Light Electrical Engineering industries, Tyres and Tubes industries etc.

Supply of Civil Defence Equipment.

MINISTRY OF STEEL :

Civil Defence in projects and Works as also Steel Plants in Public and Private Sectors

MINISTRY OF COAL :

Civil Defence in Mines and Collieries.

MINISTRY OF PETROLEUM AND NATURAL GAS :

Civil Defence measures in petroleum and Oil Refineries, pipelines and dumps
LPG Bottling and storage plants.

MINISTRY OF RAILWAYS :

Civil Defence measures for Railways and Railways colonies.

Railway Transport needed for Civil Defence purposes.

MINISTRY OF FINANCE :

Civil Defence measures in Mints, Security printing press, Reserve Bank, State Bank and
other Banks etc.

MINISTRY OF WATER RESOURCES :

Civil Defence measures for River Valley Projects and other water resources.

MINISTRY OF POWER :

Electricity and water supply for Irrigation and for Generation of electricity, both Thermal
and Hydel.

MINISTRY OF EXTERNAL AFFAIRS :

Collect the literatures and reports on Civil Defence/Home Guards from the other
countries.

MINISTRY OF AGRO & RURAL INDUSTRIES (DEPARTMENT OF ATOMIC ENERGY) :

Responsible for making SOP's against NBC attacks.

Making plan for guarding vital plants/installations relating to Atomic Energy.

MINISTRY OF CHEMICAL & FERTILIZER :

Issue the standing instructions for chemical warfare.

PART-III
SYSTEM OF AIR RAID WARNING

I. OBJECT :

In times of war, implementation of Civil Defence measures effectively depends upon perfect warning systems in the Civil Defence towns. For these measures to be effectively implemented it is imperative that adequate signal communications are available to the Civil Defence staff concerned at all levels. An effective warning system for the passage of air raid warnings is the life blood of Civil Defence organization in any country. Warning of approaching enemy air planes affords time for the people to take shelter and to enforce various Civil Defence measures including crash blackout. Also warnings regarding the withdrawal of the threat are required for the people to come out of shelter and resume their normal activities. Hence an efficient warning system will ensure sufficient warning time to study the Civil Defence warning system and the types of warning messages in case of enemy air raids.

II. WARNING SYSTEMS :

In order to obtain a proper warning for a target area, a warning has to be issued by the Air Defence systems. As soon as the enemy planes are spotted at a certain distance approaching the target area a watch has to be kept on the skies and this is the job of Air Force and they have to keep vigilance on the skies all along the border, In order to check violation of our airspace. Since our borders extend to hundreds of miles on all sides the information is collected at certain selected points wherefrom the warnings originate and are transmitted quickly to threatened areas. The collection and transmission of messages are included in the external warning system and dissemination of these warnings in an area under the jurisdiction of a C.D. Town Control Center constitutes Internal Warning System. Due to the high speed at which the aircrafts fly and the nearness of our potential enemy it may not always be possible to give more than a few minutes warning. In certain cases it may not be possible at all to give any warning.

III. EXTERNAL WARNING SYSTEM :

The air crafts are detected with the help of radar. From the time, the enemy air craft is picked up by the radar unit to the time the warning is received in a town Civil Defence control center, a system of communication is planned which is designated as External Warning System. The system is dividing into two parts, viz.

- (i) The General duty liaison officer at the Air Defence Directing Center (ADDC) of the IAF pass air raid warning to the Regional Civil Defence Control Centres (RCDCC).

- (ii) The Regional Civil Defence Control Centers after receiving the warning transmit the same to a number of town Civil Defence controls depending on RCDCC through a specially built P&T telephone network as well as through high frequency radio net. At the Air Force end, the information obtained through radar is plotted on a large map at the ADDC and defensive counter measures are put into action by each ADDC. Each ADDC in addition to its own active air defence action will pass air raid warning to the Regional Civil Defence Control Center responsible for the region. The target areas will be divided into zones according to the convenience of the communication facility available in the particular area. The warning received from the Sector Operation Center is intended for the zone surrounding the receiving point and should not be conveyed to the neighbouring or other zones for whom it is not intended.

IV. SALIENT FEATURES OF EXTERNAL WARNING SYSTEM :

From each ADDC of Indian Air Force Station, the warning first goes to the regional Civil Defence Control Center over telephone and VHF radio link. The Air Force Unit and RCDCC are connected by direct non exchange telephone lines (two pairs) as well as by VHF radio link as stand by. While transmitting warning the Air Force Unit first give an audible and visual signal to RCDCC by operating a warning/RCDCC converse with the Air Force Station Unit over the hand set provided. This unit is termed as "Speaker and warning tool". Thus transmission of warning message from ADDC with the RCDCC is instantaneous. From the RCDCC the warning is disseminated to a number of Town Civil Defence Control Centers (TCDCCs) through land line as well as HF radio communication system. For this purpose the RCDCC is connected to the local trunk exchange by direct non exchange lines. The trunk exchange at RCDCC point is designated as Controlling Trunk Exchange. Each Controlling Trunk Exchange make use of public Trunk Circuits existing to a number of other trunk exchanges of CD town in the zone.

These distance trunk exchanges are designated as controlled trunk exchanges which in turn or connected to Local Town Civil Defence Control Center (TCDCC) by direct non exchange line so whenever warning message is transmitted to TCDCC, the RCDCC sends audio visual warning to the controlling trunk exchange by lifting the hand set of the telephone specially provided. This audio visual indication (i.e. a tone) is sent automatically to all the controlled trunk exchange operators either at Controlling Trunk Exchange or at distant controlled trunk exchange. This facility is termed as "**Conference Call Facility**".

The effect is a light and buzzer operated at controlling and controlled exchanges. On receipt of this audio visual warning, the Monitor in the trunk exchange immediately attends to the call of RCDCC. RCDCC thereafter asks for the outstations (TCDCC) to be contacted over trunk call for the passage of emergency messages. The controlling trunk exchanges are provided with special equipment to afford conference call facilities to the

RCDCC. Under this system the RCDCC will be connected to the desired number of TCDCCs through the controlled exchanges for dissemination of air raid warning to all the stations at a time. Where such facilities are not available, warning messages are transmitted by trunk call under "Clear the Line Priority". Under this facility as soon as RCDCC wants to converse with any particular station the call in progress on the trunk line is immediately disconnected and the concerned station is connected to RCDCC through controlled exchanges immediately. Under this system simultaneous broadcast of messages to all the stations is not possible. Each station is to be conveyed the message one after another. Some of the TCDCCs will have the responsibility of relaying the warning messages to other towns where direct trunk circuits are not available. Such TCDCCs are designed as Secondary Civil Defence Control Centers (SCDCC). For relaying warning to other TCDCC the SCDCCs will avail of "**Clear the Line Priority**".

Since line communication system is not fully reliable due to variety of reasons e.g. sabotage, enemy air raid, system failure, line fault and so on, provision of an alternative warning system is imperative. Hence the necessity of radio communication. While the RCDCC is connected to AFS by VHF radio link besides direct line communication, the TCDCCs on the other hand will be connected to RCDCC by HF radio link. A VHF link is provided where the distance between the two stations does not exceed 30 Kms. Since distance between RCDCCs and TCDCCs exceeds that limit, HF link needs to be provided.

This system is known as External Radio Warning System. Under this system warning is passed to the TCDCCs directly from RCDCCs simultaneously with the warning issued over P&T line circuits. Under this radio communication system radio terminals working at both RCDCC and TCDCCs are allotted call signs. TCDCCs are called by their call sign number for proper identification.

V. INTERNAL WARNING SYSTEM :

On receipt of warning at the Town Civil Defence Control Centre it will be disseminated to the public (if it falls under that category) and other authorities and factories located within that zone. For this purpose a reliable means of warning system is provided which is designated as "Internal Warning System". For adequate dissemination of warning, important officials, factory managers, warden posts and other subscribers of local Telephone network are grouped and warning is given to them by simultaneous broadcast facility (S.B.F.). This is done through the ARP equipment located in the P&T exchange. If the public are to be warned then it is the town. These are centrally operated through ARP equipment from the Central Control of Sirens (C.C.S.). This is explained further in the next para.

VI. DISSEMINATION OF WARNING WITHIN A TOWN :

Each selected town will receive the air raid warning messages through the external warning system as described earlier. The warning messages received by the control centres

will be further communicated to the other CD units in the area, police, railways, factories, essential services, etc. The messages will be sent to local recipients by telephones as well as by VHF radio link and through messengers in case of such places as are not connected with telephones/radio or in case the telephone lines get damaged. A warning which is meant for the general public will be conveyed through appropriate signals by sounding sirens. In order to facilitate quick dissemination of warning messages over telephone to more than one subscribers on the warning list simultaneously, use of simultaneous broadcast system (S.B.F.) may be made. Such a device will reduce time in sending messages to many recipients by simultaneous broadcast of messages to all of them. Similarly a civil defence town may be having a number of sirens for dissemination of warning to the public. When it is intended to issue warning to the public over sirens all the sirens need to be sounded simultaneously. Hence for the purpose of simultaneous broadcast over telephone and central control of all the sirens in a town, an equipment known as ARP equipment manufactured by I.T.I. Bangalore is deployed. The salient feature of the I.T.I., A.R.P. equipment is as follows :

The ARP equipment comprises of :

- (i) a control equipment installed in the TCDCC.
- (ii) Main station equipment installed in the P&T telephone exchange.
- (iii) Sub station equipment installed in other exchanges in the town.
- (iv) A contactors unit fitted to the siren point.

All these equipment and sirens are connected by pairs of non exchange lines. The control unit installed in the TCDCC has the following keys for operation :-

(a) GENERAL BROADCAST KEY :

By operating this key the control centre may starts broadcast announcements. All telephone subscribers connected to the main station equipment are disconnected to the main station equipment are disconnected from any conversations and are switched over the the ARP system. Immediately the subscribers telephone will ring at the frequency of two seconds on and two seconds off. On hearing the ring the subscriber may take up the receiver and (or if already engaged in conversation) listen to the broadcast.

(b) SPECIAL BROADCAST KEY :

This is operated for issuing warning to the selected subscribers as per special broadcast list. The operation is the same as above.

(c) WARNING KEY :

This is operated for dissemination of warning through sirens and telephones simultaneously.

(d) ALL CLEAR SIGNAL :

This is operated for issuing all clear signal on sirens and telephones.

(e) CANCEL ALL SIGNALS KEYS :

This is operated for cancellation of warning signals "Red" which may result due to mechanical faults.

There are two types of ARP equipments :

- (i) Standard type; and
- (ii) Small type

The small type equipment consists of a control unit, a main station equipment, and can provide connection to another four sub station equipment and one satellite station equipment.

The main station equipment caters for a maximum of 144 SBF subscribers of the public telephone exchange and sounding 24 sirens simultaneously. A Civil Defence town having more than 24 sirens needs to be provided with a sub station equipment besides the main station equipments. The sub station equipment is capable of sounding 24 more sirens at a time and disseminating warning messages to additional 72 subscribers of the public telephone exchange on SBF. Hence the requirement of sub station unit besides the main station unit for a standard type of ARP equipment depends upon the number of sirens and telephone subscribers in the town. The sub station unit is connected to the main station unit and cannot work independently. As soon as the key is operated in the control unit from the control centre both the main station and sub station units are actuated simultaneously. The small type of ARP equipment comprises of :-

- (i) A control unit
- (ii) ARP unit
- (iii) Contactor unit.

This equipment is capable of controlling upto the maximum of 4 sirens as a time and transmitting warning messages to 12 subscribers on SBF of the public telephone exchange. The control unit is installed in the control centre and the ARP unit in the telephone exchange. Facilities are same as in the standard type of equipment. A town having not more than 4 sirens may, therefore, be provided with a small type of ARP equipment.

VIII. TYPES OF AIR RAID WARNING MESSAGES :

(i) PRELIMINARY CAUTIONS :

The message is a preliminary one and is confidential. It is a forecast of raiders movement. Arrangements must be made for an unobtrusive movement of Civil Defence Services on receipt of the Preliminary Caution. The text of the message is "Air Raid Message–Yellow". The object of keeping this message confidential is to minimise public alarm.

It is received by a limited number of officials on the special warning list such as Headquarters of Civil Defence Organisation, Police, Fire Brigade, Important factories, public utility concerns and Railways. Recipients may inform such of their subordinate as they consider necessary. This preliminary caution will remain in force until cancelled by "Cancel Caution" i.e. "Air Raid Message–White".

(ii) ACTION WARNING :

This is a warning that raiding aircraft are heading towards certain towns which may be attacked within a few minutes and is a confirmation of the "Preliminary Caution". The text of the message is "Air Raid Message–Red". The message is received by those in the Action Warning List of threatened towns. The message is passed on by telephones to those on the Action Warning List, some of whom will be responsible for sounding the public warning signals. The various signals used are given in Appendix–A.

(iii) RAIDERS PASSED :

This message means that raiding aircraft have left the towns warned or no longer appear to threaten these towns. The text of the message is "Air Raid Message–Green", and is conveyed to all recipients of "Action Warning". This message is passed by telephone to recipients on the Action Warning List some of whom will sound the "Raiders Passed" signal. The signals used are given in Appendix–A.

(iv) CANCEL CAUTION :

This means the Preliminary threat has passed, and the text of this message is "Air Raid Message–White". This message is confidential it will be passed on to all those who received the "Preliminary Caution (irrespective of whether or not they received the Action Warning and Raiders Passed) messages". On receipt of this message normalcy is resumed.

(v) I.B. ATTACKS :

This warning is given by air raid wardens and police by means of a succession of short blasts on a whistle. The type of signals used are given in Appendix-A.

VIII. RECIPIENTS OF MESSAGE :

The telephone numbers of persons who are to receive Warning Messages, will be recorded in Warning Lists are follows :-

(i) SPECIAL WARNING LIST :

This list will show the telephone numbers of those who are eligible to receive the air raid messages "Yellow" and "White".

(ii) ACTION WARNING LIST :

This list will show the telephone numbers of those eligible to receive the air raid messages "Red and Green".

(iii) MESSENGERS WARNING LIST :

The list will consist of the Civil Defence and other Organisations, eligible for warning under (i) and (ii) above, which can be warned quickly by a messenger in order to relieve the load on the telephones and to provide for places which have no telephones.

NOTE : It may however be noted that the S.B.F. of the I.T.I. A.R.P. equipment provides arrangements to contact only one set of subscribers and therefore preferably it should be used for special warning list.

IX. FACTORY HOOTERS :

Factory Hooters not included in the layout of the Public Warning Signals could and should be sounded in an air attack after the public warning has been heard, for passing on the air raid warning to workers in the factories, and incidentally, for supplementing the scheduled public signals. The use of factory hooters for purposes other than air raid warnings will be prohibited. Internal warnings should not be audible outside the factory. Supplementary warning arrangements should also be considered for such concerned, firms or institutions whose location or process of working would make it difficult for public siren to be heard clearly.

X. SIRENS :

Instruments suitable for air raid and warning signals are of three general types :

- (i) Steam sirens and whistles.

- (ii) Rotary compressed air sirens, power driven.
- (iii) Rotary self governing sirens, electrically driven.

Where 4 H.P. electrically operated sirens are available they should be provided on the scale of 1 per square mile area. The actual location of sirens will have to be finalised after carrying out the audibility test. The maximum use should be made of the existing factory hooters, sirens etc. by including them in the public alarm system of the town. Hand operated sirens may be allotted at a scale of one per Warden Post.

XI. SIREN CONTROL :

Normally sirens are operated on central control from TCDCC through the ARP equipment. However, there may be occasions to operate the siren locally due to failure of central control. Hence a local switch should be provided. This must be located at a secure place to avoid unauthorised operation. The Siren is normally connected to local mains power supply. However, effort should be made to make use of power supply available with private parties as stand by power supply in case of failure of main supply.

NOTE : In view of the fact that GPCD as it exist today does not have chapter on External Warning System and deals only with Internal Warning System aspects. It has been decided to include chapter on System of Air raid warning (External and Internal).

APPENDIX – III-A
PUBLIC WARNING SIGNALS

Types of Warning	General Alarm System, Sirens etc.	Local Alarm System, Whistle etc.
1. Action Warning (Red)	A signal of 2 minutes duration consisting of EITHER a fluctuating or warbling note of varying pitch in which frequency Range is not less than 10% Above and below the mean pitch, The complete cycle of each fluctuation to extent over a period of about 3 to 5 second or a succession of intermittent blasts of about 4 seconds duration separated by a silent period of about 4 seconds.	A short blast followed by a long blast repeated at intervals of 3 seconds for 2 minute. or A visual signal may be used viz. Both arms raised above and waved or any other method decided upon locally.
2. Raiders Passed (Green)	A continuous signal of 2 minutes duration at a steady pitch.	2 long blasts on the whistle Repeated at intervals of 3 seconds for 2 minutes.
3. Incondiary Bombs Attack		A succession of short blast on whistle.

APPENDIX III-B
AIR RAID WARNING MESSAGE

Situation	Message	Test	To whom sent	Remarks
Raiding aircraft are approaching a zone	Preliminary Caution	Air Raid Message YELLOW	recipients on the special Warning List	The message is only preliminary one and is intended to be Confidential. Recipients may however advise such of their subordinates as they Consider necessary.
Raiding aircraft are Heading towards Certain towns which may be attached within five minutes.	Action Warning	Air Raid Message RED	Recipients on the Action Warning List.	Message passed to Authorities on the warning list some of whom will be responsible for sounding the Air raid warning signal.
Raiding aircraft have Left the towns and no Longer appear to threaten these towns	Raiders passed	Air Raid Message GREEN	All recipients of Action Warning	Message passed to authorities on the Action warning list some of whom will be responsible for sounding the Raiders Passed Signal.
The Preliminary threat has passed.	Cancel Caution	Air Raid Message WHITE	All recipients of preliminary caution (Whether or not they Have received action Warning and Raiders Passed Messages)	This message is intended to be confidential. It will be passed on only to those who received the premilitary caution

APPENDIX III-C

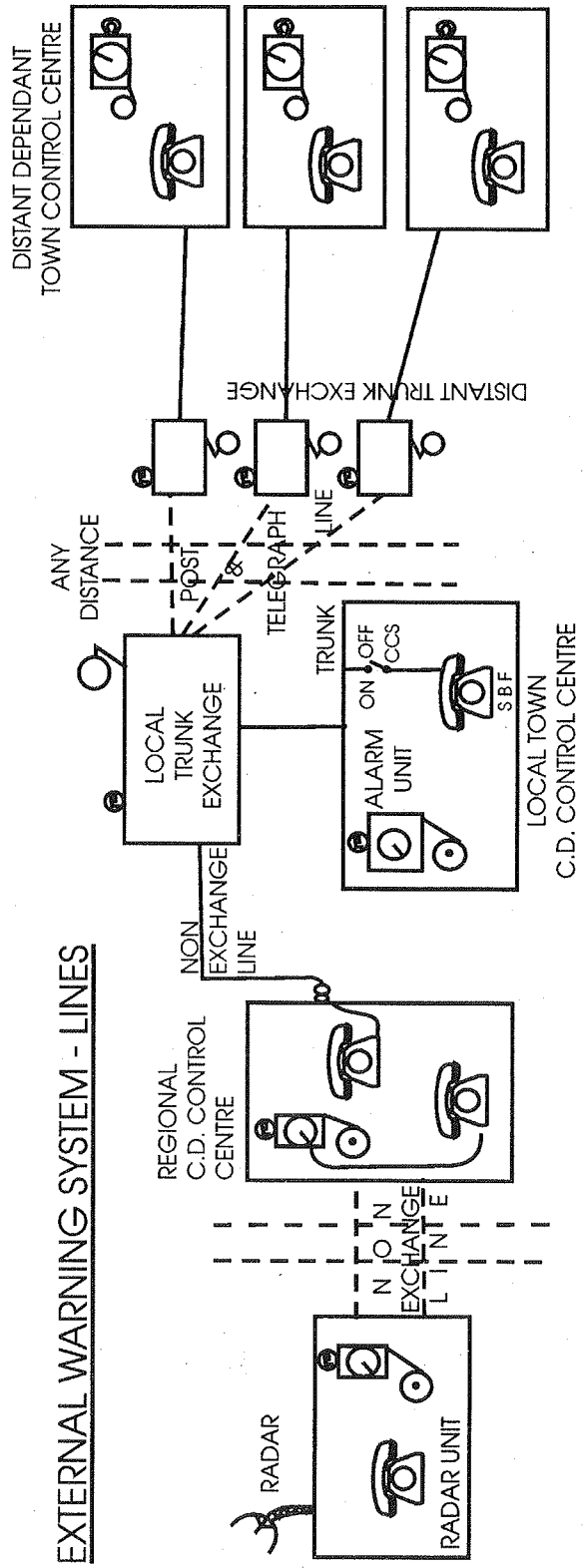
Recipients	Whether eligible For special list Yellow/White	Whether eligible for action list in all		Responsibility for conveying warning	Whether remarks responsible for information another recipient
		circumstances Red/Green	Only if not with in car shot of public signal		
(1)	(2)	(3)	(4)	(5)	(6)
1. Raj Bhavan	Yes	Yes	—	C/C	
2. C.D. Controller	Yes	Yes	—	Do	
3. District Magistrate	Yes	Yes	—	Do	
4. Local Naval, Military and Air Force H.Qrs.	Yes	Yes	—	Do	
5. Ordnance Factories	Yes	Yes	—	Do	
6. Sub control Centres	Yes	Yes	—	Do	
7. Operators of Public Warning Signals	Yes	Yes	—	Do	
8. Police Hqrs.	Yes	Yes	—	Do	
9. Fire Hqrs.	Yes	Yes	—	Do	
10. Port Trust	Yes	Yes	—	Do	
11. Railways	Yes	Yes	—	Do	
12. Telephone Exchange	Yes	Yes	—	Do	
13. Electricity Generation Station	Yes	Yes	—	Do	Only gas producing work to be included
14. Gas Works	Yes	Yes	—	Do	
15. Water Works	Yes	Yes	—	Do	
16. Oil Installations	Yes	Yes	—	Do	
17. Aerodrome Officers (At Civil Aerodromes)	Yes	Yes	—	Do	Detached Gas holders will not be included

18. Heads of C.D. Services	Yes	Yes	—	Do
19. A.I.R. Stations	Yes	Yes	—	Do
20. Cantonments	Yes	Yes	—	Do
21. Municipal Hqrs.	Yes	Yes	—	*S C/C
22. Mints & Security Press	Yes	Yes	—	Do
23. G.P.O. and C.T.O.	Yes	Yes	—	Do
24. Hospitals	Yes	No	—	Do
25. Jails	Yes	No	—	Do
26. Wardens Posts/ (Fire and Posts, Depots)	Yes	No	—	Do

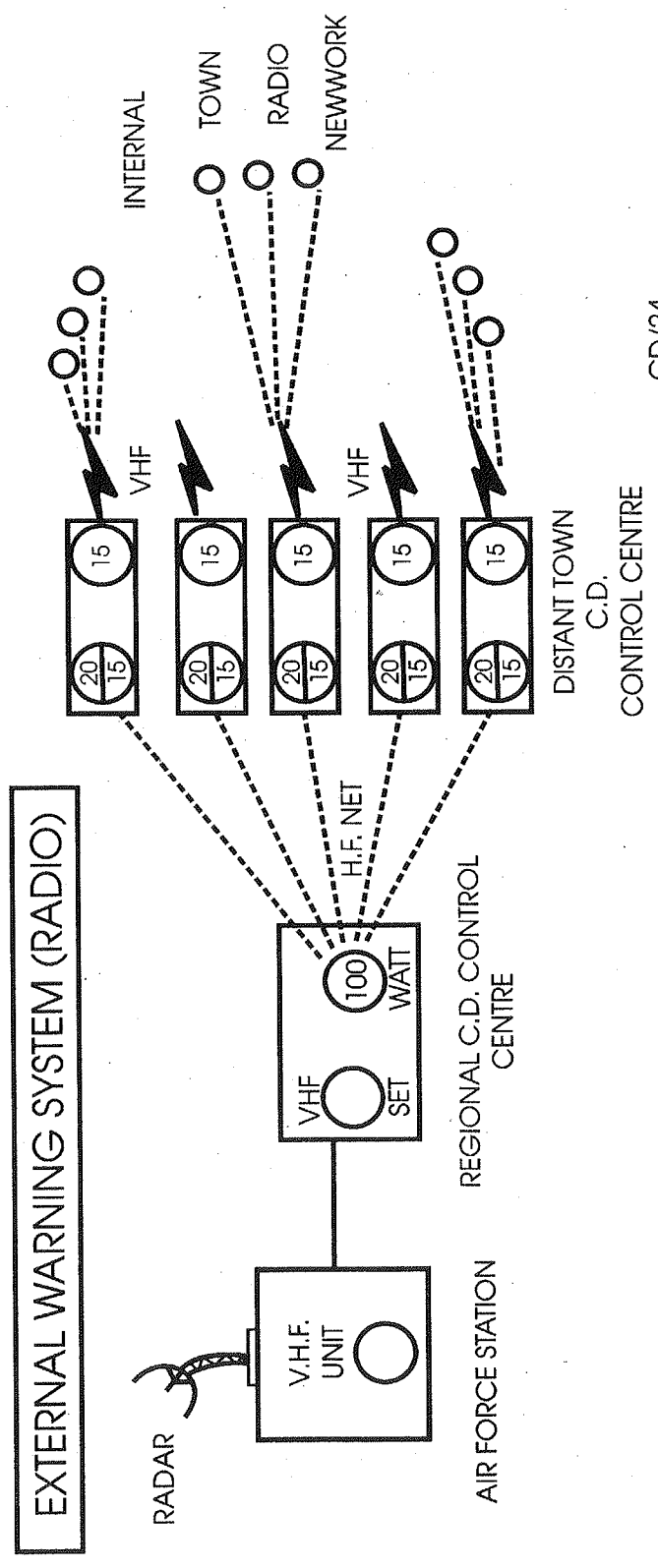
*C/C - Control Centre

*S C/C - Sub Control Centre

EXTERNAL WARNING SYSTEM - LINES



CD/24



PART-IV

CONTROL AND SUB-CONTROL CENTRES

4.1 **General**—Information of air raid damage is given by Wardens or other authorised reporting agents to Sub-Control Centres from which orders for the despatch of services are then sent out. They will also pass on to the Depots such other information (e.g. road blocks) as would affect the quick arrival of the services at the place of incident. Sub-Control Centres also pass on the information to the Control Centre, so that the latter has a complete picture of the general situation and is in a position to cope with demands for extra assistance and to provide necessary co-ordination and control.

In many areas, the Control and Sub-Control Centre will be combined; and in others, where there are several Sub-Control Centres, the Control Centre will be separate, but may be located for convenience and with some economy, alongside one of the Sub-Control Centres in the same building; in some areas (this should be exceptional) the Control Centre may be independent and at some distance from the Sub-Control Centre.

It may be noted that a Control Centre, if not combined with the Sub-Control Centre, does not receive reports direct from Wardens, but it is kept informed by one or more Sub-Control Centres of the situation as it develops.

Experience has proved that, generally speaking, the fewer the number of Sub-Control Centres there are in an area, the better; but the distance messengers may have to travel and the possibility of a Sub-Control Centre's communications becoming congested should be borne in mind when deciding on the numbers required.

Depot Superintendents in charge of Civil Defence Depots will normally take action only in accordance with messages received from the Control Centre or from a Sub-Control Centre; they may, in exceptional circumstances, have to comply with demands received direct from Wardens or others in which case the Sub-Control Centre must be informed of the services despatched.

Within any Control or Sub-Control Centre, a carefully devised organisation and a trained staff are essential to produce quick and accurate working. It is extremely important to institute the simplest possible procedure to this end.

Owing to many possible variations in construction which are required to suit local conditions it is not possible to standardise completely the staff and procedure of Control Centres, Sub-Control Centres and Combined Control and Sub-Control Centres. It is, however, possible to lay down broad principles for staff and procedure which can be adapted to suit local conditions.

4.2 **Essentials**—The main war-time essentials of Control and Sub-Control Centres are :-

- (a) at any time of the day or night, for so long as enemy action may necessitate, the Control and Sub-Control Centre must be in a position to receive and deal with reports of air raid damage or other messages;
- (b) a picture of the situation in the area must be maintained as a map record;
- (c) messages reporting fires must be dealt with immediately;
- (d) provision must be made for information which might affect the operation of any service e.g. blocking of roads, destruction of bridges, etc.) to be not only readily available, but also to be notified to all concerned as a matter of routine;
- (e) a simple and ready system should be instituted whereby the Controller and the Heads of Services can see at a glance the whereabouts of the parties of the various services and the number of parties which are available for duty at their depots;
- (f) the organisation should be such that under heavy bombing conditions when local resources may be insufficient to deal simultaneously with all the damage which has occurred, a decision may be taken on how these resources may be best employed and also on the order of priority in which the damage awaiting attention is to be dealt with as resources become available. An agreed decision should be arrived at by all Heads of Civil Defence and Essential Services involved, reference being made to the District Magistrate and to the Civil Defence Controller, if a difference of opinion arises; and
- (g) arrangements must be made for the preparation and despatch of reports required by higher authorities.

4.3 **General**—In order that the District Magistrate and C.D. Controller and the Heads of Civil Defence and Essential Services may control and co-ordinate action required as a result of an air raid and come to quick decisions, there must be a headquarters where -

- (i) they can meet and decide on the action to be taken and where they can be found for consultation by others;
- (ii) they have speedy access to all essential information affecting the situation; and
- (iii) there are means of communicating orders and information to all concerned.

This headquarters is termed "The Control Centre".

When there is only one Sub-Control Centre in the area, the Sub-Control Centre itself provides all the facilities necessary and should be the headquarters of the controlling officers who are then best located in the map room of the Sub-Control Centre. This Headquarter is then called "The Combined Control and Sub-Control Centre".

When there are several Sub-Control Centres in the area, each Sub-Control Centre receives information only about that part of the area for which it is responsible. It is then necessary to set up in addition a Control Centre to which the situation can be reported, as it develops, by each Sub-Control Centre, and where information regarding the whole area is thus available.

In these circumstances, the controlling officers cannot keep in such close touch with events, and authority should be delegated to the Officers-in-Charge of the several Sub-Control Centres to carry out such functions as may be considered necessary. Such delegation is generally best limited to the despatch of the mobile Civil Defence Services located in the area served by the Sub-Control Centres (e.g. Ambulance Service, First Aid Party, Rescue Service); all the remaining matters are then dealt with by the District Magistrate and C.D. Controller. These would include *inter alia*-

- (i) The provision of assistance from the area of one Sub-Control/Control Centre to that of another or reinforcements from a neighbouring Civil area/town;
- (ii) Matters pertaining to Hospitals and First Aid Posts (e.g. admission, transfers, removal of casualties, etc.);
- (iii) Unexploded Bombs;
- (iv) Care of the homeless;
- (v) Repairs to essential services;
- (vi) Clearance of debris, etc.

The Sub-Control Centres may however in respect of items (iii) to (vi) take such immediate action as is possible.

- (a) *Responsibility for Control and Sub-Control Centres*-A responsible officer to be called the Officer Commanding, Communications Service, should be placed in charge of the Civil Defence Communications System. He will be responsible for preparing local plans for Communications Service. In addition to planning of Control and Sub-Control Centres, he should be responsible for the enrolment, organisation, administration and training of the personnel required for Communications Service.
- (b) *Number of Control Centres*-There should be a Control Centre which should preferably be combined with a Sub-Control Centre in every town.

- (c) *Number of Sub-Control Centres*—It has been found that one Sub-Control Centre can under severe raiding conditions, cope with the traffic of approximately 40–50 Wardens Posts or roughly one Sub-Control Centre may be provided for six lakhs of population. If the terrain and layout so requires a higher scale may be adopted by the State Government with the concurrence of D.G., C.D.

In any case the Control Centre should, as far as possible, be combined with one of the Sub-Control Centres (See appendices IV–A and IV–B).

- (d) *Shadow Control Centre*—The possibility of Control Centre being put out of action by a chance direct hit should be considered and alternative arrangement should be made to meet such emergency by designating one of the Sub-Control Centres to assume the functions of Control Centre also. Similarly any Sub-Control Centre should be able to assume the functions of the neighbouring Sub-Control Centre when the need arises.

Where there is only one Sub-Control Centre which is combined with a Control Centre, it is necessary to make arrangements for an alternative Control Centre (*i.e.* Shadow Control Centre) with similar facilities as for the main Control Centre. The staff who should man the shadow Control Centre on receipt of preliminary warning may be designated in advance.

4.4 Location of Control and Sub-Control Centres—The location of a Control and Sub-Control Centre will largely depend on the availability of suitable accommodation which can be made available and given the required standards of protection. The question of access to the place by messengers from all parts of the area must also be kept in mind, as well as suitability from the point of view of telephonic communications. The administrative officers of the Government or of the Municipalities generally provide facilities from this point of view; they also contain suitable rooms. An additional advantage is that a great part of the staff of the Centre may be recruited from the office staff itself who may carry on with normal office work at times when the Centre is not required to be fully manned.

Where there are more than one Sub-Control Centre it is also convenient if the Control Centre is located in the same building as one of the Sub-Control Centres. Both centres should retain their separate functions. But the Control Centre should be adjacent to the Sub-Control Centre so that some economy in accommodation, telephone lines and staff may result (*e.g.* the Outdoor Messenger's Room may be shared).

4.5 Layout—A suggested layout for the various inds of Centres is shown in diagrammatic form in the appendices :—

Appendix IV–A shows a Combined Control and Sub-Control Centre.

Appendix IV–B shows a Sub-Control Centre.

Appendix IV–E is a guide to the size of Control and Sub-Control Centres.

A short description of the layout of a Control Centre is an area where there is more than one Sub-Control Centre is given below :-

- (a) *Map Room*—Wall space is required for the display of a large scale map covering the whole area. Space should also be allotted for the "Tally Board" (see para 4.9).

The Officer-in-Charge, the Plotting clerk and their staff will work here; there must be accommodation for the District Magistrate and Civil Defence Controller, the Heads of Civil Defence Services, and the Representatives of the various Essential Services.

- (b) *Message Room*—In this room only the reception and transmission of messages will be dealt with. Provision must be made to accommodate Telephonists, Message Supervisor and Indoor Messenger.

The Message Room is best located next to the Map Room with two hatches in the dividing wall for "IN" and "OUT" messages respectively. In any event it must not be far from the Map Room, or otherwise it will result in undue delay.

- (c) *Messenger's Room*—out-door Messengers will wait here until required.

It should be so situated that it can serve as an intersection point at which visitors to the Centre are detained pending instructions of the Officer-in-Charge.

It should be provided with "IN" and "OUT" hatches in the dividing wall between it and the Message Room.

4.6 **Telephones, accommodation etc.**

Control and Sub-Control Centre

The following lines will be required and should be given ex-Directory numbers.

- (i) *Exchange Lines*—

One—For the use of the District Magistrate and Civil Defence Controller;

One—For the use of each Head of Civil Defence Service and Representatives of Essential Services; one telephone, however, might well be shared by two or more persons; and

One—For receipt of air raid warnings.

- (ii) *Direct Lines*—

One to each Sub-Control Centre;

One to Fire Brigade Headquarters;

One to Police Headquarters;

One to Military Headquarters (if the town is also a Military Station); and

One to the next Higher Authority, Headquarters of the Commissioner or State Government. (This might, however, be an exchange line).

Where telephone lines cannot be obtained it will be necessary to depend on Messengers.

Combined Control and Sub-Control Centre

(a) Number of telephones for a Combined Control and Sub-Control Centre.

(i) *Exchange Lines-*

(1) Map Room

1 for Civil Defence Controller.

1 for each of the two Heads of Civil Defence Service and the Representatives of Essential Services.

1 for Officer-in-Charge.

(2) Message Room (All lines on P.B.X. system)

Town of 50 Wardens Posts in which there are telephones-6 In, 6 Out.

Town of 40 Wardens Posts in which there are telephones-5 In, 5 Out.

Town of 30 Wardens Posts in which there are telephones-4 In, 4 Out.

Town of 20 Wardens Posts in which there are telephones-3 In, 3 Out.

Town of 10 Wardens Posts in which there are telephones-2 In, 2 Out.

1 Special for Warnings.

(ii) *Direct Lines-*

(1) In Map Room

1 to Military Headquarters.

1 to District Headquarters or State Government.

(2) In Message Room

1 to each Fire Station if the Chief of the Fire Brigade has his headquarters in the Control Room; or

1 to Fire Brigade Headquarters if it is elsewhere than in the Control Room.

1 to Police Headquarters.

1 to each Sub-Control Centre.

- (b) *Personnel*—The establishment excluding controlling staff, for Combined Control and Sub-Control Centres of various sizes is given in Appendix IV-F (1 & 2). Three shifts are necessary. A reserve of 25 per cent should be trained.
- (c) *Additional Accommodation*—Apart from the operational rooms of the Control and Sub-Control Centre the following additional accommodation should be provided :—
- (i) Feeding for personnel on duty.
 - (ii) Retiring Room.
 - (iii) Sleeping accommodation for those on duty at night who are not expected to remain awake until the 'Action Warning' is received and for that proportion of other shifts who for any reason are unable to remain at their homes.
 - (iv) Shelter for any staff over and above those on duty in the Control and Sub-Control Centres.
 - (v) Lavatory.
- (d) *Protection of the Control and Sub-Control Centre*—The Control and Sub-Control Centres should be given standard protection against the blast and splinters effect of High Explosive Bombs and against the fall of debris caused by the collapse of upper storeys (of paragraph 1.14).
- (e) *Ventilation*—Adequate ventilation should be provided.
- (f) *Lighting*—An emergency lighting system should be installed.

4.7 **Equipment**—The equipment required for Control Centres and Sub-Control Centres is similar and the following applies to both. A reserve of 10 per cent of the equipment should be maintained.

The map must be so situated that it is fully visible to the controlling staff and the Officer-in-Charge. It may be hung on the wall or placed on a sloping table. It should be mounted on material such as cork line or low density wall board, so that pins may be easily inserted. The map should cover the whole area controlled by the Control Centre or the

Sub-Control Centre. The largest scale possible should be used. Upon the map should be marked the location of the Control Centre, Hospitals, First Aid Posts, Civil Defence Depots, Warden's Posts, Police, Fire Station etc. Important factories and undertakings should not be marked in any way which will indicate that they are vital to the war effort. (This is secret information). Too much detail should be avoided, otherwise it will be impossible to show a clear picture of the damage which is the main object of the map. It is not necessary to mark the boundaries of Warden's sectors, but the boundaries of Warden's Post areas should be shown and indicated by the number given to the post, e.g., K.B. (1). (See paragraph 6.6).

Representatives of Essential Services should be provided with map showing the layout of their respective services, e.g., the representative of the electricity undertaking should be provided with a map showing the layout of the cables, stations and sub-stations, etc.

4.8 **Damage Indicators**—Pins with different coloured heads to denote the type of incident and tabs which may be hung on the pins to denote the number allotted to the incident by the Chart Writer should be provided, for example.

(a) Incident pins about 1½ inches long with different coloured heads e.g.—

Navy Blue—to represent H.E.

Red—to represent fire still burning.

Blue with a white spot—to represent unexploded bombs.

Silver White—to represent crashed aircraft.

(b) Incident tabs are small discs with holes large enough to admit of their being hung on the incident pins in use. Tabs should be serially numbered the number being shown on each side; 1 to 25 should be enough for most centres. Two sets are required, one coloured white with black numbering and one coloured black, with white numbering, for use on alternate days in order to distinguish incidents occurring on the previous day.

(c) *Road Block Pins*—Pins with heads differently shaped from the incident pins should be used for this purpose, but should be provided with coloured heads as for incident pins. The appropriate colour denoting the reasons for road block should be used.

(d) *Road Closed Pins*—Pins with black and white heads should be used to delimit the area closed.

4.9 **Tally Board**—A Tally Board showing the resources available and their allocation should be provided for each Control and Sub-Control Centre. It is not necessary for each Head

of Service to maintain a separate Tally Board for his use as he will be able to see the one provided for the Centre as a whole.

Particulars of a suggested Tally Board are given in Appendix IV-D.

4.10 **Telephones**—It will be convenient if the "IN" telephones are given consecutive numbers and arrangements are made with the Posts and Telegraphs Department for a "P.B.X." (Private Branch Exchange) system of numbering to be installed whereby a call made to the first of the numbers will, if that is engaged, be passed automatically to the next disengaged number.

4.11 **Visual Calling Indicators**—Visual calling indicators are preferable to a number of telephone bells/buzzers and if possible arrangements should be made for their installation in the Message Room at least.

4.12 **Switch Boards**—Switch Boards provide for communication between a number of rooms in one office, access from several internal telephones to lesser number of external lines, the connection of an incoming call to a particular recipient, and the concentration of lines for a reduced staff at times when the office is not fully staffed.

For Civil Defence communication the number of external lines must in any event be approximately equal to the number of telephones installed because the use of a switch board would lead to delay increase in faults and the need for additional staff and accommodation. The use of a switch board is, therefore, NOT advised.

If however, a switch board is used, it should be located in the protected part of the building.

4.13 **Duties—**

(a) *District Magistrate and Civil Defence Controller—*

- (i) To exercise general control of all action to be taken as a result of an air raid and to keep in touch with the general situation.
- (ii) To take decisions on matters of major importance. Where the functions of the District Magistrate and C.D. Controller are not performed by one offices, the District Magistrate has the responsibility for taking the final decision on any matter, should a difference of opinion arise between any of the officers concerned.
- (iii) To arrange for mutual support between the Sub-Control Centres or from neighbouring areas.
- (iv) To make reports as required to higher authorities

(b) *Heads of Civil Defence Services and their Deputies-*

- (i) To exercise general control and supervision over the work of their services.
- (ii) To consult with one another on matters affecting more than one service and to decide, if necessary, after reference to the District Magistrate and C.D. Controller, on the action to be taken.
- (iii) They do not intervene in the action of Sub-Control Centres unless it is necessary to allocate the services to incidents in order of priority or for some other good reason.

(c) *Representatives of Essential Services-*

- (i) To keep their headquarters in touch with the situation and to inform them of any matter which affects their particular service.
- (ii) To arrange for any action necessary to be taken by their services.
- (iii) To be available for consultation with the District Magistrate and C.D. Controller.
- (iv) To maintain a record of progress of repair work.

(d) *Officer-in-charge-*

- (i) It is not desirable that the District Magistrate, C.D. Controller and Heads of Civil Defence and Essential Services should be hampered in the exercise of other responsibilities by the routine of managing a centre. It is equally undesirable that the operation of a Centre should be dependent upon all the staff being present throughout the period of and immediately following an air raid (see para 4.3) Heads of Civil Defence Services should not normally be directly responsible for despatching Civil Defence Services as they will have other important matters to attend to. The responsibility for the operation of Control and Sub-Control Centres and for the despatch of services should therefore, be entrusted to the Officer-in-Charge. He will be directly subordinate to the District Magistrate and C.D. Controller and may deputise for the latter when he is not available.
- (ii) If the situation is such that the order of priority in which incident should be attended is to be decided he will take instructions from the District Magistrate and C.D. Controller. He will then be responsible for the consequent detailed action.
- (iii) If necessary he will decide on the priority of despatch of messages.
- (iv) He will ensure that all clocks and watches are synchronised at regular times each day with Post Office, Radio or Railway time.

- (v) He will be responsible for the efficient organisation of the Centre, training of the staff, maintenance of roster of duties and provision of reliefs.
- (vi) He will see that arrangements for alternative lighting and other precautions are satisfactory.

(e) *Chart Writer*—*

- (i) He works with the plotting Clerk.
- (ii) He receives all the copies of "IN" messages and allots a serial reference number to each incident and enters it on the bottom right hand corner of each "IN" message form. To avoid confusion between the incidents of different days the date of occurrence should be shown after it, e.g. 5/16 which mean incident No. 5 of 16th. Any messages which are received and which relate to the same incident must be similarly marked with the number previously given to that incident.

A copy of any message reporting a fire must be passed on without delay to the Fire-Liaison Officer or in his absence to the Officer-in-Charge of the Centre, if necessary, without marking the number of the incident; this can be done later.

- (iii) The record which he keeps is called a "Chart" and should have following columns headed—

Incident No.	Time of incident	Place of Incident	By whom reported

In the first column the numbers 1, 2, 3, 4, etc., may be filled in beforehand with a separate number on each line.

The other columns should be filled in on the basis of information supplied by the Plotting Clerk and should be checked against the Plotting Clerk's copy of

* *The duties of Chart Writer and Plotting Clerk may be combined.*

the "IN" message before this goes to the record clerk for filing. At every midnight he will draw a line below all previous entries. The first incident reported after midnight will be given Serial No. 1

(f) *Plotting Clerk*—*

- (i) The Plotting Clerk is responsible for keeping the map up-to-date and ensuring that it gives a correct picture of the situation as it has been reported upto any given moment.
- (ii) As reports come in he must determine whether they relate to fresh incidents or incidents which have already been reported. If it is a fresh incident he will inform the Chart Writer so that a serial reference number may be allotted.
- (iii) He will plot the incident on the map using the incident tabs and pins provided for the purposes. The appropriate coloured pins should be inserted in the map at the point where the incident has occurred and the tab bearing the number of the incident should be hung on it. Should it be multiple incident e.g., H.E. and fire, then the blue and red pins should be struck in at the same place and the tab hung on one of them.
- (iv) He will remove the pins for any incident when it has been reported as cleared, but he should consult the Officer-in-Charge before doing so. Pins indicating unexploded bombs, roads blocked and closed roads should not be removed until the bombs have been disposed of or the roads reopened. The incident tabs should be removed when the incident has been reported as dealt with and in any case at 23.59 hrs. on the day following that on which the incident occurred.
- (v) He will keep Static Damage Map up-to-date (see Appendix IV-K)

(g) *Intelligence Officer*—

- (i) The Intelligence Officer will maintain a diary of all important events and a record of each incident showing the action taken.
- (ii) He must be ready to give at any time an up-to-date and accurate appreciation of the situation.
- (iii) He will prepare drafts of such reports as have to be sent to higher authorities. To enable him to do this he should see every "IN" and "OUT" message and have ready access to the files maintained by the record clerk.
- (iv) It is desirable that any one in the Control and Sub-Control Centre may at any time see what has been done about any incident. The intelligence

Officer will, therefore, after noting the contents of "IN" and "OUT" messages, which he receives (see para 4.16 (a) below) place them together in the order in which they were received or despatched and hang them on pegs fixed in a suitable place on the wall of the Map Room.

- (v) In smaller Control Centres where no Intelligence Officers are provided the above duties may be performed by the Officer-in-Charge assisted by his clerk and the Chart Writer.
 - (vi) He will prepare reports on the use of new weapons and new enemy tactics as required by the C.D. Controller.
 - (vii) He will keep up-to-date static damage cards (vide Appendix IV-K).
- (h) *Tally Board Clerk*-*
- (i) He operates the Tally Board under the immediate supervision of the Officer-in-Charge.
 - (ii) He is responsible for keeping the Tally Board up-to-date so that it correctly shows the distribution of the Civil Defence Services. To enable him to do this, he must see copies of all "IN" and "OUT" messages affecting movement of services.
- (i) *Record Clerk*-*
- (i) He files all "IN" and "OUT" messages in files numbered to correspond with the reference number of the incident to which they refer. He has thus available for reference a complete record of all reports and the action taken in respect of each incident. He will also maintain a log book for recording the main events of the day.
 - (ii) He should file a duplicate copy of all "OUT" messages passed for despatch and attach to them the original, with the spaces for 'date', 'time of despatch' and 'telephonist's initials' completed. Thus any one consulting the file can see whether an "OUT" message has been despatched or not. There should be a separate file for each incident.
 - (iii) All incidents should be properly recorded and suitably indexed. A sheet of coloured paper should be used to separate messages relating to fresh incidents. Record should also be maintained for messages to and from the next higher or lower authority and other miscellaneous messages which do not relate to any particular incident.

* *Duties of Tally Board and Record Clerk may be combined.*

- (iv) After midnight a new set of files will be started for fresh incident occurring in the next 24 hours. After the incident on a file has been closed, it should be recorded. All the files should be arranged date-wise in serial order of incident number.
- (v) He should be continually scrutinising his files with a view to (a) verifying that all messages included have been correctly filed and that any superfluous copies are removed and (b) detecting and bringing to the notice of the Officer-in-Charge any incidents in regard to which action is unaccountably incomplete or slow.
- (j) *Clerks to the Controller and the Heads of Services*—They will write messages as instructed by the officers they serve and assist them in any other way required.
- (k) *Message Supervisor*—
 - (i) Is in charge of the Message Room and is responsible to the Officer-in-Charge for the training of its staff.
 - (ii) Will arrange the daily roster of duties for all the Message Room personnel so that a small skelton staff is always on duty and a full staff is available at a very short notice by day or night.
 - (iii) Will supervise the work of the Message Room generally to ensure that it is carried out with accuracy and rapidly, that the messages are legible and that the message procedure is correct.
 - (iv) Will inform the Officer-in-Charge of any interruptions or congestion of the Communication system.
 - (v) If congestion occurs he will ensure that the messages are despatched according to the order of priority ordered by Officer-in-Charge.
 - (vi) During periods of congestion he will authorise the use of "IN" telephones for "OUT" messages.
 - (vii) He will ensure that the messages are despatched by the most expeditious means, e.g., by telephone or by messenger, as may be deemed best at the time.
 - (viii) He will ensure that each telephonist has a list of all telephone numbers which it may be necessary to call. The names and addresses with the authorised abbreviations of the subscribers should be in alphabetical order for easy reference.

- (ix) He will see that all messages are completed with the particulars concerning the 'date', 'time at which receipt or despatch of message was completed' and 'telephonist's initials'.
 - (x) He will see that "OUT" message after despatch are promptly returned duly completed, to the record clerk for filing and that when messages are sent by messenger the necessary details of despatch are sent to the record clerk.
 - (xi) If messages are received by Messenger he will ask the Officer-in-Charge if he wishes to question him before he departs.
 - (xii) He will answer the telephone himself in case of difficulty with any caller.
- (l) *Telephonists*—
- (i) They will write down and transmit messages correctly, rapidly and in accordance with the rules for message procedure.
 - (ii) Messages must be checked back to ensure accuracy and after completion they will be handed over to an Indoor Messenger for check by the Message Supervisor.

Message Writing—(For specimens of Message Forms, see Appendices IV-G, IV-H, IV-I and IV-J).

- (m) *Indoor Messengers*—They will give general assistance and will act in accordance with the instructions of the Officer-in-Charge.
- (n) *Reconnaissance Parties*—The primary function of these parties will be to carry out reconnaissance of unexploded bombs. The reconnaissance of UXBs (unexploded bombs) involves detailed knowledge of various types of bombs and their fuses with which a Warden may not be thoroughly familiar. Apart from this, there may be occasions when Reconnaissance Parties may be usefully employed :
 - (i) For reconnaissance at places where damage of severe type has occurred. Only a detailed reconnaissance by specially trained parties at such places will disclose the true picture of damage. Such reconnaissance, which presupposes a certain technical standard, is beyond the scope of a 'Warden'. The C.D. Officers present in the Control Room or at the scene will need the assistance of these specialists whose reconnaissance will help them considerably in formulating their line of action.
 - (ii) Where special types of weapons are used by enemy, a detailed study of these weapons and their effects will be useful both for defensive as well

as offensive purposes. The personnel of these parties, with their knowledge, would be able to furnish useful data so that methods may be devised for training C.D. personnel in dealing with such weapons.

There should be three Reconnaissance Parties per Control Centre/such Control Centre Party per shift, each party consisting of two Reconnaissance Officers. The object of having Reconnaissance Parties in a Sub-Control Centre is that the Sub-Control Centre should be able to have first hand information about any serious damage or unexploded bombs where special reconnaissance would be necessary. On receipt of a report of any such kind, they will, on instructions from the Officer-in-Charge of Sub-Control Centre, proceed to the scene of incident and carry out such further reconnaissance as may be necessary and report back to the Sub-Control Centre. This will enable the Sub-Control Centre to have a graphic account of the situation and decide upon the measures necessary to deal with the situation. Members of Reconnaissance Parties should normally be recruited from instructional staff. No separate manpower is therefore necessary for this purpose.

The Reconnaissance Parties will be accommodated in the Sub-Control Centre the size of which should be increased suitably to meet their requirements also.

A reserve of 25 per cent of the personnel for Reconnaissance Parties should be recruited and trained. The reserve of equipment and vehicles should be 10 per cent.

4.14 "IN-Messages"-

- (i) "IN-Messages" should be written down in Sub-Control or Control Centres on CDM2 if they start with the phrase Fire/Express/Air Raid Damage as the case may be and on form CDM4 for other messages. These forms are printed in red to distinguish them readily from "OUT-Message" forms which are printed in black (see paragraph 4.15 below).
- (ii) The number of copies required should be decided in advance by the Officer-in-Charge and this number should henceforth apply to all messages received whether by telephone or by messenger. Four copies should normally be sufficient even in the largest Centres.
- (iii) Arrangements must be made for making copies in the Message Room of messages received through messengers.

4.15 "OUT-Messages"-

- (i) Message should be written on CDM3.
- (ii) Sufficient copies of all messages must be taken so that apart from those required for use in the Centre, one copy for each addressee can be passed to the Message Room.

- (iii) In the 'Addressed to' part of the form should be written the designation and address of the person for whom it is intended. It should seldom be necessary to use the actual name of the addressee. It is advisable that recognised abbreviations for the designation and address should be used and made known to all concerned.
- (iv) The text should be concise but complete and whenever possible each message should refer to only one incident or a group of incidents when several have been grouped for the purpose of incident control.
- (v) It is essential that messages reporting damage should describe the place in a manner which will enable a Plotting Clerk-cum-Chart Writer who may have little local knowledge to identify readily the location of the incident on the map in use. Either of the two methods may be employed :-
 - (a) the name of the street in or near which the incident has occurred or the name of nearest road junction; or
 - (b) an outstanding map feature may be referred to, e.g., "House 200 yards east of Telegraph Office".
- (vi) The expression "Road Blocked" should only be used to denote the fact that it is physically impossible for a vehicle to pass. Where a road is closed by the Police or other authority, e.g., because of an unexploded bomb or a dangerous building the expression "Road Closed" should be used.
- (vii) To enable the Tally Board Clerk-cum-Record Clerk to file message correctly the incident number must be inserted by the originator in the bottom right hand corner on "OUT-Messages".

4.16 Circulation of Messages-

- (a) "IN-Message" — When a message is received by telephone, the telephonist will make the required number of copies and pass them to the Message Supervisor for check. If a written message is received by messenger it will, in the first instance, be handed over to the Message Supervisor who will arrange for the required number of copies to be made.

They are then passed through the "IN" Hatch to the Chart Writer who hands over one to the Plotting Clerk. If the message reports a fire he will pass a copy, which normally goes to the Officer-in-Charge (see at page 48), immediately to the Fire Liaison Officer or in his absence, to the Officer-in-Charge without delaying it for the insertion of the incident number as mentioned below. The Fire Liaison Officer or the Officer-in-Charge will, after having taken action, pass

this copy to the Chart Writer for insertion of the incident number; the Chart Writer will pass it to the Officer-in-Charge for normal circulation as given below. The Plotting Clerk decides whether it relates to a new incident or not. The Plotting Clerk then informs the Chart Writer either (a) that it is a new incident in which case the Chart Writer allots a number, informs the Plotting Clerk, inserts the number on the three copies with him and distributes them as below, or (b) that it is an incident previously reported and states the number of it; the Chart Writer inserts the number of the incident on the three copies with him and distributes them as below.

The Chart Writer then writes the number of the incident in the bottom right hand corner of all the copies and distributes them as follows :-

Copy	Plotting Clerk	After plotting the incident on the map the Plotting Clerk hands his copy back to the Chart writer who in turn enters incident number therein and passes it to the Record Clerk for filing.
1 Copy	Officer-in-Charge	If the message affects the movement of services he passes it to the Tally Board Clerk who makes the necessary alterations on the Tally Board. The Tally Board Clerk then passes the copy to the Intelligence Officer who finally keeps it on the clip file.
2 Copies	District Magistrate & C.D. Controller	For the information of the District Magistrate and C.D. Controller, Heads of C.D. Services and representatives of Essential Services. When no longer required these copies should be passed to the Record Clerk in order to save an unnecessary accumulation of papers on the table of the controlling staff.

In Sub-Control Centre three copies will be made instead of four and their distribution and course of circulation will be as shown below :-

- 1 copy Plotting Clerk-Chart Writer-Record Clerk
- 1 copy Office-in-Charge-Tally Board Clerk-Record Clerk
- 1 copy Liaison Officer (if any)

(b) "OUT-Messages"-Messages will be written on CDM3.

The number of copies will vary, but sufficient copies must be taken so that there is :-

1 copy for each addressee

1 copy for record

1 copy for the Officer-in-Charge who, if it refers to the movement of parties will pass it on to the Tally Board Clerk; The latter after making any necessary alterations on the Tally Board, will pass it to the Intelligence Officer. If the messages does not refer to the movement of parties, the Officer-in-Charge will pass his copy to the Intelligence Officer direct.

The copies for despatch unless those for the Record Clerk and the Officer-in-Charge will be passed through the OUT-HATCH to the Message Supervisor. He will distribute them to the Telephonist or send them by messenger. When the telephonist has completed the details on the top of the form, it will be passed through the Message Supervisor to the Record Clerk.

If the message is sent by messenger, the Message Supervisor will fill in a blank CDM3 message form, the following details from the original :-

Incident No.

Date

Time of origin of the message

Time at which despatch was completed

Addressed to

Addressed from.

He will mark the form 'sent by messenger', initial it and pass it to the Record Clerk who will then attach it to the original to show that it has been despatched.

In a Sub-Control Centre the distribution and course of circulation of an 'OUT' message will be as follows :-

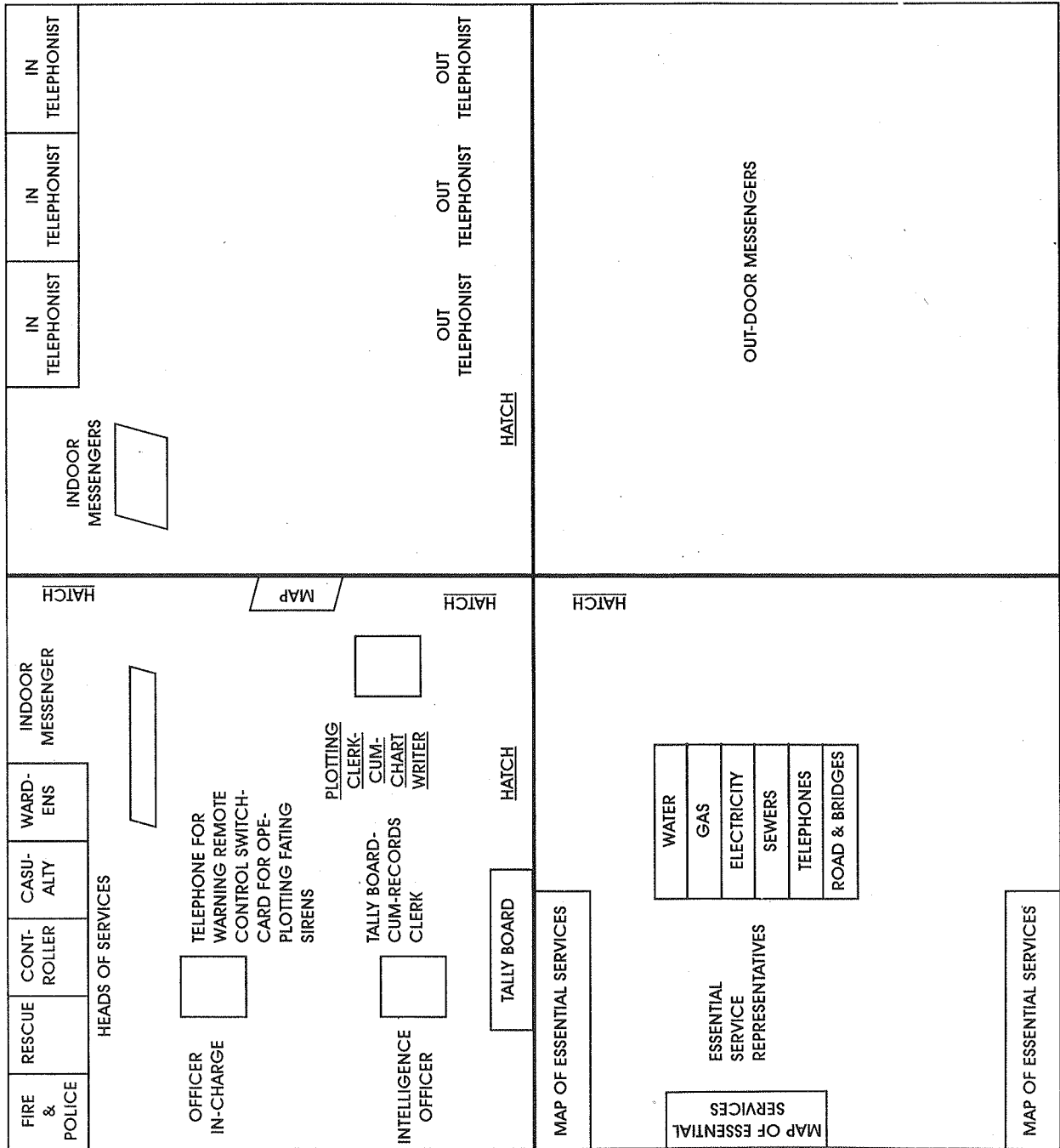
1 copy for each addressee

1 copy for Record Clerk

1 copy for Officer-in-Charge-Tally Board Clerk-Record Clerk.

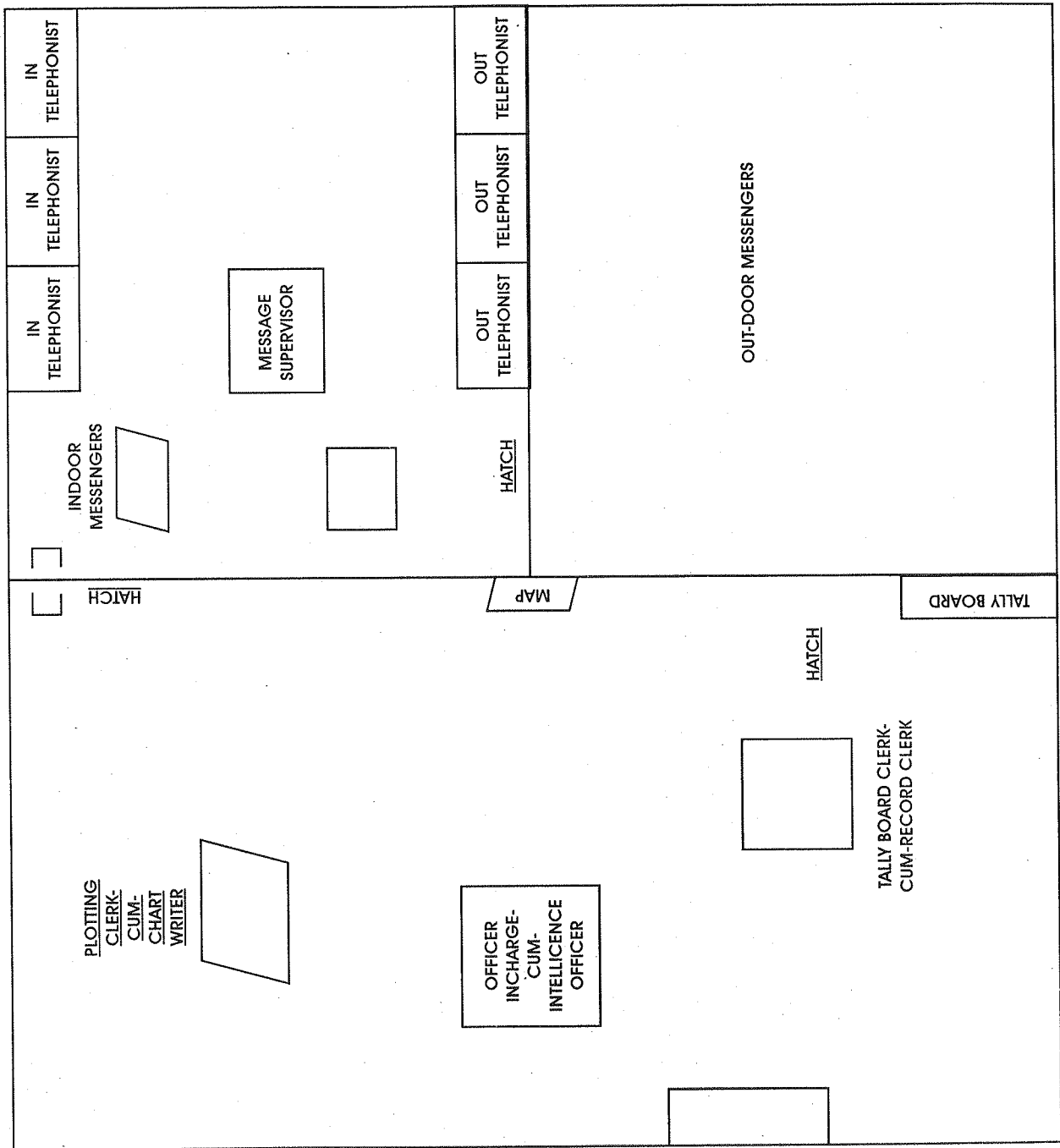
APPENDIX IV-A

DIAGRAM OF A COMBINED CONTROL & SUB-CONTROL CENTRE



APPENDIX IV-B

DIAGRAM OF SUB-CONTROL CENTRE



APPENDIX IV-C

TALLY BOARD

1. Functions of the Tally Board

The Tally Board is designed to show at a glance the Civil Defence and other resources available in an area under a Control/Sub-Control Centre and their movement. The Tally Board will indicate the following :-

- (1) The strength of resources available to the authority at any time;
- (2) the disposition of these resources within the area; and
- (3) the deployment of the resources to the sites of incidents.

It will also show :-

- (i) the services received as 'Reinforcement' from outside the area and the services sent to outside areas, at any time; and
- (ii) the deployment of the services received as 'Reinforcement' to the place of incident.

Many other items can be included on the tally board but care is needed to avoid overloading, remembering that normally only one person will operate the board, and that detailed information can be obtained from the register of incidents kept by the Record Clerk.

In actual raiding conditions the tally board is equally important as the map. The map is meant for locating an incident or place of damage and the tally board for indicating the resources engaged in dealing with the situation.

2. Type of Board

The size of the board will depend on the number of depots and mobile resources available to the Control/Sub-Control Centre and the number of incidents desired to be shown on the board at any one time. The board has two panels; one 'Resources Panel' showing the resources on hand and the other the 'Incidents Panels', showing the deployment of these resources at the incidents. The board should be designed so as to allow for insertion of further incident panels, if necessary. A small black-board is included at the bottom of the 'Resources Panel' which is intended for essential information not already covered by the board. As a rough guide, a 5'x8' board will be enough for a Control/Sub-

Control Centre serving an area having a population between 2 to 5 lakhs. Detailed specification of the tally board will be given in the hand book on "Communication Service".

The board, the sketch of which is appended (see page 49), should be painted with a white undercoating and with two coats of white paint (matt finish). This provides the best possible background, from the visibility point of view, and will not shine. All rulings and letters on the board should be in black. The 'Reinforcements' column and the bottom strip of the 'Resources Panel' should be painted in black with letters and rulings in white.

3. Tallies

A tally is a flat, regular piece of metal or some other durable substance capable of withstanding much handling without deterioration, with a flange through which a hole is perforated. They are required to be in assorted colours to represent various Civil Defence services. Materials like plastic and painted tin plate would serve the purpose very well. The shape of the tally should be somewhat as shown in the appended diagram with one side not exceeding one and a quarter inch and the other one inch. The tallies are hung on either right angled hooks or small panel pins driven at a slightly upward incline into the board. Each tally should represent a unit of the particular service and bear the number of the depots to which the service belongs. When a tally is removed from the 'Resources' panel it is immediately apparent from its colour what party or vehicle it represents and by its number, the depot from which it comes.

4. The Resources Panels

Down the right hand side of the panel are shown in writing the names of various services likely to be available to the authority. Each service has its own distinctive colour. The colour scheme for tallies of different services is shown in paragraph 9 (Nine) below.

Across the top of the panel are shown the depots at which the resources are stationed. Each depot bears its distinctive number which is also shown on the tallies representing the services available at the depot.

5. Reinforcement Received

Down the left hand side of the 'Resources Panel' is shown the 'Reinforcement Column'. The 'Reinforcement Column' provides two sub-heads (i) IN and (ii) OUT. When Services are received as 'Reinforcements' from outside the area of a Control, Sub-Control Centre, the number of service units received should be noted in writing in the 'IN' column. The units or services received as 'Reinforcements' should be represented by discs to distinguish them from 'Tallies' representing local services. The discs for 'Reinforcing' Services should be one inch in diameter with a hole near their circumference (*vide* diagram at page 56) and be of the same colour as allotted to the corresponding local services but for obvious reasons will not bear depot numbers. All the 'Reinforced' Services, for the operational purposes,

should be assigned to some local Depot and the requisite number of 'discs' representing the 'Reinforced' Services should, therefore, be placed in the appropriate service strips below that Depot. When these 'Reinforcing' Services are moved to any place of incident, the required number of discs representing these 'Reinforcing' Services should be removed from the 'Depot' column and be placed in the 'Incident' column of the particular incident. As soon as these services are returned from the 'Incident' the discs relating to these services should be moved from the incidents column and placed in the respective depot column. When the services are, however, returned to the parent depot, the discs representing these services are removed from the Tally Board.

6. **Reinforcement Sent Out**

When services are sent outside the area of a local Control/Sub-Control Centre to reinforce the services of a neighbouring area, the tallies representing the units of the local services should be removed from the panel of the 'Depot' column concerned and placed in the 'OUT' column under 'Reinforcements'.

7. **The Incident Panel**

Across the top of the 'Incidents' Panel there is a column for the Incident number. This is indicated by a number which will correspond to the incident number plotted on the map.

When Services are ordered to be sent, the appropriate number of tallies representing the service units ordered out are moved across from the 'Resources' Panel and placed against the incident number to which they have been ordered. When the services are reported back at their depot, the tallies are returned to their original position.

All incidents brought together under one Incident Officer are treated as a single incident and the tallies of all resources sent there should be grouped under one incident number, agreed upto to represent the group of incidents. At the bottom of the incident panel are shown the non-civil defence services, e.g., Fire Service, Police, Essential Services, etc.

8. **Fire Service, Police, Essential Services, etc.**

In the case of these services only one tally should be placed for each different type of service in the incident column, e.g., if three pumps are dealing with fire at an incident, it is not necessary to place three tallies of Fire Service below that incident column, but only one tally should be placed to show that the fire is being attended to.

It must be remembered that the Tally Board is intended to show only the resources available and their disposition. The incident which does not involve any change in the disposition of the available resources need not be shown on the Tally Board. The operator should be instructed to take action only on those messages which relate to movement of parties or vehicles.

Incidents to which no services have been despatched will, of course, be recorded on the Register of Incidents.

It is imperative that the depots should notify to the Control/Sub-Control Centre of the despatch or return of services so that full check can be kept on their movement and the Tally Board is kept up-to-date.

9. The colour scheme for Tallies of different Services is as follows :-

I. **C.D. Services**

(1)	Rescue Parties	Blue
(2)	First Aid Parties	White with light green bar
(3)	Mobile First Aid Posts	White with green bar
(4)	Ambulances	White with light red bar
(5)	Mobile Surgical Unit	White with red bar
(6)	Other C.D. Services-	
	Canteens	Light Green with white bar
	Incident Officers	Light Blue with white bar
	Reconnaissance Parties	Deep Grey with white bar

II. **Non-C.D. Services**

(1)	Fire Service	Red
(2)	Police Service	Brown
(3)	*Repair Parties of Essential Services	Light Grey with letters representing each service.
(4)	Bomb Disposal Squads	Blue with red bar.

* In order to identify the various repair parties belonging to essential services the following letters are suggested :-

Repair Parties	Gas Mains	→	G
-do-	Water Mains	→	Wa.
-do-	Electricity Mains	→	El.
-do-	Sewers	→	Sew.
-do-	Telephones	→	Tel.
-do-	Road	→	Rd.

NOTE-The bars mentioned above should be 1/4" thick painted at the bottom of a tally.

APPENDIX IV-E

(a) Guide to the size of Sub-Control Centres

No. of wardens Posts in Area	Map Room (Assuming Three Representatives)	Message Room	No. of Telephonists	No. of Messengers	Messengers Room
	Sq. ft.	Sq. ft.			Sq. ft.
50 Posts	350	375	12	15	250
30 Posts	325	250	8	10	167
10 Posts	300	150	4	5	120

(b) Guide to the size of Combined and Sub-Control Centre

No. of Wardens Posts per Sub-Control Centre	Control Room <i>i.e.</i> Map Room (Assuming six Representatives and C.D. Controller)	Message Room	No. of Telephonists	No. of Messengers	Messengers Room
	Sq. ft.	Sq. ft.			Sq. ft.
50 Posts	525	425	12+2	15+3	300
30 Posts	500	275	8+1	10+2	200
10 Posts	450	150	4	5+1	120

(c) Formulae

The general formulae for determining the number of Telephonists and Messengers and accommodation requirements of Sub-Control/Control Centres Staff are given below :-

Staff	Sub-Control Centre	Combined Sub-Control and Control Centre	Control Centre (when not combined)
(i) No. of Telephonists	No. of W. Posts* $\frac{\quad}{5} + 2$	1 to 2 Telephonists more.	4 to 8 Telephonists
(ii) No. of 'OUT' Messengers	No. of W. Posts* $\frac{\quad}{4} + 2$	1 to 3 Messengers more.	5 to 10 Messengers

* Warden Posts.

Accommodation-

- (i) Roughly 25 square feet per head are provided.
- (ii) Minimum size of room should be 120 sq. feet.
- (iii) For Messengers Room accommodation should be provided only for two-thirds of the number of out-door Messengers.

(NOTE : All Messengers are not expected to be continuously in the room, as some of them will be out on errands).

- (iv) For details of staff of Map Room and Message Room see Appendices IV-F(1) and (2). For Map Room, calculate also the accommodation required by the representatives and the Controller and add 100 sq. ft. for equipment.

APPENDIX IV-F(1)
STAFF OF SUB-CONTROL CENTRE
Details of one shift

Details	No. of Wardens Posts per Sub-Control Centre		
	50 Posts (Population 5 lakhs)	30 Posts (Population 3 lakhs)	10 Posts (Population 1 lakh)
	(1)	(2)	(3)
Officer-in-Charge	1	1	1
Plotting Clerk/Chart Writer	1	1	1
Tally Board Clerk/Records Clerk	1	1	1
'IN' Messenger	1	1	1
<i>(a)</i> Total of 'Map Room' Staff	4	4	4
Message Supervisor	1	1	Nil
Telephonists	6	4	2
'IN' Messengers	1	1	Nil
<i>(b)</i> Total of Message Room Staff	8	6	2
<i>(c)</i> Total of 'OUT' Messengers	6	4	2
Total in shift <i>i.e.</i> total of <i>(a)</i> , <i>(b)</i> and <i>(c)</i>	18	14	8

A reserve of 25% of the personnel should be provided. Besides the above staff there should be one reconnaissance party per shift in Sub-Control Centre.

APPENDIX IV-F(2)

STAFF OF COMBINED CONTROL AND SUB-CONTROL CENTRE

Details of one shift

Details	No. of Wardens Posts per Sub-Control Centre		
	50 Posts (5 lakhs Population) (1)	30 Posts (3 lakhs Population) (2)	10 Posts (1 lakh Population) (3)
Officer-in-Charge	1	1	1
Intelligence Officer	1	—	—
Plotting Clerk/Chart Writer	1	1	1
Tally Board Clerk/Records Clerk	1	1	1
'IN' Messenger	1	1	1
<i>(a)</i> Total of 'Map Room' Staff	5	4	4
Message Supervisor	1	1	Nil
Telephonists	10	6	2
'IN' Messengers	1	1	1
<i>(b)</i> Total of Message Room Staff	12	8	3
<i>(c)</i> Total of 'OUT' Messengers	10	6	2
Total in shift <i>i.e.</i> total of <i>(a)</i> , <i>(b)</i> and <i>(c)</i>	27	18	9

Besides the above staff there will be 2 Reconnaissance Parties per shift in a Control Room. Each Party will consist of 2 persons. Extra accommodation should be provided for them near Control Room. Where Intelligence Officer is not provided his duties should be performed by the Officer-in-Charge.

APPENDIX IV-G
MESSAGE FORM CDM 1

Date	Form of Report to sub-control Centre or Fire Station	Time of origin
1.	*(Commence report with the words) :- FIRE/EXPRESS/AIR RAID DAMAGE REPORT	
2.	Designation, Reporting Agent :- (e.g., Warden's post Number)	
3.	Time of Incident- (Approx.)	
4.	Place of Incident-	
5.	*Cause of Damage-	H.E. I.B. Cr. Aircraft
6.	Casualties :- (If any trapped under wreckage or fire say so).	
7.	Type of Fire, if any-	
8.	Names of Roads Completely Blocked-	
9.	*Damage to Mains-Water, Gas, Sewers, Overhead/Underground Electric Cables	
10.	Position of Unexploded Bombs-	
11.	Services already on the spot or coming-	
12.	Remarks-	
	(Finish with the words)-	"MESSAGE ENDS"

ORIGINAL/ These words are for use with a report sent by messenger.
DUPLICATE Delete whichever does not apply.

*Put a ring round the actual damage and leave others alone.

NOTE: For express of fire report use only columns 1-8 and where necessary column 12 also.

APPENDIX IV-H
MESSAGE FORM CDM 2
(For use at Sub-Control Centres)

Date	Time at which receipt of message was completed	Telephonist's Initial
1.	*(Commence report with the words) :- FIRE/EXPRESS/AIR RAID DAMAGE REPORT	
2.	Designation, Reporting Agent :- (e.g., Warden's post Number)	
3.	Time of Incident- (Approx.)	
4.	Place of Incident-	
5.	*Cause of Damage-	H.E. I.B. Cr. Aircraft
6.	Casualties :- (If any trapped under wreckage or fire say so).	
7.	Type of Fire, if any-	
8.	Names of Roads Completely Blocked-	
9.	*Damage to Mains-Water, Gas, Sewers, Overhead/Underground Electric Cables	
10.	Position of Unexploded Bombs-	
11.	Services already on the spot or coming-	
12.	Remarks-	
		Serial No. of Incidents (Inserted in the Map Room).
	(Finish with the words)-	"MESSAGE ENDS"

*Put a ring round the actual damage and leave others alone.

APPENDIX IV-I
MESSAGE FORM CDM 3

Date	Time at which despatch of message was completed	Telephonist's Initial
------	--	--------------------------

Addressed to :-

Text of Message :-

Time of Origin of Message :- Addressed from :-	Serial No. of Incident (Inserted in the Map Room)
Signature (of official authorising the despatch of an "out message").	

APPENDIX IV-J
MESSAGE FORM CDM 4

Date	Time at which receipt of message was completed	Telephonist's Initial
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Addressed to :-

Text of Message :-

Time of Origin of Message :-	Serial No. of Incident (Inserted in the Map Room)
Addressed from :-	

APPENDIX IV-K

STATIC DAMAGE MAP

The Control and Sub-Control Centre should have a special map for those incidents which have not been cleared up by the midnight of next day of the occurrence and where the damage is so great that some time may elapse before the damage is repaired or the incident cleared. Even if the Wardens have been withdrawn after having given over charge to Essential Services, Police or Military and the incidents have been cleared from the C.D. point of view, but in fact still some work has to be done by non-C.D. Services and such work will take some time before the incidents are cleared finally, such incidents are plotted and the incident will be re-plotted on the Static Damage Map. The Static Damage Map will show at a glance to the Controller and other Officers the incidents which are static and not cleared up.

The following category of incidents may have to be plotted on Static Damage Map:-

- (1) Unexploded Bombs
- (2) Crashed Air Craft
- (3) Big fires
- (4) Fires controlled or extinguished but which have flared up again.
- (5) Roads blocked owing to crater or fall of heavy building.
- (6) Damage to-
 - (i) Water Reservoirs
 - (ii) Generating Stations
 - (iii) Bridges, etc.

The Intelligence Officer and Officer-in-Charge of Sub-Control Centre will write in short, adopting the Express Message style, the details of incidents on a Card specially meant for Static Damage Map showing such incidents.

In writing the Card, the Officer-in-charge will write-

- (i) Number and date of incident
- (ii) Location

(iii) Nature of Damage

(iv) Action taken

e.g. :-

(i) Incident No. 4 of 3rd December 20.....

(ii) Patel Nagar Waterworks

(iii) Pumping Station blown up

(iv) Municipal Corporation informed

The Sub-Control Centres will keep the Control Centre informed of all the static damage within their jurisdiction.

The messages relating to the incidents which have been transferred to Static Damage Map should be kept on a separate row on the top of the message rack to avoid confusion. The messages relating to static incidents will be removed from the rack only when the incidents are finally cleared and/or the damage is repaired and/or it has been declared by the authorities that the damage is beyond repair and nothing further can be done regarding the incidents.

The Officer in charge, Control Centre will keep the Controller informed of the progress of the static damage.

PART-V
MESSENGER SERVICE

5.1 **Duties**—There will be two types of Messengers—Indoor Messengers and Outdoor Messengers. Outdoor Messengers are an essential part of the Civil Defence Organization and provide an alternative means of communication in case of a breakdown of the telephone service. They are required to provide communication from Warden's Posts etc. to the Control/Sub-Control Centre and from the Control/Sub-Control Centre to Warden's Posts, Combined Depots, First Aid Posts, etc., and also to the next higher authority.

Indoor Messengers will be required at Control Centre, Sub-Control Centres and First Aid Posts to assist in passing on messages between various authorities under the same roof (i.e. indoor) and any other assistance that may be needed of them.

5.2 **Control**—The Officer in charge, Communications is in general charge of this service. He will generally require a Staff Officer or Messenger Commandant, who should be responsible under his direction for the organisation, administration, enrolment, training of the service and the maintenance of records. He should be provided with the necessary clerical staff.

5.3 **Numbers Required**—The numbers of messengers required for each CD service are shown under the respective services.

A reserve of 25 per cent of the establishment should be enrolled and trained.

The numbers required for the Fire Service need special consideration in the light of local conditions. Messengers for the Fire Service should form part of that service and not of the Messenger Service.

5.4 **Equipment for Outdoor Messengers**—1 Bicycle per Messenger. In addition a proportion of motor cycles may be necessary when the Warden's Service relies on the use of Messengers for Posts where no telephones exist.

5.5 **Accommodation**—Messengers should be considered when providing accommodation at Warden's Posts, Depots, Sub-Control/Centres, etc.

PART-VI
WARDEN'S SERVICE

6.1 **General**—There will be great need in time of air raids for persons of influence, courage and personality, with a sound knowledge of the locality to advise and help their neighbours and generally to serve as a link between the public and the authorities. To provide for this, an Air Raid Warden's Service will be organised.

No one should be enrolled who is a member of the Territorial Army or is liable to recall as a reservist to the Defence Forces, or has undertaken to join a Police Force or Fire Service or Home Guards or has undertaken any other statutory obligation in an emergency.

6.2 **Duties**—A warden's duties are *inter alia*—

- (a) To give general advice on Civil Defence to the residents in his locality as to what they can do to help themselves and others in an air raid, and to organise self/help parties from among the residents.
- (b) To help to recruit volunteers for Civil Defence Services.
- (c) To assess air raid damage and to report it concisely and correctly, to guide and assist the Civil Defence Services, to deal with it.
- (d) To advise persons in the street to take shelter when an air raid warning has been sounded.
- (e) To report outbreaks of fire to the fire brigade.
- (f) To study his sector in the hours of darkness so that he can find his way out without hesitation in an emergency—when the area may be plunged in darkness.
- (g) To keep his C.D. diary up-to-date.
- (h) To set an example of coolness and to prevent and control panic and specially counteract rumours.
- (i) To tour his sector at regular intervals, noting weather conditions such as the direction of wind and any other points, which may prove of value in an air raid, e.g., empty houses where fires may occur unnoticed, nearest telephones, location of Fire Hydrants etc.
- (j) To give warnings in the following manner :—
 - (i) A succession of short blast on the whistle to indicate that incendiary bombs are being dropped in the neighbourhood;

- (ii) "Action Warning" by a short blast followed by a long blast on whistle repeated at intervals of three seconds.
- (iii) "Raiders Passed" signal by two long blasts on the whistle repeated at intervals of three seconds.
- (k) To maintain a household register for his sector showing the number of residents in each building by day and by night.
- (l) To give advice regarding emergency sanitation, care of animals etc.
- (m) To help in collection drive for emergency clothing.
- (n) To control the incident pending arrival of Incident Officer, make arrangements for parking of vehicles, control of traffic etc.
- (o) To render first aid, rescue and such other assistance as may be necessary pending arrival of specialised services.
- (p) To report UXBs, cordon off the areas and get the houses evacuated.
- (q) To arrange for temporary morgue pending arrival of Corpse Disposal Squads.
- (r) To render succour to homeless people, pending their dispersal to Rest centres.
- (s) To furnish information to people regarding their various problems such as loss of clothing, identity cards, rations, repairs to houses, whereabouts of relatives etc.
- (t) To secure useful equipment like ladders, ropes, buckets etc. from local people or improvise the same.

6.3 **Warden's Post**—The unit of organisation for a Warden's Service is the Warden's Post which should serve normally 5 sectors each comprising a resident population of about 4000.

The post should be in a prominent position in order that it can easily be found by Wardens and members of the public. It should be situated as near as possible to the centre of the group of sectors which it serves.

The Warden's Post is the place at which Wardens allotted to the post would assemble on "Action Warning". It is also the place from where they would telephone or send message to the Sub-Control Centre. It may be that some of the sectors served by the post will be found to be too far from it to admit of the wardens residing in those sectors to proceed to the post before bombs might be expected to fall. Wardens of those sectors would assemble at a pre-arranged place in those sectors.

The post should be large enough to provide a message room in which there should be a telephone, if possible, and the necessary furniture. This room should be capable of

affording protection for the wardens using the room, against blast and splinters of a 1,000 lb high explosive bomb, falling 75 feet away and protection against the fall of debris.

6.4 Spacing of Warden's Posts—In the very sparsely populated parts and on the outskirts of towns a minimum of at least one post per sq. mile would be necessary.

The Civil Defence authority, having determined the number of posts and their location on the principles laid down above, should proceed to select the premises to be used.

6.5 Number of Wardens—The establishment is two wardens per sector of 4000 population. In sparsely populated areas, a sector may consist of about 1000 population. In addition, there should be one Post Warden per Post.

Additional personnel upto 25 per cent of the authorised establishment should be enrolled and trained in order to provide a reserve to be called upon in case of need.

It is essential that all industrial and commercial concerns should be fully informed of the arrangements made by the Civil Defence Controller of the area in which they are situated, and of the best method of calling for assistance.

To avoid variation in the methods used by firms, factories etc., for reporting incidents, it is considered desirable in the interest of efficiency to secure uniformity in this matter. The following procedure is recommended :—

- (a) In concerns not having their own Control Post, the request for assistance should be sent through the nearest Warden's Post to the Sub-Control Centre.
- (b) In concerns which have their own Control Post, the request should be made from the Control Post direct to the Sub-Control Centre.
- (c) The reporting procedure should conform to that in use in the city or town Civil Defence area.

6.6 Organisation of the Wardens Service—The executive head of the Warden's Service should be a Chief Warden or Officer Commanding, who will require a Deputy.

10 Posts should normally be grouped in a division under a Divisional Warden. Normally a division should consist of two lakh population.

The post should be placed in charge of a Post Warden and one of the Wardens should be appointed as Deputy Post Warden to assist him and to act as his relief. The Post Warden will be in charge of the wardens in the post area.

Each group of posts should be distinguished by the name of the division or a symbol. The posts belonging to a division will be indicated by the name of that division or a symbol coupled with a number—thus the Posts in the 'Karol Bagh' division would be

numbered KB1 KB2 KB3 and so on. It is preferable for administrative convenience, to have the numbers of the posts rather than of the sector which may be otherwise distinguished if considered necessary—e.g., sectors attached to Post KB1 might be known as sectors KB1(a), KB1(b), etc.

Thus the structure of the organization for a town of approximately 2,00,000 inhabitants will be :-

Divisional Warden (with one deputy)	
Division (2,00,000 population)	
Post Warden Post (20,000 population) i.e. K.B.1	9 other posts
Sector Warden Sector (4,000 population) i.e. K.B.1(a)	4 other Sectors

Where the Chief Warden and Divisional Warden are volunteer officers, they may be provided with the assistance of whole time Staff to impart training and to ensure efficiency of the Warden Service in addition to taking charge of routine duties. He can also act as Incident Officer in his area. The staff officers should be provided with clerical assistance according to necessity. As a general rule, two Instructors with one clerk and one messenger per two lakh of population or per division have been authorized.

The basic requirements of Warden Service in a typical town with two lakh population will be as follows :-

Sector Warden (2 per 4,000 population)	100
Dy. Post Wardens (10 Posts)	10
Post Wardens (10 Posts)	10
Dy. Divisional Warden	1
Divisional Warden	1
Dy. Chief Warden	1
Chief Warden	1
Staff Officer/Specialised Instructors	2
Clerk	1
Messenger	1
Total	128

A reserve of 25 per cent of the personnel should be provided.

Each Wardens post should also have 2 outdoor Messengers, with 25 per cent reserve, all diverted from existing staff.

The Chief Warden, the Deputy Chief Warden, the Divisional Warden, the Deputy Divisional Warden and the Post Warden should take part in arranging for the registration and training of wardens, and should be responsible for allotting them to posts and arranging roster of duty, replacement in cases of sickness or injury and so on. With the exception of the Post Warden, they would not, however, constitute a chain of communication in time of air raids; the individual wardens would send their reports direct or through the Post Warden and not through their Divisional or Chief Wardens or their Deputies.

There may, however, be occasions when the most expeditious method for calling out the C.D. Service would be for the warden to directly contact the C.D. Depot, e.g., where an incident has occurred in close proximity to the depot. Warden should, however, take the earliest opportunity to inform the appropriate Sub-Control Centre in CDM1 form adding the details of services requisitioned from the Depot.

6.7 Incident Officers—The presence of various C.D. Services at a scene of air raid damage requires that their work should be controlled and co-ordinated on the spot by a responsible officer. This officer is usually designated as an "Incident Officer". Incident Officers are in fact an adjunct to the Warden's Service Organisation. Suitable persons from the higher ranks of Warden's Service and instructional staff who have no operational function during an air raid should be selected to perform the functions of incident Officers. Their duties in general consist of :-

- (i) exercising control over the C.D. Services at the scene of an incident;
- (ii) ensuring that operations proceed systematically;
- (iii) keeping the Report Centre informed of the progress of the incident.

The Incident Officer is required to co-ordinate the work of a number of services each of which has its own technical problem to solve. He is not required to decide all the details of the technical work to be done, but to see that the work is adjusted to suit the general plan.

One Incident Officer (Post Warden) per 50,000 population may be selected and trained; a reserve of 25 per cent of Incident Officers should be provided. Staff Officers or some of the instructional staff may be designated as Incident Officers and hence no fresh recruitment will be necessary.

Incident Officers should be selected with regard to personality, power to command, coolness in danger, ability to size up the situation and to make a plan, etc. They should

have detailed knowledge of the topography of the affected area and of the Civil Defence Organisation and operation.

It is desirable to accommodate the Incident Officers in the Combined Depots because transport and other information affecting the area will be readily available there. If they are accommodated at a selected Wardens Post in each Division, transport, communication, and other arrangements will have to be duplicated.

Until the arrival of an Incident Officer, the Post Warden or the senior most Warden present will co-ordinate the activities of various services at the scene of damage.

6.8 **Card of Appointment**—Wardens should be provided with a card of appointment. A suggested form of card, which should be signed by the Controller of C.D. Services, is given below. It is advisable that a photograph of the Warden should be placed on the back of the card and stamped with the seal of the Civil Defence authority concerned.

<p>NAME OF THE CIVIL DEFENCE AUTHORITY</p> <p>Civil Defence</p> <p>This is to certify that Shri has been duly appointed as an Air Raid Warden*. This is his authority to carry out the duties laid upon him by the (name of C.D. authority).</p> <p>Signed.....</p> <p>Controller of C.D. Services</p> <p>Place and Date of issue of card.....</p> <p>Date of appointment of Warden.....</p> <p>Signature of Warden.....</p>
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* A similar card of appointment should be issued to the personnel of all other C.D. Services by replacing the word 'Air Raid Wardens' with the appropriate designation.

PART-VII
CASUALTY SERVICE

7.1 **General**—This chapter deals with the organisation, training and work of Casualty Service in Civil Defence and its relation to the Hospital Organisation in an emergency. The arrangements for dealing with casualties in wartime comprise of the Emergency Hospital Organisation under the hospital authorities and the Casualty Service under the Civil Defence Organisation. Emergency Hospital Organisation will provide expanded facilities for the treatment of air raid casualties requiring hospital attention. The Casualty Service will provide First Aid facilities on the spot and at fixed centres as well as provide transport for the casualties. In addition there will be Civil Defence Ambulance Trains arranged and organised by the Civil Defence authorities at the Centre to provide for movement of casualties from heavily blitzed areas to hospitals in safer zones.

7.2 **Emergency Hospital Organisation**—This consists of casualty receiving hospitals in vulnerable areas and base hospitals in safer areas. The casualties after they have received treatment at the Casualty Clearing Hospitals will be removed to base hospitals, where they can recoup their health undisturbed. Besides such removal will release much needed accommodation in the hospitals in vulnerable areas. States have the following categories of hospitals :—

- (a) Government Hospitals,
- (b) Local Bodies Hospitals (Municipal and District Board),
- (c) Charitable Hospitals,
- (d) Private Hospitals,
- (e) Railway Hospitals.

The Administrative Medical Officer of the State (*i.e.* Director of Health Services) controls the State Medical Service and Government Hospitals; other hospitals are administered by their own organisations. All the hospitals mentioned above should be considered in the Emergency Hospital Organisation and may be required to admit and give treatment to air raid casualties. In casualty receiving hospitals, arrangements should be made so that beds could be made available—

- (a) within 24 hours of declaration of an emergency, by immediate discharge of minor cases or by transferring some cases to base hospitals and by putting extra beds in wards and varandahs of existing hospitals, and
- (b) within a week by taking over and equipping buildings already earmarked for emergency hospitals.

The basis of the provision of number of beds in each graded town will depend on its vulnerability, its size and importance both military and industrial. It is, however, considered, that it will be sufficient if one bed per 750 of population is provided for.

7.3 Casualty Service—The Casualty Service in Civil Defence organisation will consist of the following sections :—

- (a) *First Aid Parties*—The function of First Aid Parties will be to render first aid to air raid casualties at the place of damage and to provide transport for casualties by stretchers or emergency transport methods.
- (b) *First Aid Posts*—They may be mobile or static. They are designed to relieve congestion at the hospitals by providing first aid facilities for the air raid casualties.
- (c) *Mobile Surgical Units*—They are intended to provide surgical facilities in areas where such facilities are deficient.

The casualty service will provide vehicle transport for casualties by means of Ambulances.

The First Aid Parties, Ambulances, Mobile First Aid Posts and Mobile Surgical Units will all be located at the Combined C.D. Depots. On being ordered the specified services will proceed to the scene of damage and attend to the casualties on the spot. Casualties will then be sent to Hospitals or First Aid Posts unless a Mobile First Aid Post has been functioning on the spot. The stretcher cases will be transported in Ambulances, and other cases if unable to walk may be transported in the First Aid Party Cars which will serve as sitting case cars also.

7.4 First Aid Parties

- (a) *Controlling Officers*—The Officer Commanding, Casualty Service is in general charge of the First Aid Parties. For every Two lakhs population he should have to assist him, a Staff Officer who should be responsible under his direction for the organization and administration of the service, enrolment and training of personnel and maintenance of records. This officer should also be made responsible for Ambulances and the Ambulance personnel. He should be provided with the necessary clerical staff. For operational efficiency of casualty service vehicles the Transport Supervisor (see para 12.4) should be made responsible. A Chief Honorary Staff Officer in district, Senior Honorary Staff Officer in a zone and Honorary Staff Officer in a division should take part in arranging for registration and sponsoring for imparting training of personnel and should be responsible for allotting them to posts and arranging roster of duty, replacement in cases of sickness or injury and so on.

One First Aid Party Group Leader may be appointed in each Civil Defence Depot who will be in command of all First Aid Parties stationed at the Depot.

In each party one man should be appointed as Leader of the party and another to act as his Deputy.

- (b) *Composition of Parties*—First Aid Parties should be composed of 4 first aiders and 1 ambulance driver. One of the men should be designated as Leader and another as his deputy. The party should be provided with a car at the rate of one per 3 parties. A reserve of 10 per cent of vehicles should be provided.
- (c) *Number of Parties*—First Aid Parties are to be provided at the scale of three parties per static First Aid Post. The distribution of the First Aid Parties will, however, depend on the importance of the locality and the density of its population. A reserve of 25 per cent should be enrolled and trained.
- (d) *Location*—First Aid Parties should be stationed in Civil Defence Depots where other Civil Defence Services (Rescue, Ambulance, etc.) are also stationed.

7.5 Ambulance

- (a) *Control*—The Staff Officer of First Aid Parties is in general charge of the Ambulance Services. He should be responsible for the organisation and administration of the Service, enrolment and training of the personnel, and the maintenance of records. He should be provided with one clerk.
- (b) *Number of Vehicles*—Ambulances should be provided on a scale of 2 per five First Aid Posts and 1 per three First Aid Parties. A reserve of 10 per cent of vehicles should be provided. For sitting cases First Aid Party cars should be utilized.
- (c) *Types of Vehicles*—Suitable Light vans capable of taking (in two tiers) 4 stretchers of the size of the Army Pattern (viz. 7' 9" long 1' 11" wide 6" high) should be earmarked. It may be found necessary to earmark private cars for conversion into a van shaped body. There should be room within the ambulance for the attendant.
- (d) *Personnel*—The establishment is one driver and one attendant for each ambulance. A reserve of 25 per cent should be provided.
- (e) *Location*—Ambulances should be located at the C.D. Depots.

7.6 First Aid Posts :

- (a) *Controls*—The Officer Commanding, Casualty service, is also in general charge of the First Aid Posts Organisation. Where there are four to fifteen First Aid Posts, he is assisted by a Chief Honorary Staff Officer in a district, Senior Honorary Staff Officer in a zone and Honorary Staff Officer in a division who should be responsible

under his direction, for the organization and administration of the posts, enrolment and training of the personnel, and the maintenance of records. They should be provided with the necessary clerical staff.

When the Casualty Service organisation is so small as not to need a staff officer for each Casualty Service e.g., First Aid Posts Organisation, Ambulance Service and First Aid Party Service it may be possible for the Officer Commanding, Casualty Organisation to be personally responsible for the above matters in respect of all these services. In some instances one Staff Officer for all or some of these services would be sufficient.

Each First Aid Post should be in charge of a doctor. He will be directly responsible for the efficiency of the First Aid Post personnel.

Fixed First Aid Posts should be situated in buildings suitable for this purpose. Where possible, these posts may be at or attached to hospitals which will enable them to function efficiently and also to act as a screen to the hospital against an abnormal influx of lightly injured persons. By such an arrangement admission to hospital of cases requiring further treatment can be made with the least possible delay. It has the added advantage that the resources of the hospital in the form of its equipment and personnel can be made available to the post, if and when required.

- (b) *Functions*—It is intended that First Aid Posts should relieve congestion in hospitals by dealing with cases requiring treatment which can properly be given initially by personnel trained in first aid.

The cases calling for urgent medical or surgical attention, such as may be obtained only at a properly equipped hospital, would derive no benefit from further first aid treatment after having received attention from the First Aid Party and might indeed suffer by reason of the delay. Such cases should be sent direct to hospital without delay and should not pass through a First Aid Post at all.

Stretcher cases should be placed in an ambulance and sent direct to hospital; walking cases should be directed to a First Aid Post, or sent home after aid is given at the site of incident. Casualties requiring attention at First Aid Posts, but not able to walk may be sent there in First Aid Party cars.

- (c) *Spacing of Posts*—The normal rule is that adjacent Posts should be less than two miles apart so that no casualty would have to go more than a mile to reach a post, i.e., one First Aid Post should serve an area within a radius of about 1 mile or roughly an area of three square miles. Normally one First Aid Post should

be planned for an area of three square miles, the size of the First Aid Post depending on population as shown in (d) below.

- (d) *Scale of First Aid Posts*—The First Aid Posts are to be set up at the scale of 1 per 20000 for the first Two lakh of population and 1 per 40000 above that.
- (e) *Layout of First Aid Posts*—The rate of flow of patients through each type of First Aid Post, type, plans and description of Post are given in detail in Appendix VII-A. This may be modified to suit local conditions.
- (f) *Personnel*—It is suggested that the establishment of the Post should as far as possible be according to the scale given below :-

There will be a doctor in charge of each First Aid Post and his staff should preferably include at least one fully trained nurse in addition to first aid workers, clerks, etc. They are required to work within the Post. The clerks may also perform the function of storeman for the post.

Suggested minimum staff is :-

Doctor	1
First Aiders	3
Nurse	1
Clerk	1
Messenger	1
Sweeper	1

The scale of relief staff is as below :-

Doctor	1
First Aiders	3
Nurse	1
Messenger	1

A reserve of 25 per cent should be enrolled in order that casualties among the staff may readily be replaced.

- (g) *Medical Stores Depot*—A stock pile of medical stores for Civil Defence services should be built up in Central Medical Stores Depots. Medical equipment for both casualty and hospital services will have to be made available, as far as possible, from these depots. Where the depots are not able to meet the demand, State Governments will be authorised to purchase these locally.

- 7.7 (a) **Mobile First Aid Posts**—The main draw back in having static F.A. Posts is that they immobilize more medical and nursing man-power on standby duty than can be spared in any future war. Mobile First Aid Posts will, therefore, meet this difficulty considerably. In the less densely populated areas small First Aid Posts might be replaced by Mobile First Aid Posts which would be used in effect to set up an aid-post as and where required. Even in thickly populated areas it will be useful to have one Mobile First Aid Post in each combined Depot in replacement of a Static First Aid Post. The number of posts so replaced should not exceed 1 per sub-control centre. These mobile First Aid Posts should consist of complete first aid medical unit ready to proceed to the scene of a major incident, to set up and provide immediate medical attention and treatment there. Each mobile post consists of a motor vehicle such as a big truck or van carrying more or less the same equipment as for a small fixed First Aid Post and also the medical staff. A reserve of 10 per cent of vehicles should be provided.

The Mobile First Aid Posts, wherever possible, should be stationed at Civil Defence Depot.

Each Mobile First Aid Post should have the following staff :-

Doctor	1
Driver	1
Nurse	1
First Aider	1
Sweeper	1

Doctor-in-charge of the Mobile First Aid Post should be entrusted with the following duties :-

- (a) To train the personnel of Casualty Service.
 - (b) To train C.D. Services in first aid.
 - (c) To act as Medical Officer-in-charge of the Depots.
 - (d) To go out to attend to major incidents where a number of First Aid Parties have to be sent.
 - (e) Administrative matters connected with the Casualty Service Personnel in the Depots.
- (b) **Mobile Surgical Units** : In areas where hospital facilities are not readily available Mobile Surgical Unit may be established. Each Mobile Surgical Unit will consist of a Motor vehicle which will carry all the equipment of the Unit and its staff.

A reserve of 10 per cent of vehicles should be provided. The unit should function in conjunction with a First Aid Post.

Each Mobile Surgical Unit should have the following staff :-

5 Doctors (including one General Surgeon, one Orthopedic Surgeon and one Anesthetist)

5 Fully trained Nurses.

2 O.T. Assistants

2 O.T. Attendants

1 Radiographer

1 Lab. Technician

1 Driver

Other supporting staff as required.

A reserve of 25 per cent should be enrolled and trained.

It is recommended that one Mobile Surgical Unit may be provided for every 600000 to 1000000 of population. In towns where population is less than 6,00,000 the local authorities should ensure adequate surgical facilities to the existing hospitals.

7.8 Local Reserves—These reserves should be divided into First Line and Second Line Reserves, 50 per cent being allotted to each. First Line Reserves should be held, in selected First Aid Posts for the immediate replenishment of the First Aid Posts, Haversacks, First Aid boxes, etc. Second Line Reserves should be held in selected hospitals serving a group of First Aid Posts.

7.9 Civil Defence Ambulance Trains—The train will be made up of passenger coaches suitably altered to take lying as well as sitting cases with arrangement for medical staff, equipment and feeding. Staff will consist of doctors, nurses, first aiders, clerks, cooks and attendants.

The trains will be stationed at sidings of some selected Railway Stations outside threatened areas. From here the trains will run to the towns requiring evacuation of casualties and then the loaded trains will go to the Hospital reception areas. After unloading the train will return to the original location and will be re-stocked preparatory for making another trip. The local authorities should provide the Ambulances and stretcher assistance in loading and unloading the casualties. On arrival at the entraining station the Officer Commanding of the C.D. Ambulance Trains should be supplied with the following information :-

- (a) No. and type of cases classified according to injury.
- (b) No. of cases which can go on upper berths.
- (c) Cases requiring special attention.

The C.D. Ambulance Trains will be under the administrative control of the Civil Defence authorities at the Centre, whom the State Medical Authorities will approach in case of need. The C.D. authorities at the C.D. Centre will then inform the Officer Commanding C.D. Ambulance Train and give him the name of detaining station. The Officer commanding will get in touch with Railway authorities concerned and inform the medical authorities at the entraining and detraining stations of the probable arrival of the train so that they proceed with arrangements for transporting the casualties.

7.10 **Record of Casualties**—Proper record of casualties should be kept both by the First Aid Parties and at the First Aid Posts. The Casualty label should be filled in by a First-aiders and tied on the casualty. Similarly casualty register book, personal injury casualty In-patient and Out-patient book may be filled in at a First Aid Post. These are shown in Appendices VII-B, C, D & E.

7.11 **Identity Cards for Diabetic Patients**—In order to facilitate treatment by first aid workers all diabetic patients should carry identity cards as shown in Appendix VII-F.

APPENDIX VII-A

FIRST AID POSTS

The guidance given in this memorandum as to the spacing of the First Aid Posts, should be closely followed in the preparation of schemes. The number of Posts should not be greater than is required by the Area to be covered.

1. Requirements of a Post

The Post should consist of three rooms, namely :-

F.A. 1 Reception Room.

F.A. 2 First Aid Room.

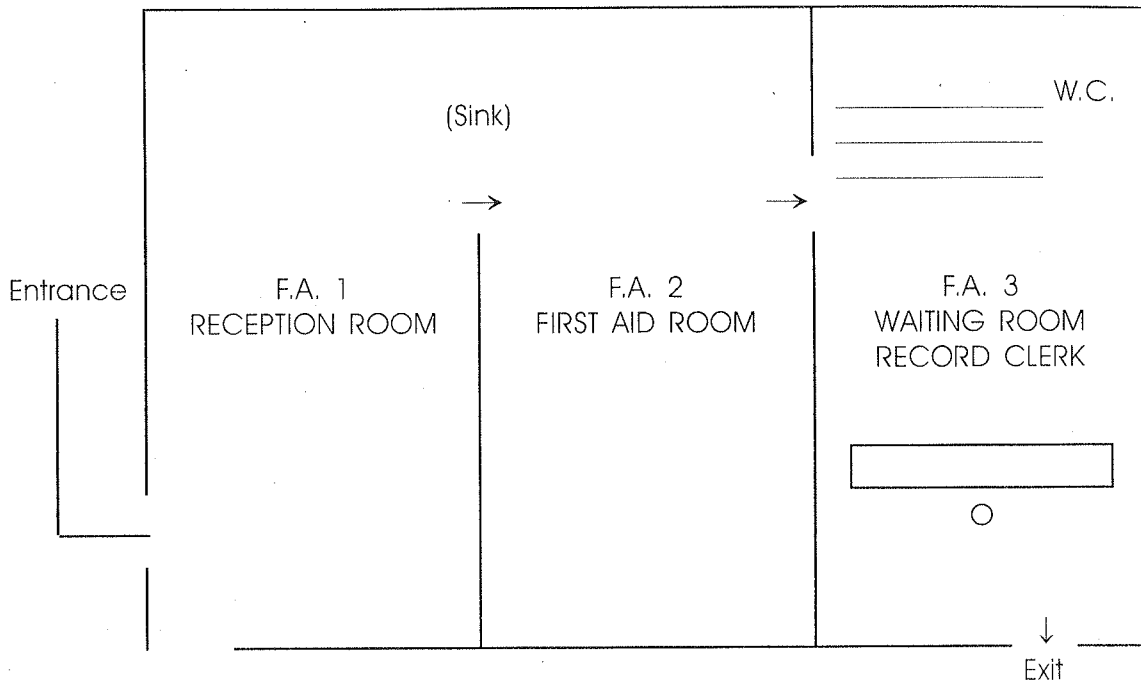
F.A. 3 Waiting Room.

The Reception Room, into which casualties would first be admitted, would be a place where their outer clothing may be removed if necessary. They would then pass straight into the First Aid Room. The Reception Room should be large enough to permit a certain number of casualties remaining there if the First Aid Room happens to be full.

The First Aid Room, adjacent to the Reception Room, would be the most important room in the Post and should be allotted as much space as possible to prevent casualties from being delayed in the Reception Room. In this room some screened space should be provided to afford some privacy for female patients.

The Waiting Room would be required for the casualties after they have passed through the First Aid Room. Some would be awaiting removal to hospital, others would have to be dressed preparatory to discharge. In both cases some delay might be involved (for instance those to be discharged might need a period of rest) and therefore considerable waiting accommodation would be desirable. If full accommodation is not available in the First Aid Post the extra accommodation required may be provided in a neighbouring building.

The essential requirements of a First Aid Post are shown diagrammatically below :-



Layout of a First Aid Post

(dotted lines in the diagram indicate curtains or low partitions)

2. Size for a First Aid Post

The capacity of the Post should obviously be related to the factors which would affect the possible number of casualties to be handled. No estimate of any kind can be given on this point, but areas with a high density of population which are likely, from their geographical situation, to be within range of frequent attacks, need more provision than areas of lower density. The precise factors cannot be expressed numerically, but the recommendations below are the result of careful consideration and should be followed.

As a rule the adjacent Posts should not be more than two miles apart so that no casualty should have to go more than mile to reach a Post. Each area where Posts are required should be planned out on a map to show the proposed position of each Post, and the area which it would serve—an area of roughly a mile radius, or up to three square miles in extent.

Where the buildings provide space which is less than the specified standard, efforts should be directed towards increasing the effective capacity of the Post either by arranging for temporary structures or by endeavouring to hasten the rates of flow through the post as the capacity of the Post is really governed by the rate of flow through the different sections.

In addition to the accommodation for patients, every Post must have an office and store rooms for administrative purposes, a rest room and canteen facilities for the Staff. The office must be in the Post itself, but the store rooms and staff accommodation can if necessary be in a neighbouring building.

Description	F.A. Post	
	Area of Room	No. of patients at one time
	Sq. ft.	
F.A. 1 Reception Room	120	4
F.A. 2 First Aid Room	350	12
F.A. 3 Waiting Room	130	6
Total	600	—
Administrative Office	100	—
Total in post proper	700	—
Additional accommodation (possibly in another building) :-		
Waiting accommodation	250	16
Store Rooms	100	—
Total space required (excluding staff rooms)	1,050	—

The above calculations have been based on the following space allowances for different purposes :-

Lying Cases—For reception of cases, and for cases in waiting rooms after treatment, 27 sq. ft. per patient.

For first aid treatment, 40 sq. ft. per patient.

Sitting Cases—For reception of cases, and for cases in waiting rooms after treatment, 7½ sq. ft. per patient.

For first aid treatment, 15 sq. ft. per patient.

Allowance has also been made for furniture and equipment in the rooms.

The amounts of space listed in the above tables are designed to permit of the following rates of flow in the Posts, expressed as the number of patients of each sex arriving within half an hour. It is assumed that this period would represent the peak inflow following one raid.

The number of lying cases may seem large if all serious cases requiring hospital treatment are to go straight to hospital, but this is to provide a margin of safety, since lying cases occupy more space than sitting cases.

Description	F.A. Post	
	Lying	Sitting
Inflow in half an hour	10	10

In all schemes for setting up Posts in existing buildings the greatest possible simplicity in planning and avoidance of major structural changes are to be aimed at in order to reduce the time which would be necessary when there is a threat of war to get the Post in proper condition for use.

3. Brief description of each Room in the Post

F.A. 1 Reception Room—An ordinary room, or a partitioned portion of a large hall with adequate seating arrangements will suffice for the general Reception Room.

Benches or chairs should be provided for sitting cases, and a W.C. or latrine bucket should be available for patients.

F.A. 2 First Aid Room—In this room space and light and access to running water for use by the first aid personnel are the main considerations.

F.A. 3 Waiting Room—The Waiting Room should have adequate seating arrangements. A.W.C. should also be provided.

There should be a record clerk at a table in the Waiting Room to take particulars of all patients.

If a small waiting room in the Post itself is supplemented by additional waiting accommodation in another building, the latter should be regarded as an overflow only, and should not be used if the accommodation in the Post is sufficient.

Administrative Office—It is essential that an office should be provided for the office-in-charge of the post. The office must be in the Post itself.

The administrative work will consist of (a) the arrangement of the rotation of duties for staffing the Post, (b) compiling the records of persons treated at the Post, for transmission to the higher authority, and (c) records of the stores supplied and consumed.

Staff Accommodation—It will be necessary that the Post itself should include a lavatory, and at least a small rest room for female members of the staff. In addition, arrangements must be made for feeding the staff and possibly where the Posts have to be continuously manned, for billeting either the whole staff or at any rate one shift. This latter accommodation can, if necessary, be arranged in a separate building, provided that it is not too far away. The same detached building could, for instance, contain the staff accommodation and the extra waiting room for patients who have passed through the Post.

4. **Further points for consideration**

The following general points should be borne in mind in planning of the Posts :—

- (i) All lights must be obscured after dark, so that none are visible from outside except a dim sign indicating the position of the Post.
- (ii) To prevent damage from broken glass, all glass should be replaced by hard board or cloth or thick paper.
- (iii) Alternative lighting arrangements should be made against failure of electricity. Similarly the hot water supply should not, as far as possible, be solely dependent upon gas or electricity.
- (iv) Sufficient water should be stored in tanks, against the main supply being interrupted by bomb damage.
- (v) A shelter for the staff should be provided to protect them against blast, splinters and falling debris. One of the rooms in First Aid Post could be given suitable structural protection for this purpose.
- (vi) Adequate arrangements should be made for drinking water for the patients.

APPENDIX VII-B
CASUALTY LABEL AND RECORD BOOK

FORM A-1
Casualty Identity Label
OBVERSE

Date.....

Name..... Age..... Sex.....

Father's or Husband's Name.....

Address.....

Site of injury.....

Nature of injury.....

Special Instructions.....

Signature
Leader, F.A. Post No.
F.A. Post

REVERSE

1. To
From First Aid Post No.
.....
.....
Forwarded for treatment and disposal.
 2. To Medical Superintendent
..... Hospital
.....
- Please admit.

N.B. - If discharged from F.A. Post cross out 2 and give this card to the patient with instructions, where necessary, to present it at the nearest hospital for further treatment (on the same or the next day).

APPENDIX VII-C

REGISTER

FORM A-2

Casualty Register Book

This form should be prepared in quadruplicate using carbon paper :

- (1) Original for F.A. post;
- (2) Duplicate for Medical Superintendent of the Hospital;
This copy alongwith the casualty Identity label should be given to the injured person if he is discharged.
- (3) Triplicate for Medical Officer Casualty Service;
- (4) Quadruplicate for the Personal Injuries Claims Officer through the local C.D. Headquarters.

F.A. Post.....

Town and District.....

Date and time of arrival.....

Name..... Age..... Sex.....

Father's or Husband's name.....

Address.....

Occupation.....

If civil defence volunteer *On duty/Off duty*

By whom brought.....

Nature and cause of injury.....

Treatment.....

A.T. Serum.....

Morphia, dose and time.....

Disposal.....

Special Instructions.....

Medical Officer Incharge
F.A. Post

APPENDIX VII-D
PERSONAL INJURY CASUALTY IN-PATIENT BOOK
FORM B-1

This form should be prepared in duplicate, using carbon paper :

- (1) Original for hospital;
- (2) Duplicate for the Personal Injuries Claims Officer through local C.D. Headquarters.

Hospital.....No.....

Town and District.....

Date of admission.....

Name.....Age.....Sex.....

Father's or Husband's name.....

Address.....

Occupation (Note if C.D.V.).....

Where first treated (with date).....

F.A. Post at.....

By whom brought.....

Date of injury.....

Name and probable cause of injury (Note if gassed).....

Name and address of next of kin.....

discharge
Date of _____

transfer to out-patient Department

Medical Officer

APPENDIX VII-E

PERSONAL INJURY CASUALTY OUT-PATIENT BOOK

FORM B-2

This form should be prepared in triplicate, using carbon paper :

- (1) Original for the hospital/dispensary;
- (2) Duplicate for the Claims Officer through the local C.D. Headquarters;
- (3) Triplicate for the patient

Hospital/Dispensary No.....
Town and District.....
Name.....Age.....Sex.....
Father's or Husband's name.....
Address.....
Occupation (Note if C.D.V.).....
Where first treated (with date).....
F.A. Post at.....
Casualty Book No.....
Whether ex-in-patient.....
Date of injury.....
date of 1st treatment in O.P.D.
Whether incapacitated for work.....

Medical Officer

(REVERSE)

- 1. *Hospital copy :*
Make entries in the following table on each occasion when the patient is treated. When discharged, write "Discharged" and the date.
Particulars of any refusal to undergo treatment should be noted.



Dates of further treatment and discharge—

Date	Whether incapacitated for work	Signature of M.O.
------	--------------------------------	-------------------

- 2. *Patient's copy :*
Keep this carefully and take it with you when you go to the hospital, *Dates for further treatment and discharge*
Date Whether incapacitated for work Signature of M.O.

APPENDIX VII-F
IDENTITY CARD—MEDICAL PERSONNEL

FRONT

	IDENTITY CARD FOR CIVIL MEDICAL PERSONNEL	
Name.....Age.....Sex.....		
Address.....		
The bearer of this card is protected by the Geneva Convention relative the protection of Civilian persons in time of War of August 12, 1949 in his capacity as.....		
Date of Issue :		Seal & Signature of Issuing Authority

REVERSE

Photo of bearer	Signature or Finger print of bearer	
Height	Colour of eyes	Colour of hair
Distinguishing marks.		

PART-VIII

RESCUE SERVICE

8.1 **Object**—The primary object of the Rescue Service is to rescue living persons entrapped in debris. It is also responsible for the recovery of the dead from damaged buildings, and to take such immediate steps as may be necessary for the temporary support or demolition of buildings, the collapse of which is likely to endanger life or to obstruct traffic. The Rescue Service should not normally undertake extensive demolitions or demolitions involving the use of explosives. It may, however, undertake any work for which it is suited provided its ability to carry out its primary task is not affected. The work of rescue requires experience and care, since debris unskilfully moved may release other parts of the structure, and so cause it to crash upon both rescuers and those to be rescued. Personnel for the Rescue Parties should be recruited from the Home Guards and the building trades on account of their practical knowledge. As it is probable that some of the trapped will be injured, all members of Rescue Party should be trained in first aid.

8.2 **Control**—A responsible officer who possesses a sound technical knowledge of rescue operations should be placed in charge of the Rescue Service to be designated as Officer Commanding Rescue Service.

Where the Officer Commanding does not devote the whole of his time to the service he should be provided with Staff Officers at the scale of 1 Staff Officer per 15 Rescue Parties. He should have constructional qualifications and should be responsible under his direction for the organisation and administration of the service, the enrolment and training of the personnel and the maintenance of records. Necessary clerical staff should also be provided.

The Staff Officers or Rescue Group Leaders would, after receipt of the Preliminary Caution, be available to assume charge of the technical operation of rescue work at major incidents.

A Rescue Group Leader with constructional qualifications should be appointed to be in command of Rescue Parties at each Depot. The Group Leaders are extra to the authorised establishment. In each party one man should be appointed as its leader and another to act as his deputy.

8.3 **Composition of Parties**

Rescue Parties—These consist of Eight men, viz—

One leader

Six members

One driver for the party lorry

It is desirable that in each Rescue Party men should be available who are capable of turning off the gas, water and electricity.

8.4 **Number of Parties**—Rescue Parties should be provided on a scale of 1 per 50000 population. A reserve of 25 per cent should be enrolled and trained.

8.5 **Vehicles**—Lorries having sufficient capacity to carry both personnel and party equipment should be provided for all Rescue Parties of the authorised establishment. For rescue work open lorries are preferable to closed vans. They should have tarpaulins covering supported on angle iron frame. A reserve of 10 per cent of vehicles should be provided.

8.6 **Depots**—Rescue Parties should be located in Combined C.D. Depots where other service are also accommodated.

PART-IX
WELFARE SERVICE

9.1 In the event of an attack, the number of people rendered homeless is likely to be very large. In addition to the homeless there would be a large number without food or adequate clothing. Grave social problems resulting from death, injury, loss of home and family disorganisation would be handled by the Welfare Service, which is designed to assist people in need after an enemy attack, supply them with immediate essentials and encourage them to self-help. The availability of such facilities can play a decisive role in not only raising public morale but also in rehabilitating the civilian population.

The functions of this Service in general are :-

- (i) *Information*—Supply of information regarding missing relatives, dead, etc., nature of facilities and assistance available for affected people, enrolment in C.D. Services, and such other matters.
- (ii) *Care of Homeless*—Provision of Rest Centres where people whose homes are destroyed by air raids may be given temporary shelter, food and clothing.
- (iii) *Evacuation*—Dispersal of population from the large congested target areas in an orderly manner to less vulnerable areas and making suitable arrangements for the evacuees during transit and at the destination.

I. CIVIL DEFENCE INFORMATION OFFICES

9.2 In each town in which Civil Defence preparations are made arrangements are necessary for a Civil Defence Information Office. In large towns more than one office may be required.

Experience has shown that such an office is of paramount importance after an Air Raid.

- 9.3
- (a) The primary function of the Information Office should be to give information to enquirers on all matters connected with Civil Defence, both before and after raids, to collect information regarding casualties and to publish casualty lists for the information of the public.
 - (b) In addition to one or more telephones and clerical staff to maintain the records one Information Officer with one or more assistants will be necessary to deal with the public for each information centre. These officers should be carefully selected, for their tact and patience, as these qualities will be needed in dealing with enquirers, especially after raids.

9.4 The kind of information that should be available at the Information Offices is suggested in the list below :-

- (a) Information and advice regarding :-
 - (i) Enrolment in the Civil Defence Services
 - (ii) Procuring sand, sand-bags and stirrup pumps.
 - (iii) Structural precautions; choice of refuge room; carrying out lighting restriction; repairs to gas, water or electric installations in private premises; assistance in matters of sanitation and public health; assistance in repairs to slightly damaged houses and in pulling down dangerous buildings and clearance of debris.
 - (iv) Supply of official technical manuals and handbooks and other Civil Defence literature.
 - (v) Voluntary evacuation.
- (b) Information as to what to do before, during and after an Air Raid.
- (c) Information regarding the location of :-
 - (i) Warden's Posts and the area served by each.
 - (ii) First Aid Posts and the area served by each.
 - (iii) Fire Brigade Stations and the area served by each.
 - (iv) Police Stations and the area served by each.
 - (v) Salvage Headquarters and details of the salvage scheme.
 - (vi) Government or municipal controlled food shops.
 - (vii) Rest Centres and Emergency Meal Centres.
 - (viii) Hospitals.
 - (ix) Mortuaries, burial and burning grounds.
 - (x) Routes for leaving the town and advice regarding voluntary evacuation.

For this purpose a map on a scale as large as possible with the information plotted on it is most desirable.
- (d) Names, addresses and telephone numbers of all Post Wardens and other Civil Defence officers of equal or higher ranks alongwith the details of the areas they serve.

In addition there should be an abundant stock of all Civil Defence leaflets and handbooks, priced publications as well as those to be distributed free of charge to the general public. The office should also be prepared to receive complaints and suggestions from the public, to deal with them courteously and expeditiously and to transmit them to the appropriate authority for necessary action. It is advisable that responsible executive officers of the post-raid relief services, such as War Injury Claims, Repairs to House, Salvage, Care of Homeless should be located in or close to the same premises so that enquirers need not be redirected to several separate offices, perhaps some distance away from the Information Office.

- (e) *Post-Raid Information*—The Information offices should be able to give the following information :—
- (i) Whereabouts of persons who are reported missing after an air raid.
 - (ii) What assistance, Government or private, is available for persons whose homes have been bombed, e.g., location of Emergency Feeding Centres, Rest Centres and accommodation available therein.
 - (iii) Information about facilities available for repair, in cases where people can return to their homes after minor repairs.
 - (iv) The particulars and necessary application forms for getting monetary assistance under the War Injuries Scheme to enable the persons affected by air raids to rehabilitate themselves.
 - (v) Location of emergency Government or Municipal foodgrain or ration shops.
 - (vi) Information regarding persons injured or dead and their disposal.
 - (vii) Advice on problems such as loss of ration cards, clothing and chattel, pension papers, identity cards, insurance and valuable documents.

II. CARE OF PERSONS RENDERED HOMELESS BY AIR ATTACK

9.5 **General Considerations**—Persons may be rendered homeless through one of the following three main causes :—

- (a) Widespread panic causing large crowds to desert a town for the mofussil (see 'Evacuation', paragraphs 9.10 to 9.19).
- (b) The destruction of their homes.
- (c) The temporary compulsory evacuation of persons living in the vicinity of an unexploded bomb.

Arrangement will have to be made to provide accommodation, food, clothing to those rendered homeless.

9.6 **Rest Centres**—Points for consideration when drawing up a scheme are given below:—

- (a) A number of emergency Rest Centres should be earmarked in which the following facilities should be provided :
 - (i) Lodging.
 - (ii) Lavatories.
 - (iii) Food, water and clothing.
 - (iv) The maintenance of morale is of great importance. This will depend chiefly on the personality of the Officer-in-Charge and his staff, as well as on the efficiency of the organisation.
 - (v) Records of persons using the centre will be essential if their needs are to be met and queries have to be replied to. They will also be of great use to other services.
- (b) As far as possible Information Offices should be located alongside the Rest Centres where people can get sympathetic advice (see para 9.4).
- (c) Provision should be made to reserve some tentage equipment to provide extra accommodation in Rest Centres in case of a sudden unexpected rush or for setting up alternative Rest Centres if a centre is demolished.

9.7 **Emergency Feeding**—The Rest Centres will normally cater to the needs of people whose homes have been bombed. Serving of refreshments on the spot to the people affected by air raids helps considerably in reassuring people and in toning up their morale. The general public will need rations, other foodstuffs and fuel. Usually following a raid the shops close down, and it becomes difficult to obtain these things. Arrangements will have to be made so that a few shops dealing in essential commodities can be taken over immediately after a raid for this purpose. These shops should be able to supply emergency foods like biscuits, canned foodstuffs, fruits and vegetables, infants milk, condensed milk, cooking oil, salt, matches and fuel etc. Local products such as baked gram, baked maize and rice, puffed rice and ground-nuts should also be stocked at these shops. The people who depend for their meals on hotels will also have to be considered. There will be need for some Emergency meal Centres which can serve cooked meals to a fairly large number of population. Some voluntary organisation may be willing to man these services and full use should therefore be made of their assistance. Feeding of C.D. personnel not stationed in Depots may be done through Mobile Canteens. To ensure against failure

of water supply it may be necessary to rush drinking water in mobile water tanks. Provision should be made to reserve a few vehicles for transporting the homeless and serving light refreshments and water to the people affected by air raids.

9.8 **Emergency Clothing**—Some people may lose their stock of clothings in air raids and may not be able to replace them immediately. Clothing is one of the prime necessities of man. Efforts should be made to provide emergency clothing for at least 0.25 per cent of the population. It should be possible to supplement it further by voluntary contributions from the public. The object is to enable such persons to pull on till they can provide themselves. Various age groups should be considered in providing suitable stock of clothes e.g., infants children, girls, boys, adult-ladies and gents. The collection drives could be organised from time to time and it is considered that Wardens would be able to assist very much when they are not otherwise engaged. However, there should be a collection organiser (vide Appendix IX-A) who should be made specifically responsible for emergency clothing, who should organise such collection drives from time to time, arrange for the clothes to be mended, washed etc. and should stock it with the Supply Service. The Supply Service would issue the supplies of clothings as and when necessary to the Rest Centres where they will be issued to the deserving people. The voluntary bodies and institutions such as women societies, girls schools etc. can assist in such matters as mending and sewing of clothing and knitting of pullovers etc.

9.9 **Housing and Billeting**—For various reasons it is considered necessary to make arrangements for the accommodation of evacuees or others whose houses have been destroyed by air raids. This function should be performed by Housing and Billeting Section of the Welfare Service. This Section will also bring to the notice of Repair Services the cases of partially damaged houses which can be easily put into habitable condition by minor repairs, and see that necessary essential services like water, electricity etc. in such houses are quickly restored. As regards billeting there appears to be very limited scope for it in our country and therefore this process is not very dependable.

III. EVACUATION

9.10 Large scale movement of people from areas which are either affected or threatened by a disaster to safer areas, is termed as "Evacuation of the population". This causes dislocation of normal life and a lot of suffering and misery to the people affected. The evacuation of the population therefore, should be avoided at all costs. But under the threat of air raids or after an air raid, people may start aimless evacuation and if such an evacuation is not properly controlled, it will cause a lot of suffering. In the following paragraphs we will study this problem.

9.11 Depending upon the time at which evacuation is effected, it could be categorised as "Predisaster" to "Post disaster" evacuation. The Post disaster evacuation crates many

problems. After the impact of the disaster the disruption of means of communication and transport and panic will make orderly evacuation impossible. It will be difficult to know the extent of dislocation. The number and place at which the evacuees have collected and the nature of their immediate needs etc. Once a population have made up their minds to leave the town, it is humanly impossible to persuade them to stay back. Therefore, the Civil Defence Authorities must be prepared in advance to deal with such evacuation. The evacuation in the pre disaster period or even the post disaster period could be at the insistence of the Administrative Authorities concerned. Such evacuation is called "Sponsored Evacuation" and very well thought up plans for such evacuation could be prepared in advance. The categories of personnel to be evacuated and the number involved can be worked out, which will facilitate the proper evacuation. But the population of a town may not like to leave their homes. It is not proposed by the Government to resort to sponsored evacuation. However, it is possible that the evacuation may start spontaneously by the inhabitants of a particular locality due to fear or false rumours. Efforts to persuade people through local leaders may allay panic and may reduce the problems, but it is not possible to put any practical ban on such unsponsored evacuation. Such evacuation is not desirable, but it is essential that plans are made and measures adopted to turn this Unsponsored evacuation into an orderly movement of the people from a town. The following are some of the important points to be remembered in this connection.

9.12 Problems of Large Scale Evacuation :

The following difficulties will be faced in dealing with large scale evacuation :

- (i) The evacuees may not know the places which could be safely and quickly reached and they may rush to places where no help can be sent to them for days for lack of coordination.
- (ii) The evacuees may use the routes which are open to danger or may be required for essential military operation etc. The evacuees may thus even be stranded on the way resulting in administrative problems for the local authorities.
- (iii) Lack of adequate transport facilities will result in panic, mass exodus on foot and other odd conveyances which will hamper the pace of and arrangements for proper evacuation.
- (iv) In an emergency everybody is panicky and hence the tendency to leave the area first of all. Proper checks will therefore have to be maintained by the local authorities.
- (v) A very large number of people may converge at one point and the congregation may be too large for ease of handling with every chance of panic breaking out. Therefore, there is the necessity of collecting the people from each locality at the specified point.

- (vi) The evacuees may form unmanageable groups without proper guidance. Therefore, unless escorts and guides are provided the movement may be delayed and the people may go to the wrong places.
- (vii) Traffic jams may result due to :
 - (a) Indiscriminate use of roads by all sorts of slow and fast moving conveyance as well as those moving on foot.
 - (b) Narrow roads, blockage due to damage to roads, debris, breakdown of vehicles and river and railway crossings.
 - (c) Stray cattle and dead animals.
- (viii) Activities of unsocial elements and hence the necessity of taking steps to prevent break-down of law and order.
- (ix) Lack of essential facilities such as water, sanitation and hence the necessity of the provision of such facilities to all the evacuees.
- (x) Due to rush of unsponsored evacuation young children may be lost and the other members of the families may also be separated from each other hence the necessity of organising information centres etc.

9.13 Arrangement for Movement :

- (a) **General Organisation**—Evacuation should be organised into parties which should have among themselves Leaders and Deputy Leaders appointed. Escorts for unattended children and women should be provided. The group leader and the escorts carry first aid kits, thread needles, water bottles, paper and pencils etc.
- (b) **Assembly Points**—Such points be located near the railway stations/stands. All the persons who want to leave the town should be directed to assemble there. From here the evacuees should be sent out in convenient batches by rail or other transport. Assembly Points are also intended to relieve congestion at the railway stations. As the evacuees are likely to stay here for some time before they can be cleared, arrangements for sanitation, refreshments, feeding, water, first aid, traffic control, maintenance of law and order etc., should be adequately made in order to be able to handle the anticipated rush.
- (c) **Other Facilities**—Some evacuees may be in need of certain clothing which may have to be arranged. Care must be taken to see that children are not lost and in case of their having been lost, efforts must be made for their quick restoration to their parents. Arrangements for taking into custody any lost property

and returning the same to the lawful owner will also have to be made. Evacuees should be instructed to label their belongings so that the owners can be traced quickly, if necessary. Information Office should be located near the Assembly Points to give essential information and guidance to the evacuees. The Assembly Points should maintain constant liaison with the Reception Points etc., to inform them sufficiently in advance of the anticipated number of evacuees being despatched.

9.14 A few people may move by road in their own fast moving vehicles. They should be told about the routes to be followed by them taking care to ensure that the routes earmarked for military and other essential traffic are kept free. There may be large number of people who may move in their slow moving carts and unless they are made to take a route different from the route earmarked for the fast moving vehicles, they will create many traffic problems. There may be a large number of people who will leave the town on foot along with their belongings and cattle. Unless they are diverted to special routes, they will block the normal route for the fast moving vehicles. The following arrangements may have to be made for the movement by road and the traffic control.

- (i) As far as possible the number and type of transport vehicles to be used in case of unsponsored evacuation should be worked out and wherever possible, earmarked in advance. The availability of the reserve stocks of petrol and lubricants for the vehicles should be ensured. The few vehicles available during the emergency will have to be used continuously throughout the day and night and therefore, reserve drivers for such vehicles should be earmarked in advance. In certain areas specialised Motor Units of Home Guards may have to be organised.
- (ii) Mobile Vehicle Repair Teams should be organised to provide repair facilities to the vehicles which may breakdown in the evacuation convey.
- (iii) Public should be advised to carry with them some of the essential things like food, water, blankets etc. cyclists should be advised to carry pumps and puncture repair equipment.
- (iv) Strict instructions should be issued not to damage crops enroute.
- (v) Members of Home Guards/Police should accompany the convoys on motor cycles and may also be provided with loud speakers to direct and control the traffic.
- (vi) Earmark separate routes for the fast and slow moving traffic when possible. Traffic should be one way and in the absence of separate roads, separate lanes on the same road may be provided for each type of traffic.

- (vii) Strict traffic control should be enforced by posting additional trained personnel along the route and at possible bottle necks.
- (viii) To prevent traffic jams at level crossing, the Railway Authorities should be requested to cut down the minimum the period for which the railway crossings are closed for traffic.
- (ix) Transit camps en-route should be provided in case of long journeys. Facilities like space for rest, light refreshments, drinking water, latrines and urinals and medical care should be organised at these places.

9.15 Exodus by Rail :

In case of a very large scale unsponsored evacuation it will be necessary to make use of the railways in addition to the motor transport to evacuate the population. The local authorities should, therefore, have liaison with the local railway authorities to enable them to arrange for additional trains to be run to clear a large number of evacuees from the town concerned. Advance planning in this respect will have to be made. The following arrangements will help in the exodus by rail.

- (i) Posting extra staff at railway stations including additional booking facilities.
- (ii) Provision of barricades and Home Guards/Police to control and prevent the rush at the platforms. Admission of passengers to platforms should be limited to the number of persons a particular train can accommodate.
- (iii) Preparation of time table for special trains and allotment of seating accommodation to the evacuees at the Assembly Points.

9.16 Reception Points :

In the reception area evacuees may be pouring in from various channels of transport. They have to be properly received at these points by welfare units, who would listen to their difficulties sympathetically first aid. Those who are sick are separated and sent to hospital. The evacuees are taken to dispersal camps.

9.17 In making arrangements for evacuation the general plan will be to assemble the evacuees at convenient points at the starting place and send them in parties with an officer in charge say a Welfare Officer. He shall see them to the destination and return to take more batches. It may be necessary to arrange Transit Camps along the routes of movement with a view to providing facilities for temporary halts necessiated by rest transhipment or detrainment. There should be Dispersal Camps at the destination where evacuees can find temporary shelter before moving on to friends and relatives. A small percentag eof evacuees who cannot find accommodation elsewhere will need Settlement Camps, until

arrangements are made to rehabilitate them. Voluntary societies may in many cases be willing to undertake the above arrangements and to provide necessary facilities therein such as food, refreshment, medicines etc.

9.18 In view of general shortage of accommodation, plans should provide for tentage or camps equipment to be kept assembled at convenient points so that it could be rushed to the spot and camps set up within a few hours. It is important that evacuees should be got off the roads with speed to avoid their being a target and to keep roads clear for Military traffic.

9.19 Equipment and Rations :

During Emergency Additional District Magistrate, Civil Defence Supplies should be responsible for quality control. A separate quality control unit to be designated and they should also be provided adequate scales for measurement of essential commodities. No equipment or uniform needs to be supplied to members of the Supply service. The Supply Officers and the Watchmen may however, be provided with a steel helmet, a torch and a whistle. A reserve of 10 per cent of the equipment should be provided.

APPENDIX IX-A

WELFARE SERVICE PERSONNEL

(1) Information Section

(One per 2 lakh population)

Information Office Staff-

1 Inquiry Officer

*2 Clerks

*2 Messengers.

A reserve of 25 per cent of the personnel should be provided.

*Note-*For lesser population the posts marked in *asterisks* should be reduced proportionately. One of the Information Officers should be designated as the main office, which should have the following additional staff : 1 Reporter, 1 Receptionist, and for every two Branch Offices under its control, 1 extra clerk and 1 extra messenger.

(2) Rest Centres Section

(One per 2 lakh population)

(To provide shelter for about 250 persons)

Administrative

1 Superintendent

*2 Cooks

1 Attendant for cooks (extra help may be organised from the inmates of the centre)

*2 Clerks (one to act as stores clerk)

*1 Assistant for Stores Clerk

*2 Sweepers

9

Shift Staff

1 Shift-Leader

1 Ayah (to look after unattended children etc.)

2 First Aiders

*2 Messengers

1 Guard

(i) Total 7

(ii) 3 Shifts $7 \times 3 = 21$

A reserve of 25 percent of the personnel should be provided.

*Note-*For lesser population the posts marked in *asterisks* should be reduced proportionately.

(3) *Emergency Feeding Section*

I. *Emergency Meal Centre* (One per 2 lakh population)

(To feed about 500 persons at a time).

1 Supervisor

1 Clerk to Supervisor

*5 Cooks

*5 Attendants

12

* A reserve of 25 per cent of the personnel should be provided.

Note—For lesser population posts marked in *asterisks* should be reduced proportionately and the functions of Assistant Supervisor and the Supervisor may be combined.

II. *Mobile Canteens* (One per 2 lakh population)

1 Supervisor

3 Attendants

1 Driver

5

* A reserve of 25 per cent of the personnel and 10 per cent of vehicles should be provided.

(4) *Housing and Billeting Section*

(One per 2 lakh population)

1 Overseer (as Housing Officer)

*1 Clerk

*1 Messenger

3

* A reserve of 25 per cent of the personnel should be provided.

(5) *Emergency Clothing Section*

(One per 2 lakh population)

Staffs—

1 Collection Organiser

2 Processing Assistants (To arrange for mending, darning, knitting, repairing, tailoring and washing of clothes).

A reserve of 25 per cent of the personnel should be provided.

- Notes—
- (i) Additional help should be organised from Girls Schools, Women's voluntary associations etc.
 - (ii) Storage of clothing will be entrusted to the Supply service.
 - (iii) Wardens will be required to assist in door to door collection of old clothings.

(6) Evacuation Section

Since evacuation will be a purely temporary phase the manpower required for it will be drawn mostly from existing personnel and no separate provision for man-power is necessary. Evacuation details will form the subject matter of a separate handbook.

PART-X
SUPPLY SERVICE

10.1 Object

Civil Defence depends largely on organised services which perform such emergency functions as fire fighting, rescue, transportation, engineering, medical aid, welfare and communications, etc. For the effective functioning of these services, they must have adequate equipment which should be made available to them in proper condition and at short notice. To achieve this civil defence plans should provide for an efficient Supply Service, which will plan, organise and stockpile the necessary equipment before an actual emergency and be responsible for their proper and quick distribution at the time of need.

A broad classification of the equipment required by the Civil Defence Services and the authorities responsible for procuring storage, issue, etc. are as follows :-

- (a) Civil Defence equipment such as : steel helmets, stirrup pumps, fire fighting appliances, rescue equipment, uniforms for the operating services, medical supplies, etc. (Supply Services).
- (b) All Civil Defence transport such as : motor cycles, bicycles, trucks, ambulance vans, etc. (Transport Service).
- (c) Essential supplies, such as foodstuffs required for mass feeding and clothing during an emergency (Welfare Service).
- (d) Office equipment such as : stationery, furniture, etc. required for use in Civil Defence Centres, Posts and Dépôts (Administrative Organisation of C.D. Controller).

As regards reserves of essential supplies and petrol, they should normally be built up through normal trade channels and hence no separate storage facilities will be needed.

10.2 Functions

The main functions with which the Civil Defence Supply Service will be concerned are :-

- (a) Estimation of the requirements of the various operating services.
- (b) Procurement of all supplies of equipment according to standard specifications.
- (c) Storage of equipment.
- (d) care and maintenance of equipment.

- (e) Distribution of equipment. (The necessary transport should be obtained from the Transport Service).
- (f) Maintenance of sufficient reserve of each item of equipment.
- (g) Inspection and accounting of equipment.

Transport Service will of course make necessary transport available for movement of equipment. Procurement of C.D. vehicles will be the responsibility of Transport Service.

10.3 Organisation

The Director of Civil Defence in each state and the local Civil Defence organisations are primarily responsible for the estimation, procurement, maintenance, distribution and accounting of the equipment required by the Civil Defence Services. The procedure detailed below should normally be followed in obtaining the equipment. The head of each local civil defence services, e.g., Rescue Service, Warden Service etc. should work out the equipment required for the personnel under him and furnish the Supply Officer in the local headquarters with a detailed list of the equipment required by his Service. The Supply Service will scrutinise such lists received from the various Heads of Services and prepare consolidated lists of each item of equipment. These lists will be forwarded by the Supply Service through the C.D. Controller to the Director of Civil Defence, who assisted by a Deputy Director (Supply) and the organisation under him, will co-ordinate the procurement and distribution of equipment required by the various local Civil Defence establishments in the State.

The equipment required by the Civil Defence Services will ordinarily fall under one of the following categories :-

- (a) Equipment which can be obtained locally, that is, within the State.
- (b) Equipment available in India, but is not available in the State concerned.
- (c) Equipment which may have to be imported from foreign countries.
- (d) It will also be desirable to further categorize all Civil Defence requirements into stores, equipment and vehicles. The stores may consist of such items as petrol, oil, and spare parts; the vehicles should include motor cycles but not cycles. All other items needed to equip the services or the vehicles should come under the category of equipment.

The Deputy Director (Supply) should sort out (where necessary, with the help of the appropriate Department of the State Government) the equipment required by the Civil Defence Services and decide whether such equipment should be obtained locally, or from other States or should be imported from foreign countries. In case particular equipment of

approved specifications is obtainable locally, he should place an order on the local Government agency normally responsible for the supply of equipment etc. to other Departments under the State Government. He should place an order after obtaining the necessary approval.

In case of equipment which is in short supply within the State and has to be obtained from other parts of the country or from abroad, however, the Director of Civil Defence should write to the Government of India. The Government of India will receive such indents from the various States and co-ordinate their procurement and supply. Where necessary, the Government of India will make arrangements to keep Civil Defence equipment in reserve and supply them to the States at the time of need.

10.4 Staff

Each State Government should appoint, under the Director of Civil Defence, a Deputy Director to plan and direct the State's Civil Defence supply requirements. The Deputy Director (Supply) should have under him a suitable organisation to co-ordinate the requirements of various local Civil Defence units and to correspond with the appropriate Departments of the State Government and the Government of India. The manufacturers or supplying agencies supplying the equipment required by the Civil Defence Services can be advised to supply the equipment direct to the units concerned. Since, however, it will be necessary to have equipment in reserve at the State level there should be a storage organisation under the Deputy Director (Supply). Officers in charge of such stores should check up equipment from time to time to ensure that the local units maintain their stores properly.

Supervisors should also be appointed with the responsibility of inspection and physical verification of stores.

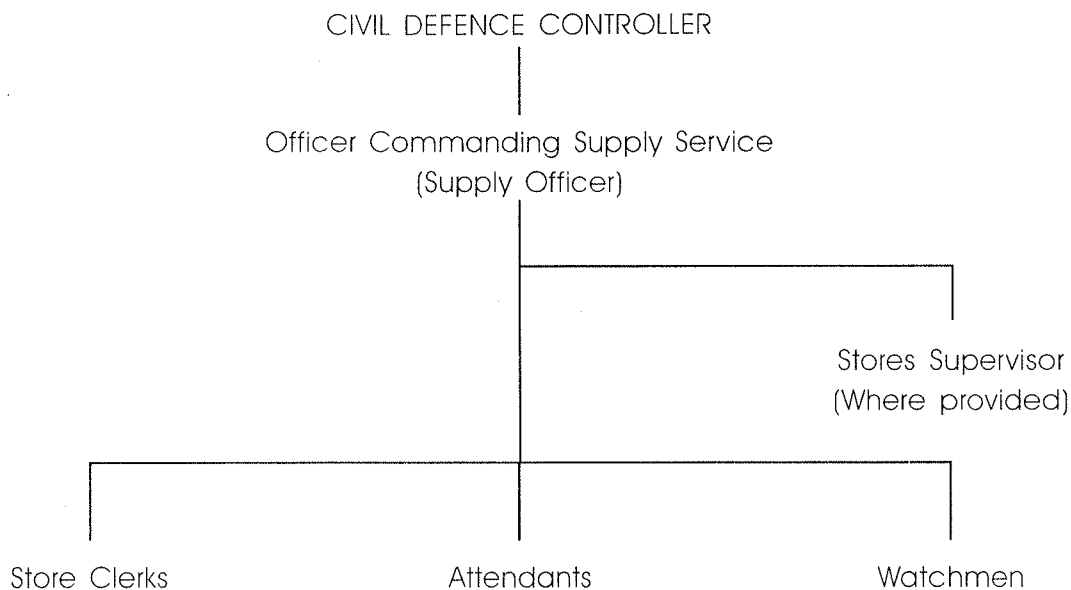
10.5 Local Supply Service

In a city or town, the supply service may be constituted as follows :-

A Supply Officer should be appointed to assist Civil Defence Controller in co-ordinating the requirements of various services. He would be responsible for procurement, storage, care, issue and inspection of the C.D. equipment. He will also be responsible for co-ordinating and getting the demands of various services.

The Supply Officer will be solely responsible for storage of equipment, its care, maintenance, distribution and salvage of such material from condemned articles as could be reused. He will need some store clerks, watchmen and coolies. Persons to be appointed as store clerks should be men of integrity and experience and should furnish adequate security or deposit and in addition execute surety bonds before they are appointed to these posts. Care should be taken to see that they have necessary knowledge of the procedure and the rules in this connection.

In towns with 6-10 lakhs population a separate officer under the Supply Officer will be required for inspection and audit which should be carried out as frequently as possible. Hence the Supply Officer should have a Stores Supervisor whose duty it will be, to carry out physical verification of the stock and see that stores are properly maintained and issued. The following is the suggested structure of local Supply Service organisation for a town :-



The number of persons to be appointed to the various grades in the Supply-Service will depend on the population of the town concerned and the amount of equipment that is required to be stored.

Suggested establishment of Supply service is as shown below :

1 Supply Officer	}	Per two lakh population
2 Stores Clerks		
2 Attendants		
1 Watchman		

A reserve of 25 per cent of the personnel should be provided.

For towns with lesser population supplies, etc., should be the normal function of the administrative office of the C.D. Controller, who may have one Store-keeper and two Attendant exclusively for this work.

In towns where no separate Stores Supervisor is provided, the C.D. Controller should from time to time check the equipment and have the accounts properly audited.

PART-XI
DEPOT SERVICE

11.1 General Considerations

It is essential that mobile Civil Defence Services should be distributed depots or stations around the area in which they have to operate with the following objects :-

- (a) To ensure assistance being available in any locality within a few minutes.
- (b) To avoid large number of casualties which might result from over concentration of resources at one place in the event of a direct bomb hit.

On the other hand if this principle is adhered to its fullest extent by each service independently, it will result in multiplication of small depots at each of which the same facilities will have to be provided. This is obviously uneconomical. There are some other difficulties also :-

- (a) Administration of too many small depots will be difficult.
- (b) Many more telephone lines will have to be maintained in raiding conditions.
- (c) Control is difficult because services will be unduly scattered.
- (d) The fact that each service has its separate Civil Defence Depot will result in several messages instead of one being sent from the Control or Sub-Control Centre when parties of different services are required.

This will entail serious delay.

11.2 In view of the above considerations the principle of combined Civil Defence Depots has been adopted. The following Services will be located at the Depots :-

First Aid Parties.

Ambulances.

Rescue Parties.

Mobile First Aid Posts.

Mobile Surgical Units.

Mobile Canteens.

Other Services, if allotted.

11.3 Control

There shall be an officer Commanding Depot Service in overall charge of all Depots and vehicles therein. He will assist the C.D. Controller in the discharge of the following functions :-

- (a) The decision as to the number of Civil Defence Depots necessary and their location.
- (b) The planning of the layout of each Depot.
- (c) Allotment of accommodation.
- (d) Structural alterations and protection.
- (e) Issue of orders for the management of the Civil Defence Depot to the Depot Superintendent (See paragraph 11.4).
- (f) Periodical inspection of Civil Defence Depots.
- (g) Procurement, repair and maintenance of C.D. Vehicles.
- (h) Procurement and issue of petrol, oil and lubricants for vehicles and to ensure economy in their use.
- (i) Training of drivers and administrative control of Transport Service.

To assist the Officer Commanding, Depot Service, in the latter three functions from (g) to (i), a Transport Officer with necessary staff shall be placed under him (See Part XII). In small towns with less than two lakh population the functions of Officer Commanding Depot Service may be entrusted to Officer Commanding Communications Service.

11.4 Depot Superintendent

Normally, a Depot Superintendent should be appointed to be in charge of a Depot. When Depots are required to be manned for 24 hours there should be Deputy Depot Superintendents to assist the Depot Superintendents. Depot Superintendents should be responsible to the C.D. Controller for management and administration of Depots. It would ordinarily be desirable to appoint an Officer to be direct responsible for the organisation and administration of the Depot Service. The officer so appointed shall be designated as Officer Commanding Depot Service.

11.5 Depot Superintendent's duties are generally of an administrative nature though he has certain operational functions. His duties will include :-

- (a) Despatch of Civil Defence Services to incidents in accordance with orders from the Sub-Control Centre. In very exceptional circumstances he may despatch services on his own responsibility, but he should always report such action to the Sub-Control Centre.

- (b) Transmission of Air Raid warnings to Civil Defence Services located in the Depot and supervision of action ordered to be taken on their receipt.
- (c) Frequent practice of action to be taken :-
 - (i) On receipt of Air Raid Warnings.
 - (ii) In case of fire in the Depot.
- (d) General administration of the Depot including :-
 - (i) Storage, maintenance and inspection of equipment.
 - (ii) Ensuring adherence to the Depot Routine.
 - (iii) Maintenance of discipline and morale.
 - (iv) Welfare of personnel in the Depot.
- (e) Provision of Depot Guard which is formed from the personnel located at the Depot.

11.6 C.D. Depot Staff

Depot Superintendent	1	1 Deputy
Telephonist	1	2 Reliefs
Clerk	1	
Store Clerk	1	
Messengers	6	for 3 shifts
Messing staff	1	per 30 persons
Sweepers	2	

A reserve of 25 per cent of the personnel should be provided.

11.7 Location of Civil Defence Depot

As a general rule, in order to prevent delay in sending services to an incident, Civil Defence Depots should be so spaced that services can get to an incident within 10 minutes after receipt of the messages ordering them out.

Wherever possible, Depot should be located well away from any likely enemy objective e.g., Aerodromes, Railway Stations, Radio Stations, Docks or Power Houses. The chances of casualties among the personnel and their vehicles will be lessened.

It is suggested to the distance of the Depots should be from any likely objective might well be about 1,000 yards, but such consideration as the state of communications and the availability of transport for the personnel should be taken into account. It may then be found that there are certain parts access to which is difficult and in which it may be

necessary to establish a depot. A decision should then be taken as to the rough areas each depot would normally serve. The number of Civil Defence Services required to serve any particular area should bear approximately the same relation to the services as does the population of that area to the population of the whole area. This will serve as guide to the size of the depots required.

In a small area where the number of Civil Defence Services is small only one Civil Defence Depot may be necessary, but in a large area several depots may be needed.

It is suggested that one C.D. Depot should be provided for about 500 of the Depot-based personnel or alternatively there may be one Depot per Sub-Control Centre. A balance between too great a dispersion of services and too great a concentration must be maintained.

Depots should be easy to access to Civil Defence vehicles and should have good turnaround space. Vehicles should be protected against weather.

11.8 Accommodation in a Civil Defence Depot

The following are the chief requirements of accommodation necessary in a Depot where the services are required to stand by throughout the 24 hours :-

- (a) *Administrative Office.*
- (b) *Operational Office with telephone*—This must be protected against blast, splinter and rendered secure against the fall of debris.
- (c) *Rest and Recreation Room*—Sufficient space for all personnel based on the depot. This room is also used for instructional purposes.
- (d) *Sleeping Accommodation*—Necessary and sufficient space for all personnel based on the depot.
- (e) *Shelter*—Sufficient space for all personnel based on the depot.
- (f) *Standard of protection*—Secure against blast, splinters and fall of debris.
- (g) *Mess Room*—Sufficient space for 50 per cent of the personnel on duty if meals are taken in two relays.
- (h) *Cookhouse.*
- (i) *Lavatories.*
- (j) *Accommodation for washing and dressing.*
- (k) *Store*—For equipment not kept normally on lorries.
- (l) There should be a suitable yard in which vehicles of the parties can be parked.
- (m) A separate store for storage of reserve supplies of petrol.

Note—The chart of Depot Service organisation is given at page 117.

PART-XII

TRANSPORT SERVICE

12.1 Object

The success of the C.D. Services depends on the efficiency and the speed with which they can bring succor to the people during and after an air raid and this in turn depends largely on the efficiency of Transport Service.

12.2 Functions

Some of the main functions of the Transport Service will be :-

- (a) To provide Civil Defence Services with efficient means of transport.
- (b) To procure vehicles for Civil Defence by hire, requisitioning, voluntary offers or any other means and their insurance against third party risks and settlement of such claims as may arise.
- (c) To maintain the transport in an efficient and road worthy condition.
- (d) To provide and train personnel for driving and servicing of Civil Defence vehicles.
- (e) To provide and control issue of petrol, oil and lubricants for Civil Defence Vehicles and ensure economy in their use.
- (f) To make arrangements for quick repairs and servicing of vehicles, and to maintain ample reserve of spare parts to facilitate quick repairs.

For efficient functioning of the Transport Service, training of drivers is most essential. The operational efficiency of the service will greatly suffer if the driver fails to bring the vehicle quickly and safely to the place of incident.

12.3 Management, Organisation and Inspection of C.D. Transport

Operational control of Civil Defence Vehicles as mentioned above rests in the C.D. Controller or Deputy Controller and the heads of the services. This control is distinct from the technical work of maintenance of the vehicles in serviceable condition, which is the function of the Transport Service.

In each area where a C.D. authority owns 100 or more C.D. vehicles there will be need for placing of vehicles under the direct supervision of a technically qualified man who may be designated as Transport Officer and shall work under the Officer Commanding Depot Service. He will be responsible for the proper maintenance and repairs of Civil Defence vehicles. In technical matters, he will have to advise the Depot Superintendents

who are responsible for the smooth running of vehicles. Any workshop operated exclusively for the repairs of C.D. Vehicles will be placed directly in his charge. He will not as Transport Officer, have any responsibility for the operational use of the vehicles. He will be assisted in his job by one *P.O.L. Officer and in certain places, one Workshop Superintendent. Duties of P.O.L. Officer will be to authorise issue of petrol, oil and lubricants for Civil Defence vehicles and ensure their economical use and prevent misuse.

12.4 Duties of Depot Superintendent

While the maintenance and the efficiency of the C.D. fleet as a whole is the responsibility of the Transport Officer, the vehicles at each depot are in the general charge of the Depot Superintendent and it would be his responsibility to see that they are kept in the best condition possible having regard to the facility available. No vehicle will leave depot for any kind of call without proper authorization from the Depot Superintendent. Each Driver should maintain a daily log book showing account of journeys performed, mileage and use of petrol etc. Transport Officer should have at depot level, a Transport Supervisor to assist Depot Superintendent in the task of management of vehicles and drivers. His chief duties will be to keep vehicles in running condition so that they are ready to move out at a moment's notice in an emergency. He will have a P.O.L. Clerk and a Vehicle Repair Party to assist him in his duties. It will be his duty to bring to the notice of the Transport Officer through the Depot Superintendent the cases of vehicles requiring repairs where such repairs are beyond the resources of the Vehicle Repair Party. Operational control of vehicles located at C.D. Depots will be vested in the Staff Officers of the respective Services such as S.O. Ambulances and Sitting Case Cars, S.O. First Aid Parties, S.O.F.A. Posts and so on.

12.5 Repairs

For large repair, arrangements should be made with local garages on contract basis to carry out such repairs generally. If no satisfactory local arrangements are available and if the number of vehicles is large enough a separate workshop may be set up to deal with such repairs. Efforts should, however, be made to utilize local resources as far as possible. In addition there will be Vehicle Repair Parties located at each Depot for carrying out minor day-to-day repairs. A small stock of spare parts should be kept with Vehicle Repairs Parties to enable them to effect repairs quickly. The Vehicle Repair Parties will consist of three persons each viz. One Mechanic, one Fitter and one Electrician. One of these person, preferably the mechanic will be the leader of the party.

12.6 Depot Staff

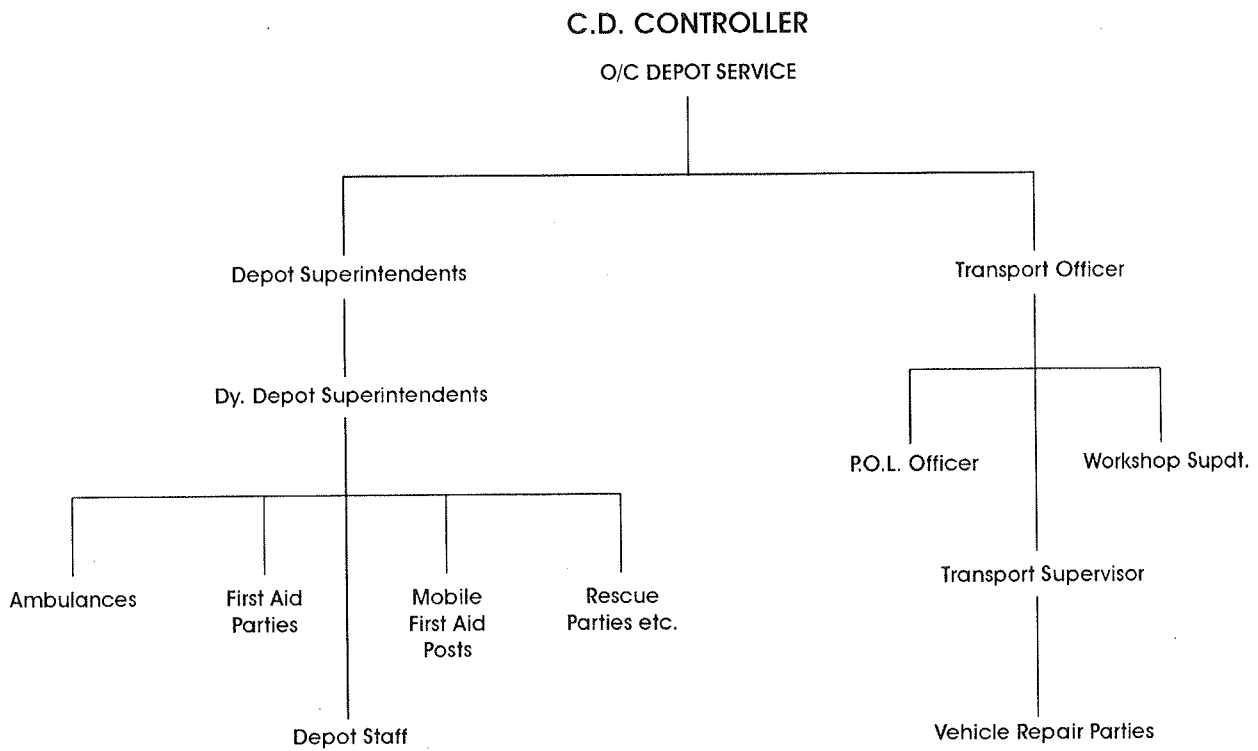
For large repair, arrangements should be made with local port Supervisor, one P.O.L. Clerk and one Vehicle Repair Party. A reserve of 25 per cent of the personnel should be provided.

* Officer for petrol, oils and lubricants.

Each Civil Defence vehicle should be provided with a suitable fire extinguisher to fight petrol fires.

12.7 Transport

Whenever vehicle faults have to be attended to on the spot outside a Depot, two members of the Vehicle Repair Party on orders from the Depot Superintendent will proceed to the site for carrying out the repairs. For this purpose each Vehicle Repair Party should be provided with one motor cycle.



PART-XIII

TRAINING OF CIVIL DEFENCE PERSONNEL

13.1 However complete the scheme of Civil Defence to any area may be, the services will not be able to operate effectively unless the personnel of each service are well trained and disciplined. This is only possible with proper and systematic training. This is only possible with proper and systematic training. The efficiency and discipline of Civil Defence Services will depend largely upon the amount of training imparted to them.

No member of the Civil Defence Services can be considered to be trained until he has completed the individual and Team Training and taken part in several Combined Exercises.

People from all walks of life will volunteer for Civil Defence Services. The training plan should, therefore, provide for the training of part time personnel. The part time personnel can only be trained at times which are convenient to them. Generally speaking; such times will be after working hours or at week ends.

13.2 Principles of Civil Defence Training

The principles on which training in Civil Defence is based are as follows :-

- (a) The standard of training must be the highest possible in order to ensure high morale amongst Civil Defence workers and confidence in the Civil Defence Organisation among the general public.
- (b) Suitable machinery must be set up for the training of personnel.
- (c) The methods of training must be uniform so that :-
 - (i) Inspection may be facilitated.
 - (ii) Comparisons may be drawn between the efficiency of the Civil Defence Organisation in different parts of the country and defects which come to light may be rectified.
- (d) Training must be of such a type as it helps to hold the interest of and maintain discipline among Civil Defence workers in periods of inaction so that their morale and *esprit de corps* shall be of a high standard and they may ever be ready for emergency.

13.3 Training Policy

The training is divided into 3 phases which follow each other in the order given below, viz.

- (a) Individual Training.
- (b) Team Training.
- (c) Combined Training in conjunction with other branches of the Civil Defence Services.

These three phases of training are applicable to all members of the Civil Defence Services though the details may vary somewhat between services. In addition there are two other phases :-

- (d) Special training for certain categories of Civil Defence workers such as Leaders, Specialist, Instructors and Incident Officers and Reconnaissance Parties.
- (e) Higher Staff training which is intended to teach and exercise higher officials in such matters as :-
 - (i) Control of the services in action.
 - (ii) Mutual Assistance.
 - (iii) Reinforcement.

13.4 Training Programmes

While drawing up a general training programme the factors which have to be borne in mind are given below :-

- (i) The syllabi of training courses and the hours required.
- (ii) The number of persons required to be trained for each type of course.
- (iii) The time of the day during which training can be imparted.

13.4.1. It is important first to decide the period within which the training should be completed. On this decision will depend :-

- (i) the number of instructors to be provided;
- (ii) the number of centres to be opened to impart training; and
- (iii) training equipment to be provided.

This period may provisionally be fixed at six months.

13.4.2. In general a Civil Defence volunteers training would consist of :-

- (i) *Basic General*-This covers instructions on protections against incendiary and High Explosive bombs and Fire Fighting, general precautions against air raids and general idea of C.D. Organisation.

- (ii) *Basic/Full First Aid*—Certain sections of Civil Defence Services will do full First Aid Course. All other sections will do Basic First Aid Course.
- (iii) *Basic/Full Rescue*—Only certain services will take this course; Full or Basic course depending on the nature of their work.
- (iv) *Section Training*—It is technical training in the work of the service in which a volunteer has been enrolled. All volunteers after finishing general training will get section training of the respective sections to which they belong.

In addition a certain percentage of members of Rescue and Casualty section should be given driving instructions.

All persons employed in clerical capacity should also be encouraged to have Basic General training to increase their efficiency in an emergency. Training has also to be arranged for employees of industrial and commercial undertakings, general public, etc.

13.5 Responsibility for Training

This is vested in the Civil Defence Controller. He will delegate the responsibility for training in subjects special to services to the heads of the services concerned. For training subjects which are common to several or all services he may delegate responsibility to the Civil Defence Officer. Where necessary a special Training Officer or Officers with whole-time administrative and instructional staff may be provided.

13.6 Training Staff

A Civil Defence Volunteer will require Individual Training, Team Training and Combined Training. Assuming that each volunteer takes four hours training in a week, he will be able to complete the training in about six months time.

It may, however, not be possible to have all full time paid instructors. The instructors should further be classified under the following categories :—

- (a) Full time Local Instructors—Paid.
- (b) Part time Local Instructors—Honorary.

Obviously part time instructors will not be able to train as many volunteers as the paid Local Instructors can do. The number of instructors has accordingly to be increased depending upon the number of part time instructors employed. In a voluntary organisation, there is also likely to be a high training wastage, a fact which has to be reckoned with when formulating proposals for the training of Local Instructors. Two whole-time instructors per 2 lakh population with 1 clerk and 1 messenger and one part-time instructor per 180 trainees may be provided.

For every 25 lakhs of population of the selected towns in each border State the following staff for Instructor's Training School may be appointed. The seniormost instructor should be put in overall charge as commandant and normal charge allowance may be given to him :-

Staff per Instructors Training School	2 Senior Instructors (Class-I) 8 Instructors (Class-II) 6 Demonstrators 1 U.D.C. 3 Typists 1 Daftry 2 Peons.
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This strength of the staff may be proportionately increased or decreased according to the total population of the selected towns in the States concerned.

In addition, Mobile Training Teams (at the scale of one team for a population of every 25 lakhs in the selected towns) of four Instructors may be appointed to impart training in Civil Defence techniques, in different selected towns in the State.

Normally 3 Centrally trained instructors (Class I and II) are considered necessary for training 20 local instructors in a period of 5 weeks, *i.e.*, 3 Centrally trained instructors will take six months to train 100 local instructors. If this training is to be finished in a shorter time, the number of Centrally trained instructors should be suitably increased. The local instructors will be trained by Class I/II instructors. The training of the volunteers will be done by local instructors.

It is desirable that in addition to their training duties, the training staff should be given some attack and post attack duties such as Incident Officers, Reconnaissance Officers, etc.

13.7 Continuity of Training

It should not be assumed that the training will be completed as soon as the personnel have gone through the cycle of training stages once. The training in Civil Defence has to be continuous so as to keep the Services at a very high pitch of efficiency. It cannot cease at any particular stage. The Team Training and the Combined Training are a perpetual feature of the Civil Defence training. Besides, Refresher Courses will have to be organised from time to time to keep the Civil Defence personnel abreast of improvements and to ensure that instructions are kept fresh in their minds.

PART-XIV

FIRE FIGHTING

14.1 General

In the event of incendiary bomb attack a large number of fires might be started simultaneously. The conditions to be met would then be quite different from those obtaining in peace time and require a different organisation. The relatively small number of existing fire engines must be increased by making use of trailer pumps drawn by motor cars or lorries. The number of trailer pumps required should be based on the ratio of 1 per 50000 population in the absence of advice from an expert Fire Adviser. In addition a reserve of 10 per cent of the vehicles required should be provided. An Auxiliary Fire Service should, therefore, be organised to man these fire engines.

The size of the trailer pump would depend upon (i) the availability of water supply, and (ii) the layout of the area. If the layout is congested and the water supplies are limited, the small trailer pump would be more useful. If on the other hand adequate water supplies are available and the layout is not very congested, a large trailer pump would be preferable.

Classification of Fire Risks

Various localities in a town or city may be classified according to the following risk categories, for the purpose of locating Auxiliary Fire Service.

- (i) *Class A Risks* : Large business premises, warehouses, large retail shops and stores, large works, munition stores and factories, aeroplane stores, docks, timber yards, railway depots, oil and petrol depots, refineries and similar risks.
- (ii) *Class B Risks* : Localities containing small factories, medium sized shops, warehouses not exceeding three storeys, Store yards (excluding timber yards), public garages, small oil depots and similar risks.
- (iii) *Class C Risks* : Localities containing residential and small shop properties.

The scale for manning of each trailer pump recommended is eight men to a pump—in all, *i.e.*, 1 leader, 1 driver-mechanic and 6 fire men. A reserve of 25 per cent should be enrolled and trained. A reserve of 10 per cent of vehicles should be provided. One messenger per each trailer pump unit should also be provided.

Under emergency conditions the Auxiliary Fire Service must be kept in a state of readiness and the aim should be to obtain and train at least twice the number of men that would be actually required to perform the duties provided for in the Fire Precautions scheme.

Auxiliary Firemen should be between 25 and 45 years of age and physically fit. They should be medically examined before enrolment, and must receive at least 96 hours training before they can be deemed efficient. The training will be carried out by the organised fire services.

14.2 House Fire Parties

In addition to the above organisation, House Fire Parties, each of four persons, at the scale of one party per 1000 of the population may be set up. The directors of Civil Defence may, at their discretion reduce the scale of House Fire Parties as considered appropriate.

Their duties will also include fire watching. The House Fire Parties should be regarded as an extension of the Warden's Service and the Chief Warden or Officer Commanding Wardens Service might normally be placed in charge of it. In very large towns, however, it may be more suitable to place them under the Command of separate officer though as a rule this is not advisable.

Generally it will be found necessary to appoint a Staff Officer each to the Chief Warden and the Divisional Wardens who will be responsible for the organisation of the House Fire Parties, recruitment, training and the storage, maintenance and distribution of the equipment. Each Staff Officer should be provided with one clerk (See diagram at page 11).

Each Divisional Warden should be provided with a Staff Officer. House Fire Parties who should be a Class I/II Instructor. He would be responsible for the preparation of programmes of training and the supervision of training carried out by House Fire Party Instructors in the group of Wardens Posts. Staff Officers should have Local Instructors trained in I.B. only to carry out the training.

In each Post area Post Warden and his deputy will be in charge of the House Fire Parties located within a Post area.

A reserve of 25 per cent should be enrolled and trained.

A note on the training and arrangement of duties of House Fire Parties is at Appendix XIV-A.

Appendix XIV-B is a model notification on fire watching.

14.3 Water Supplies

An adequate water supply is essential if fires resulting from high explosive and incendiary bomb attacks in limited and congested areas are to be controlled.

Among the more serious consequences of such attacks are fractures of distributing water mains resulting possibly in complete failure of the normal pressure supplies.

It is important that the measures already made should be reviewed to ensure that provision is made not only for using the resources available locally, but also for employing any reinforcing units which might be sent in during a raid.

In particular :-

- (a) every available means of covering water should be made ready in case of need;
- (b) plans for supplementing the supplies of water in all high risk areas by relaying it should be worked out;
- (c) every possible source of water supply should be explored to ensure that any and every supply which can be utilised is made available;
- (d) fixed tanks should be installed near the principal fire risks. The size of these tanks depends on the size of fire engines and trailer pumps available.
- (e) full use should be made of tanks mounted on lorries where these are available.
- (f) advise householders to store water, etc.

APPENDIX XIV-A

ARRANGEMENTS OF DUTIES OF HOUSE FIRE PARTIES

1. The duty of these parties is to watch for the fall of incendiary bombs and to deal with as many of the bombs as possible as soon as they fall, so that fires may be dealt with at the earliest stage and conflagration prevented.

2. The way in which fire watching as distinct from fire fighting may be arranged depends of some extent on local circumstances. In daylight hours no fire watching in streets and residential areas is ordinarily necessary. Arrangements should be made to cover the whole of the period during which lighting restrictions are in force and the object of such arrangements should be :-

(a) to ensure that the party on duty goes into action without delay, should necessity arise :

(b) to avoid fatigue which would result from an undue number of persons being kept awake at night when no enemy attack is in progress.

3. When there is no air raid warning, no fire watching need be performed but watchers should be readily available to take up their duties. When action warning is sounded or when there is gun fire, or enemy aeroplanes are about, they must be prepared to detect incendiary bomb attacks. In both cases the rest of the party can remain indoors and may be in bed. The important consideration is that at least one person should be awake during the black-out period, whether there is an air raid warning or not so that the alarm can be given as required.

4. When a watcher considers that there is imminent danger of an incendiary bomb attack in the neighbourhood, e.g., when he sees that bombs have fallen in the neighbourhood, he should warn three other members of the party to stand by for action. If they are not properly dressed they should do so but they need not turn out until they hear short blasts on a whistle which indicate that incendiary bombs are actually falling in the neighbourhood.

5. The other members of the party, on hearing the whistle should dress and take their place in accordance with a prearranged scheme. Every person should know what action he or she should take in an emergency on the whistle signal. Thus it should be for one person to note where bombs are falling and direct the personnel available accordingly.

6. In the absence of incendiary bomb attacks on a particular locality the only duty to be carried out by members of parties is that of watching, or being prepared to watch. The members of the fire parties, when not on watching duty, should be available to deal with incendiary bombs.

7. It may often be possible to arrange for one person to act as watcher for more than one section of a street, and summon the available personnel in each section in an emergency.

APPENDIX XIV-B

MODEL NOTIFICATION ON FIRE WATCHING

(1) The Central Government or the State Government may by general or special order make provision—

- (a) for requiring the occupiers of any premises to which the order applies to make and carry out such arrangements as may be specified in the order with a view to securing that fires occurring at the premises as a result of hostile attack will be immediately detected and combated;
- (b) for requiring the occupiers of several premises jointly to make and carry out such arrangements as aforesaid for all those premises, and in particular for requiring that they shall take turns of duty at specified premises and perform such fire prevention duties as may be allotted to them under those arrangements;
- (c) for empowering any authority, in such circumstances as may be specified in the order, to make and carry out such arrangements as aforesaid including a joint arrangement as respects and any premises to which the order applies, and where it carries out such arrangements to recover from the occupiers concerned the expenses of so doing.

Explanation— In clause (b) of this sub-rule "fire prevention duties" include the duties of keeping a watch for the fall of incendiary bombs, taking such steps as are immediately practicable to combat a fire caused by such bombs or otherwise and summoning such assistance as may be necessary, and also includes the duty of being in readiness to perform any such duties as aforesaid.

PART-XV
SALVAGE

15.1. During air raids many houses might be destroyed or damaged simultaneously burying large quantities of valuable property under the debris and the owners may become casualties or may run away out of fear. If these properties were left uncared for, they would be either stolen or destroyed by exposure. It would be impossible for the Police to take charge of these properties, remove them to a safe place and keep them in custody until the appearance of the rightful owner. Nor could this work be entrusted to the Police as Civil Defence measure as the Police will have many other duties to perform. Hence it will be necessary to have a separate post-raid organisation which may be called the Salvage Organisation and which would be responsible for salvaging properties from houses destroyed or damaged by air raids and for taking care of such properties and their eventual disposal or return to the owners.

15.2. It will, thus, be necessary to set up suitable organisation in every town under a responsible Officer. He should organise salvage operations through the local P.W.D. or utilize Rescue Parties during non-alert period if it does not interfere with their normal duties.

The arrangements for salvaged property should include :-

- (a) Arrangements for its custody by an appropriate officer who may be called a Custodian.
- (b) Provision of suitable places to serve as godowns for storing and guarding the salvaged property till the owners can be traced.
- (c) Protection of property against exposure to rain and weather.
- (d) Maintenance of proper accounts.

To enable the Custodians to discharge their duties efficiently they should be provided with necessary staff and equipment, e.g., a watchman, an accountant and a vehicle. Necessary labour could be engaged on daily wages when required. The parties so organised will be known as Salvage Parties. Salvage party with Police accompanied by a Magistrate should reach the spot and after putting a cordon, a further action should be taken in the presence of the Magistrate.'

15.3. **Legal Provisions.** -State Governments may appoint Officers entrusted with the task of salvage and custody of salvaged goods. The Central or State Government may by general or special order provide :-

- (a) for the clearing of any premises which, in consequence of enemy action, accident or otherwise, are substantially damaged;
- (b) for the protection of articles or things left upon such premises as aforesaid;
- (c) for the removal, custody, disposal or restoration to owners of any such articles or things as aforesaid, including the disinfection or destruction of articles or things which may be a source of danger to public health or safety.

15.4. The salvaged property will generally fall under two broad categories *i.e.*, perishable and non-perishable. Perishables may be disposed of and the amount realized may be held by the Custodian on the owners' account. If there are any useful perishables such as foodgrains they may be handed over to the Rationing Authorities, if any, suitable compensation paid to the owners.

As regards non-perishables, custody of the building material may be entrusted to P.W.D. authorities, and other property may remain with the Custodian as above unless the owners are present and offer to take the property away.

15.5. If any valuables like ornaments, gold, silver, bank notes or other documents of value are found, arrangements must be made so that they are sent by the Custodian to Government Treasuries or banks for safe custody. It is suggested that while salvage operations are proceeding, an inventory of salvaged property should be prepared on the spot by the Salvage Officer in accordance with the procedure laid down by law, and copy furnished to the Civil Defence Controller immediately. Valuables should be listed in the presence of a Magistrate. Care must be taken to guard against any mishandling of or lost to salvaged property.

APPENDIX XV-A
SALVAGE ORGANISATION

(Scale of personnel)

Custodian or/ and Assistant Custodian	1 upto 6 lakhs population and one extra for every additional 6 lakhs population.
Salvage team consisting of :	1 per two lakhs population
1 Supervisor	
1 Driver	
4 Labourers (to be employed on daily wages)	
Godown Staff as follow :	1 Godown upto 6 lakhs population and one extra for every additional 6 lakhs population.
Accountant (Godown I/C)	1 per godown
Clerk	1 per godown
Attendant	1 per godown
Watchman	1 per godown

PART-XVI
REPAIRS AND DEMOLITIONS

16.1 Object

It is necessary to make prior arrangements for the quick repair of large scale damage that may result from an air attack. The object is to restore normal life as quickly as possible and ensure maintenance of public morale thereby.

Generally it will be the responsibility of the appropriate authorities to undertake repairs for which they are normally responsible in peace time. They should augment and equip their repair personnel to deal with added risks of war. Rescue Service may assist if not required for their primary work of rescuing lives or recovering the dead from damaged buildings.

16.2. Repairs to Property

After an air raid a large number of buildings may become damaged, rendering residents of those buildings homeless. While these people will find temporary shelter in Rest Centres, the solution lies in rebuilding and repairing the houses that are damaged or destroyed. Whilst it is not possible during the war conditions to undertake the reconstruction of buildings which had been destroyed or undertake extensive repairs to buildings which had been badly damaged, there would be a large number of buildings the whole or parts of which could be made habitable after minor repairs. These buildings, after they are restored to habitable condition, would provide permanent accommodation for a number of homeless families. It is therefore desirable that—

- (a) Privately owned premises which have been slightly damaged by air attack should be rendered habitable as soon as possible after the damage has occurred. Urgent repairs would also be required for shops dealing in essential commodities, emergency catering establishments, Rest Centres, hospitals etc. In many cases public will be willing to undertake their own minor repairs. In that case some arrangements will be necessary for providing and distributing building material on the spot for small repairs. State Governments should undertake repairs only when the premises are required to house the homeless and the owner himself is unable to effect the repairs.
- (b) Such repairs should not extend beyond that which is necessary to render the building fit for habitation. This would not include interior decoration and replacement of fittings etc.

- (c) Arrangements should be made for the early inspection of slightly damaged premises by a person authorised to decide on the extent of the repairs necessary and a record should be kept of approved cost.
- (d) Repairs would only be undertaken by the State Government if (1) there is a real need for the building to be made habitable (2) that it will in fact be inhabited as soon as the repairs are done (3) that the expenditure is restricted to the minimum necessary for making the building habitable and (4) that relief is afforded only to those who are unable to carry out the repairs without it.
- (e) Repairs to property of industrial and commercial undertakings, business premises, premises of public utility undertakings, transport services and government buildings, should be carried out by the authority responsible in peace time for such repairs.

Arrangements must be made with local P.W.D. authorities, who should set up Repair and Demolition Squads for this purpose under their control, to ensure that the necessary stock of material and implements are available for repairs. These squads will also undertake demolition work described in para. 16.4 below. Special arrangements must be made for public utilities viz. electricity, gas, water etc. to restore the essential services in the damaged buildings as quickly as possible.

The problem of labour must be kept in view. The labour becomes scarce in target areas. Labour skilled or unskilled will be required on large scale. Adequate transport will be required for moving labour, debris and material.

16.3. Repairs to Road and Clearance of Debris

Roads, culverts and bridges are likely to be damaged by high explosive bombs during air raids and if they are not quickly repaired they would badly affect communications between several parts of a town resulting in lowering the morale of people and will be a severe handicap to C.D. Services. The roads may also be blocked by debris or falling masonry from the damaged building as well as due to craters caused by the impact of H.E. bombs. It is desirable that the work for the clearance of debris from the roads etc. as well as repairs to the roads should be undertaken by the Municipal Authorities/P.W.D./Corporations concerned so that the roads are put into commission as soon as possible.

16.4. Repairs to Essential Services

The services like water supply, sewerage, electricity, telephones, telegraphs and gas works usually maintain their own repair gangs, which should be suitably expanded to meet the exigencies of air raids (also see Part XXV). Repairs to Ferries, Docks, Harbours, Canals, Railways etc. will also be carried out by the concerned authorities themselves.

16.5. Demolitions

Some buildings damaged during air raids might be standing in a dangerous condition and might constitute potential sources of danger to the public. Their presence near road side might endanger lives and traffic on the roads. Hence it will be necessary to get these buildings dismantled as quickly as possible to remove the source of danger and also to restore traffic along the roads. Demolition of some buildings may necessitate the use of explosives. This work should therefore be undertaken by Repair and Demolition Squads referred to above, except that the demolitions involving use of explosives may be undertaken by Repair and Demolition Squads referred to above, except that the demolitions involving use of explosives may be undertaken with the help of the military authorities where possible.

PART-XVII

DISPOSAL OF THE DEAD

17.1 In order to set up an efficient organisation for the disposal of the dead it is necessary to consider—

- (a) the probable situation that will have to be met;
- (b) the existing law and procedure for disposing of dead bodies;
- (c) What adaptation or expansion of (b) is necessary.

17.2 Dead bodies will fall into two main categories (i) those which will be disposed of privately and (ii) those which will have to be disposed of by the Corpse Disposal Organisation. Category (ii) will consist of both identified and unidentified bodies, which may be lying in streets, in damaged or undamaged buildings, under debris, in first aid post or in hospitals. It will therefore, be necessary to make arrangements for notifying the location of bodies which need disposal by the organisation. On receipt of news of bodies requiring disposal, arrangements must be made to collect and remove them, either to a local mortuary temporarily adn hence for disposal, or straight to burial or cremation grounds. The maximum number of dead bodies likely to need disposal after a raid must be estimated; arrangements must be such as to be able to deal with this number in a very short space of time. These arrangements should include the disposal of civilian corpses in military, railway and port areas and on ships in port or putting into port. Provision is necessary for taking possession of valuables found on unclaimed corpses. Provision must be made for sending information of all deaths in both categories (i) and (ii) to the Civil Defence Information Office.

Figures of casualties and extent of damage are however NOT to be supplied to any person after any raid or series of raids. This information will be issued only by Government. This caution applies to all branches of Civil Defence Services in an area.

17.3 **Corpse Disposal Organisation**— The Corpse Disposal Organisation should be under the control of a responsible officer of the Health Department of the Municipality or Corporation, as the case may be. He will be assisted by such staff as may be necessary. A minimum of one Corpse Disposal Squad should be sanctioned for all cities having a population upto two lakh. For every additional two lakh population, one more squad may be added. For every squad one vehicle should be provided. Each squad should consist of one leader, one driver and four attendants. Some of the local voluntary organisations may be persuaded to join the Corpse Disposal Organisation or alternatively to arrange for some squads to be placed at the disposal of the Corpse Disposal Organisation for disposing of unclaimed

bodies. For removing the dead bodies the equipment required such as spades, stretchers, ropes, and disinfectants, rubber gloves, Phenyle, soap, towel, nose pads and tarpaulin, should also be provided in each vehicle and the driver should be made responsible for the proper maintenance of these articles. Each member of the Corpse Disposal Squad should be given 1 steel helmet and each squad should have 1 electric torch.

17.4 During an emergency it will be the responsibility of the public to report all deaths occurring due to air raids to the police who will make necessary enquiries under section 174 (Cr. P.C.) and permit the disposal of dead bodies. Claimed dead bodies will be given to the relatives or friends and unclaimed dead bodies will then be disposed of by the organisation for the disposal of the dead. Dead bodies of Defence personnel should be handed over to the military authorities. Arrangements should be made for keeping the dead bodies at some convenient place for some time so that they can be identified by their relatives. In any case it is desirable to have them photographed before their final disposal. Particulars regarding the dead must be supplied to the Information Offices concerned. The Information Offices will compile the information and will keep the C.D. Controller informed from time to time.

17.5 Identity Discs

To facilitate the task of identifying dead bodies, the concerned authorities may advise the public to carry identity discs in their own interests. Such discs may show the name of the wearer and his permanent address.

PART-XVIII

PUBLIC HEALTH AND EMERGENCY SANITATION

18.1 Object

It is of great importance to maintain high sanitation standards during war. Unless this is done it will lead to outbreak of epidemics which means that we will have to fight on two fronts : That is, the enemy from without and the enemy from within. Apart from epidemics improper sanitation will also give rise to serious repercussions on the functioning of C.D. Services and the morale of the people as a whole. If no war time emergency sanitation has been preplanned, the standards of sanitation will easily deteriorate for lack of enough water, equipment and services of technicians.

18.2 Control and Organisation

It is not intended to set up a separate new service for this purpose. The aim should be to strengthen the existing sanitation services, which have the necessary experience to handle the job of emergency sanitation. The sanitation authorities should prepare Emergency Sanitation plans and see what arrangements are necessary to have on hand the necessary equipment and personnel and what training, if any, should be given. Some of the C.D. Services like Wardens Service would give the necessary instructions on emergency sanitation to people and will assist the local sanitation authorities as far as possible in this matter.

18.3 Functions

The following basic responsibilities, in connection with Emergency Sanitation, should be planned for :

- (a) Maintenance or restoration of safe water supply and temporary measures of rendering water safe for drinking purposes and other essential uses.
- (b) Adequate food inspection during emergency, especially the inspection of emergency kitchens and canteens.
- (c) Tightening of existing milk sanitation regulations, and devising measures for preventing spread of diseases among milch cattle.
- (d) Maintenance or restoration of sanitation standards in the disposal of sewage and solid waste. This may have to be accomplished despite the loss, or diminution of water supply.
- (e) Regulation of sanitation in shelters and emergency camps.

- (f) Control of rodents and insects which carry disease, destroy food, or become serious nuisances.
- (g) Prevention of epidemics by mass inoculation.

In order to carry out these responsibilities both during and after disaster, the local sanitation authorities will require volunteers to act as sanitation squads who should be trained in such duties as reporting the outbreak of epidemics and keeping the neighbourhood clean etc. etc. Such volunteers should be trained in specialised fields, and should be given necessary authority to perform their special functions.

Authorities concerned will no doubt maintain suitable reserves of equipment and personnel for emergency requirements.

18.4 **Water**

The possibility of damaged water mains and the heavy use of water by fire fighting services may lead to shortage of water. Water is needed for drinking, cooking, washing and a variety of other purposes. There is also the genuine risk of the water getting polluted by sewage from broken sewers. If measures are not taken properly such water may easily find its way into food, milk and even medicine. Suggested measures to overcome those problems are :-

- (a) Training of people in water purification methods, and precautions which should be taken regarding the use of water when pollution of water is suspected.
- (b) Storing reserve of sufficient quantities of water required for drinking, cooking and washing purposes. It is estimated that roughly a minimum of 7 to 8 gallons of water are required per head per day for domestic uses.
- (c) Planning alternative sources of water e.g., hand pumps etc., renovating and putting into commission discarded wells etc.
- (d) Arrangements for obtaining immediate information about cases of diarrhoea, vomiting, etc., which indicates the contamination of water supplies.
- (e) To prevent epidemics, building up of sufficient stocks of antibiotics, serums etc. and training volunteers in their use on mass scale.

18.5 **Food and Milk**

Milk is highly susceptible to contamination. Milk sanitation regulations will require tightening up. People should be warned of the dangers of unsterilized milk. Sale of unsterilized milk should be entirely prohibited. Should the Milk Supply system fail, reliance will have to be placed on Powdered Milk, adequate supply of which should be planned for and kept in reserve.

Sanitation at canteens and all eating places has to be strictly supervised and enforced.

18.5. **Sewage and Rubbish Disposal**

- (a) Shortage of petrol may necessitate use of animal drawn and hand drawn vehicles.
- (b) Training of people in emergency measures for disposal of solid waste garbage, rubbish etc. and construction of emergency drainage, and keeping on hand such tools as shovels, disinfectants etc. for the purpose.
- (c) Training of staff and acquiring equipment for quick restoration of drainage system.
- (d) Construction of communal privies.

18.7 **Insects and Pest Control**

Prevention is always better than cure. All efforts must be made to keep out disease carrying pests. A good programme of control in the precautionary state will mean less trouble in War Stage. An extensive programme is needed to train people on their role in this matter. Wardens should notify to the local health authorities such places as require pest control measures.

18.8 **Incidence of Diseases**

During raids when hospitals will be overcrowded, the out-break of an epidemic will be a real calamity, and the local health authorities must do all they can to prevent such outbreaks. People should be trained in the precautions against epidemics, the need and methods for making arrangements for isolation of such cases. Arrangements for mass inoculation should be made at places where people are likely to congregate such as Railway Stations, Camps, Rest Centres, etc. The authorities must build sufficient stocks of antibiotics, serums etc. and train additional staff in their use on a mass scale.

18.9 **Health Supplies**

A system of distribution of health supplies such as drugs, chemicals, antibiotics, surgical textiles, infants' milk foods etc, should be worked out and reserves built up where desirable.

18.10 **Blood Reserves**

The only chance of survival for many casualties in war will be the availability of enough blood stocks for transfusion. Arrangements are therefore needed well in advance for intensifying blood donation programmes, and for their storage and processing facilities. Authorities must examine the feasibility of using any blood substitutes if possible.

PART-XIX
CARE OF ANIMALS

19.1 General

In modern war animals will be exposed to the risks of air attack in the same way as human beings, and both from practical and humane considerations, steps should be taken to protect them and to alleviate their sufferings. In certain areas such as docks, railway warehouses, and some industrial centres there will be a large number of transport animals and in cities generally there is a good number of milch cattle and domestic pets. Such areas are likely to be primary targets of air attack. On the other hand it is unlikely that the destruction of farm animals will be considered as a primary objective of hostile attack owing to their normal dispersal.

19.2 Evacuation of Animals

Plans should be prepared for evacuation of dangerous animals including animals kept in the zoo to safer places, or arrangements may be made for their destruction.

Dairies should be evacuated since the difficulty of inward transport of fodder might be greater than the transport of milk from outside areas. Stray cattles should be sent to "Goshalas" or other places of safety.

Evacuation of dogs, cats and other pets and transport animals must be considered to be the responsibility of owners.

All unclaimed stray animals must be seized and kept in custody of local authorities if possible or destroyed by authorities specially authorised for the work.

19.3 Arrangements for 'Alarm' Period

The Veterinary Services or the Society for the Prevention of Cruelty of Animals (S.P.C.A.) should be entrusted with the care of animals. Animals during or after raid will fall into three categories

- (a) Seriously injured animals.
- (b) Less seriously injured animals.
- (c) Dead animals.

The animals which had been seriously wounded or become dangerous to human health will have to be destroyed and the treatment of less seriously injured animals must be undertaken by the Veterinary Services. Therefore arrangements must be made for the

expansion of these services and the S.P.C.A. If treatment is decided on, the animal should first be suitably restrained.

Car cases of dead animals and those which are destroyed will have to be disposed of by local authority by incineration, burial or any other suitable method.

Wardens, Police etc., should intimate any cases of injured animals to the local authorities of Veterinary Services or the S.P.C.A. who will then take necessary action.

19.4 General Precautions

Injured animals in pain revert to the wild state and can cause severe injury even to those to whom they are deeply attached. Therefore, during alarm period dogs should be muzzled and kept on a short, strong lead, to prevent their getting out of control or causing injuries.

The general procedure for horse or other draught animals in towns is that when an alarm is sounded or a raid takes place, vehicles should be driven into side streets in order to keep the main road clear. The animals should be removed from the vehicles. Stables may not afford protection for horses or other animals unless they are specially constructed, but they may prevent them from getting wounded from falling shell fragments and will also protect the public from the danger caused by frightened animals. The animals may not be driven harnessed to stables and they may be tied at convenient place allowing sufficient rope for their heads to come down to the ground.

The animals should be taken into the side streets and removed from vehicles and should be securely tethered by rope to the wheels, the animals being allowed only as much rope as is necessary to permit its head to reach the ground. The bits in the mouth of animals may be removed during air raids, but it would be advisable to put on nose bags containing grains.

The best emergency measures for cattle and farm animals in general, particularly where fire breaks out, it is to get them out of the stables into the fields where possible.

For the protection of milch cattle the general principles of dispersal must be followed where necessary. Milch cattle will stand a better chance of preservation if they are removed from vulnerable areas and scattered about the outside of those areas.

Arrangements must be made to clear the roads of dead or injured animals immediately after the raids as otherwise they will obstruct the roads and create a problem for the movement of essential vehicular traffic.

The equipment and facilities at the veterinary hospitals should be increased. The S.P.C.A. should be encouraged to open First Aid Centres and to organise veterinary First Aid Parties to treat the injured animals.

PART-XX
LIGHTING RESTRICTIONS

20.1 **Object** – Lighting restrictions are an important feature of the precautionary measures to be taken as a form of security against air attack. With significant changes in the threat perception and latest technological advancement, the current procedure of black-out poses considerable problems of high-speed aircraft and the anxiety level of the enemy pilot in the cockpit would be more, if the area is dark. Therefore, black out will be carried out as per need basis and there is an obligation on those controlling lights, i.e., the police and air raid wardens, to observe and enforce the restrictions. The standard to be achieved is that no light shall be visible at a height of 5,000 ft. above ground level under normal visibility conditions.

20.2 **Draft Order** – A draft lighting restriction order is at Appendix XX-A. If this order is generally applied, the necessary standard will be achieved.

20.3 **Traffic Movement** – In order to facilitate the movement of traffic and pedestrians throughout the darkened areas, certain precautions should be taken. An indication of the nature of these precautions is included in Appendix XX-B.

20.4 It is not practicable to achieve an advanced stage of lighting restrictions all at one time. The best way of achieving a high degree of restriction is to approach it by gradual stages. The number of street light should be reduced to the absolute minimum and the power of the remaining lights reduced as far as possible and then so screened that no light is thrown above the horizontal and no appreciable light is reflected on the ground. By this means the public become used to these restrictions and to carrying on their normal activities with less and less light.

20.5 **Illuminated Advertisements**– All external illuminated advertisements and unnecessary external lights are prohibited in the vulnerable areas and all external light must be shaded or extinguished according to local rules.

20.6 **Factories** – All Factories will comply with the local regulations on lighting restrictions, but such of the factories as are engaged on work of national importance should also arrange for a "crash black-out" which means the extinguishing of all lights simultaneously. The "crash black-out" will come into effect on receipt of the "preliminary caution" or "action warning" whichever is earlier and lights may be turned on again at the "Cancel Caution". A note for the guidance of factories and industries is given at Appendix XX-C.

20.7 **Removal of Roof Signs** – It is important to take all possible steps to make less easy the identification of military objectives by day as well as by night. Accordingly arrangements should be made to remove or screen signs on the roofs of buildings which might give any indication to hostile aircraft.

20.8 These rules will apply during every Air Red practice, and continuously after an emergency has arisen, and will not apply to lighting of Railways and Docks and in certain factories. The restrictions of lighting on these are separately provided for.

Appendix XX-A

**DRAFT ORDER ON LIGHTING RESTRICTION FOR USE
UNIFORMLY THROUGHOUT INDIA**

Whereas the Government of, has by Notification No..... dated the order that the powers conferred on it by Civil Defence Act, 19 , shall be exercised on its behalf by the District Magistrate in a District within his jurisdiction.

Now, therefore, in exercise of the powers conferred upon me by the said Notification, I, District Magistrate do hereby make the following orders which shall be enforced from the(specify the date) in the whole of the District.

Preamble. – This order is intended to enable the people to protect themselves and their towns from enemy aircraft at night, without incurring the discomfort of total darkness.

A small glow of light outside houses, etc., is permitted in the order. The reduced lighting permitted in this order to the general public may continue even during an Air Raid.

I. Street Lights and public Lighting– All public lighting shall be reduced to a minimum compatible with public safety, to the satisfaction of an officer appointed by the District Magistrate in this behalf.

No direct ray from a street lamp shall be emitted except at a downward slope.

Light thrown on the ground shall not be greater than that from a 25 watt bulb at a distance of 20 ft. or an ordinary hurricane lantern at a distance of 6 ft.

II. Lights in, and on, Buildings, or Open Ground.– 1. No light shall be used in any building or premises appurtenant thereto, unless it is so placed or so screened by opaque material, that–

- (a) No ray, direct from the source of light, or reflected from a bright surface, is visible outside the roofed portion of the building;
- (b) No glare is thrown upwards outside the building or any part of it;
- (c) The total light reaching the outside of the building in any place is not greater than that thrown on the ground by a 25 watt bulb at a distance of 20 ft. or an ordinary hurricane lantern held at a distance of 6 ft.

No light whether for decoration, advertisement or any other purpose, shall be exhibited on the outside of any building or construction or on any plot of land.

III. Lights on Vehicles –

(a) Motor Vehicles –

All lights capable of throwing a beam, carried on a motor vehicle, shall be screened by one of the following methods :-

- (i) By passing dry brown paper over the glass, one thickness on the lower half, and two thickness on the upper half.
- (ii) By inserting behind the glass a cardboard disc covering the whole area, with a horizontal slit 1/8" wide, half an inch below the centre of the bulb and the reflector should be screened by a white cone of proper placed so that no light is reflected by the reflector itself.
- (iii) By using a standard headlamp mark*, complying with the specifications obtainable free from the District Magistrate.

(b) Other Vehicles –

Candle lamps and oil lamps as usually on carts, and of less power than an ordinary hurricane lamp may be unshaded.

Hurricane lamps will be painted black or blue down to the level of the flame.

No white light will be visible at the rear of the vehicle.

No light of greater power than that mentioned above shall be used.

(c) Bicycles –

All lamps will be screened by one thickness of dry brown paper pasted over the glass.

IV. Lights carried by hand – No light brighter than that of an ordinary hurricane lamp with the glass painted black or blue down to the level of the flame or candle lamp shall be carried or kept in any street or open place or outside the walls of a roofed building.

Torches must conform to the above standard and must also be screened by paper pasted all over the glass. No torch shall be carried or used outside a walled building during an air raid or practice exercise except by Magistrates, Police, Civic Guards and Civil Defence Services.

* See Calcutta Specification at Page 145.

V. The rules will apply –

- (a) during every Air Raid practice.
- (b) continuously after an emergency has arisen.

The dates and times of application will be prescribed by the District Magistrate.

VI. Any person contravening any provision of this order shall, on conviction by a Magistrate be liable to rigorous imprisonment which may extend to six months, and also to fine which may extend to Rs. 500.

VII. This order does not apply to lighting on Railways and Docks and in certain factories; the lighting of these is separately provided for.

Excepting such factories as are given special exemption orders, all other factories must comply with the general restrictions contained herein.

VIII. This order does not apply to military vehicles for which separate rules exist.

IX. The District Magistrate may exempt from this order, on such terms as he may prescribe, special lighting required –

- (1) for or incidental to the production or movement of war material;
- (2) for Police, Fire Fighting or Civil Defence vehicles.

Any such exemption shall be reported forthwith to the Government of the State.

X. **Definition** – An "ordinary hurricane lamp" is one given no more light than a hurricane lamp burning a wick of $\frac{3}{4}$ inch width in kerosene oil.

KOLKATA SPECIFICATION

(Page 13 of the Lighting Restriction Order of Bengal Government)

Obscuration of Headlights

It is notified for the information of the public that the details of the Civil Defence Headlamp Mask approved by Government of Bengal under clause 7(1) (a) (i) of the Lighting Order, No. 3144-P., dated the 8th May 1941, are as follows :-

The front plate, which carries three horizontal slits, each $\frac{5}{16}$ inch wide, is made in one piece with the cylindrical body and the flange by which the whole is attached to the back plate. The back plate carries three $\frac{5}{16}$ inch slits, covered by a piece of non-inflammable diffusing materials, held in place by a metal ring secured to the plate by four screws. Four horizontal metal strips are secured in suitable positions. When the mask is assembled the slits in the plates are parallel. A rain shield is formed on the front plate immediately above each of the slits.

The mask should be constructed of steel sheet or other metal sheet rendered corrosion-resistant. The internal surfaces should be dull black, but the colour of the outside is immaterial.

The diffusing screen should be of white or colourless non-inflammable material, matt on one or both sides, and having a transmission factor of approximately 70 per cent. The material should not exhibit any cracking, darkening, substantial deformation, or other sign of deterioration after four hours' continuous use in a headlamp* employing a 36-watt bulb; the test should be made indoors with a stationary headlamp.

The mask is so designed that the back plate may be trimmed down to a diameter of 6 inches without fouling the ring which holds the diffusing screen in position, or the screws by which the ring is attached. It is fitted by removing the front glass of the headlamp and trimming the back plate of the mask to the same diameter. The back plate is then fitted in place of the glass with the cylindrical part outwards and the slit horizontal, the rain shield being uppermost. Packing should be used as necessary to ensure a water-tight front and the plate may be notched to prevent rotation. The packing, and if necessary the direction of the headlamp itself, should be so adjusted that the beam from the lamp does not rise above the horizontal; this can be checked by observation from a distance of above 20 feet in front of the vehicle or by measuring the height of the bright patch produced when the vehicle is standing on a level road about 20 feet from a vertical wall or fence.

The conditions as to brightness will be met if the wattage of the bulb used does not exceed 36. When properly fitted no light should be emitted other than through the front slits and the drainage hold.

* A Lucas headlamp No. 140 with its front glass removed provides a test head lamp copying closely with the specification mentioned in clause.

APPENDIX XX-B

**DRAFT ORDER ON AIDS TO MOVEMENT FOR
USE THROUGHOUT INDIA**

Whereas the Government of has by Notification No. dated the ordered that the powers conferred on it by the Civil Defence Act 19, shall be exercised on its behalf by the District Magistrate in a District, within his jurisdiction.

Now, therefore, in exercise of the powers conferred upon me by the said Notification I, District Magistrate do hereby make the following orders which shall be enforced from in the whole of the, District.

* * * * *

Preamble – This order is intended to aid the movement of traffic during the hours of darkness under war-time conditions.

1. During the hours of darkness all motor vehicles which are stationary will have their side and rear lights on. In the case of animal drawn vehicles, whatever form of lighting is used, it must be placed so that it is visible from the front and rear.

2. Light from a direction indicator is permitted, so long as the light is emitted only through a single horizontal slit of a width not exceeding 1/8 inch.

3. No vehicle shall be on the road during the hours of darkness unless it complies with the provisions of this paragraph appropriate to its case –

(a) a vehicle shall have white paint, or other white material not less conspicuous than white paint, applied or fixed to the bumpers and running boards of the vehicle, or if the vehicle has no bumpers or no running boards, shall have the paint or material applied or fixed in equivalent positions on the vehicles;

(b) a tricycle or a cycle (not propelled by mechanical power) shall have attached to or carried on the rear of the tricycle or cycle a white surface of not less than 12 sq. inches;

(c) any such white paint, white material or white surface as aforesaid shall be maintained in a clean condition and shall be unobscured.

4. The following lights may be displayed for the guidance of traffic on roads :-

(a) A light in a traffic signal, so long as it is masked by an opaque disc covering the lens of the signal and having any aperture for the emission of light in the form

cross of which the vertical and horizontal arms are 3 inches in length over all and $\frac{1}{3}$ inch in width and lie wholly in the upper half of the signal face.

- (b) Lights indicating the position of a refuge of the circumference of the centre island of a roundabout so long as –
 - (i) each light is hooded so as to prevent light being thrown upwards;
 - (ii) all apertures for the emission of light are in the form of right angled crosses of which the arms are at an angle of 45 degrees to the horizontal and are 4 inches in overall length and $\frac{1}{2}$ inch in width.
- (c) Red lights indicating an obstruction or excavation upon or near any road, provided that each light is not greater than that thrown on the group by a hurricane lamp held 6 ft. above ground level or that from a 25 watt bulb at a distance of 20 ft. and that it is screened so as to prevent light being thrown upwards.

5. Direction signs to Police and Fire Stations, Hospitals, Civil Defence Posts, etc.

A light or illuminated sign may be displayed in and for the purpose of indicating the position or direction of a Police Station, Fire Station, First Aid Posts or Hospital, Civil Defence Depot or building used by the Civil Defence Services or a public air raid shelter provided by sign is so screened from above and so dimmed that, while clearly visible at a distance of 100 ft. it is not conspicuously visible at a distance of 250 ft.

6. Rescue, demolition and repair work.

Any light may be displayed which is essential for the purpose of urgent rescue, demolition or repair work carried out by members of the Civil Defence Services, local authorities or public utility undertakings, so long as –

- (a) the light is screened, as far as practicable, so that no light is cast upwards;
- (b) the light is extinguished immediately on receipt of the air raid warning red, unless it is required for the conduct of work which cannot be discontinued even temporarily.

7. White paint must be applied –

- (a) in lengths of one foot and with one foot gaps to the vertical faces of kerbs at road junctions and inter-sections, roundabouts, bends and corners, and places where the road width alters abruptly;
- (b) in lengths of one foot with one foot gaps in roads leading out from junctions—after an interval of 15 ft. on the straight and for a stretch of 10 ft. on the near side kerb.

APPENDIX XX-C

LIGHTING RESTRICTIONS IN INDUSTRIAL AND COMMERCIAL PREMISES

1. General

Emission of light and glare during darkness, whether direct or reflected and the difference in standard of lighting between the target and the background surroundings can be seen from long distances and would assist such enemy bombers as are not fitted with electronic devices in locating the targets. Hence it may be necessary to impose lighting restrictions during war time. The purpose of these restrictions is not merely to prevent conspicuous building being picked out by night from the air as targets for attack but also to deprive enemy airmen of an easy means of checking their position. The restrictions on lighting in a factory or commercial premises is, therefore, not a protection for these premises only but also for the entire neighbourhood.

2. Obscuration

The lighting restrictions may be of two types :-

- (1) Elimination of all light visible from the open air, known as a 'black-out'; and
- (2) Dimming and obscuration of light down to a prescribed standard.

Whichever of the two conditions indicated above are brought in force depending on the exigencies of the situation, the factories and commercial premises must be prepared to extinguish all lighting immediately on the receipt of an air raid warning. This is known as a 'crash black-out'.

3. Crash Black-Out

The 'Crash Black-Out' is designed to act as a safeguard against sudden raids and to provide that a factory can completely black-out within the shortest possible time. The essential elements of the system are :-

- (a) The factory Control Post must be linked with the electrician in charge by means of a special telephone. He must be notified of an air raid warning at once.
- (b) On receipt of the warning the electrician in charge proceeds to open all main lighting switches *in accordance with a planned schedule*.

The lighting circuit must be separate from the power circuit and the street lighting circuit must be separate from the internal lighting circuit. Where such

separation does not exist a scheme should be prepared and the conversion undertaken at the earliest moment.

- (c) Auxiliary lighting will be in use or will be required in most factories. Some lights may require to be kept in operation during the whole period of the air raid warning, and it is therefore essential that the auxiliary system should be independently controlled. It is very desirable that auxiliary lighting should be provided from some other source than the main electric supply; batteries or a small petrol-driven generator are suitable. If for some reason auxiliary circuits must be operated from the main electric supply, then they must be completely separated from the main lighting circuits. Auxiliary lighting will be required for:-
- (i) internal pilot lighting to ensure the safe and speedy evacuation of personnel after the main lighting circuits are switched off.
 - (ii) external pilot lighting to refuse rooms/trenches. These lights will require careful shading to local obscurity standards and should be extinguished immediately evacuation is complete.
 - (iii) the necessary lighting and fans in the Control Post and First Aid Centres, and any lighting which can be conveniently and economically arranged in other A.R.P. Posts.
 - (iv) illumination for the dials and gauges on important plant which must be watched during a raid. These also may require suitable screening.
 - (v) reduced lighting in connection with important processes where some time must elapse before the process can be made safe to leave and the workers can be sent to their refuse rooms/trenches.

These instructions on 'Crash Black-Out' are comprehensive and are designed to meet almost every situation encountered in a factory or a commercial establishment and individual factories or commercial establishments would have to give effect to the recommendations as applicable to them.

4. External Lighting

When situation so demands, all illuminated advertisement will be absolutely prohibited and all external lights, save in so far as they are expressly authorised by the Civil Defence Authorities will have to be extinguished.

5. Pilot Lighting

As soon as main lights are extinguished on receipt of an air raid warning it would be necessary to have internal pilot lighting to enable workers to proceed safely, quickly, and

without confusion to refuge rooms/trenches. Illumination values upto 0.02 foot-candles (0.2 lux) may be employed within the factory. These lights may be left on during an air raid provided the factory is fully obscured.

For external guidance hurricane lamps sheilder so that no light is emitted above the horizontal or is cast on the ground, may be spaced out to mark edges of routes, obstructions, inter-sections and corners :-

- (a) in horizontal bands 6 inches wide and 6 inches apart on trees, lamp, posts, etc., borderng the road, from ground level to a height of 3 ft.;
- (b) in the form of continuous white line along the centre of the road;
- (c) in horizontal bands, etc., strips 6 inches wide and a similar distance apart on fences, railings, etc., at bends and corners where the line of the road may thereby be rendered more easily visible.

PART-XXI

DISPERSION AND CAMOUFLAGE

21.1 Dispersion

The word 'dispersion' in Civil Defence plans indicates the scattering of persons and installations etc. so as to reduce the damage by air attacks to the minimum. The principle involved is to distribute factories and other installations in a town over a wide area so that the effects of a bomb or a concentration of bombs will have the minimum effect. Unchecked growth of towns and the tendency to crowd over in particular areas is the most undesirable feature so far as air attacks are concerned as it tends to make them very attractive targets. The need for "dispersion" is all the more desirable at the time of construction of new buildings, location of new factories, planning of new townships, etc.

21.2 Principles of Dispersion

Dispersion of key installations such as factories and head-quarters of essential services is very important. The main principles of dispersion are :-

- (a) *Zoning* – That is sectorisation of the cities and towns into various zones each one comprising the industrial, commercial or residential area as the case may be. By this method the commercial, industrial and other highly vulnerable areas in a town are separated from residential area.
- (b) *Scattering* – Much useful purposes could be achieved by locating various factories sufficiently away from each other or where convenient, moving them out from the target area itself, to other places. Dispersion further implies dispersing of goods, stores and vital machinery in a number of scattered buildings instead of concentrating them in one building. Location of air raid shelters in an area should be so planned that no more than 50 persons take shelter within a radius of 50 ft. at any time. Similarly the growth of large cities can be checked by creating satellite townships on the periphery and by providing large open spaces of green belts, play grounds, parks and fields.
- (c) *Spacing* – Sufficient space should be provided between different buildings or crows of houses to check fires from spreading over to large areas. Limitation of the size of undivided compartments and provision of dividing walls as fire stops in big stores, depots, commercial concerns, factories, etc. would also be necessary. The dividing walls should be as far as possible upto, and slightly beyond the roof to provide effective fire stops. Opening in dividing walls for

inter-communication should be through automatically closing doors (Fire Doors). Areas with high fire risk potential should be separated from other areas.

- (d) *Segregation* – Where factories have to handle explosives, inflammable and other hazardous materials, it is safer to segregate them and handle them in buildings at some distance from the main plant. Such factories should never be allowed within the boundaries of cities. Storage of inflammable material like celluloid, oil, petrol etc., in residential areas should be discouraged.

21.3 Limitations

It may not be practicable to apply the principles of dispersion to all existing structures but these should be kept in view for all future constructions and in deciding the location of new factories, and the designs and location of air raid shelters. Whenever any new project, township or port is planned, it is of vital importance that the principles of dispersion should be given full effect to and the military authorities consulted in regard to military aspects.

21.4 Camouflage

The purpose of camouflage is to render objects indiscernible and thus make bombing of specific targets as difficult as possible. The ideal of camouflage is to present the raider with a landscape devoid of special features. An object is discernible from a distance only when it differs from its background or has distinguishing features which distract the attention from its main outline. Camouflage is achieved by two ways : (i) Imitation, *i.e.*, by matching the appearance of object with the surroundings (ii) Disruption, *i.e.*, by "distorting" the form of building so as to destroy its natural light and shade sequence which gives away its form and outline. This creates a sense of hesitancy in the mind of the Bombardiers and this split second delay may make him miss the target :-

- (a) *Imitation* – The height and the speed at which a bomber is compelled to fly will make it impossible for the enemy observer to examine the whole locality below in detail. He only sees it as a general pattern. Anything which is out of keeping with the general pattern, therefore, attracts attention. The object of imitation is therefore to present a picture which is sufficiently in harmony with the surroundings, *e.g.*, large unbroken expanses of a factory roof may be painted to resemble a number of smaller residential fits in the locality.
- (b) *Disruption* – This is achieved by superimposition of a pattern of boldly contrasting colours serving to divert attention with the result that the outline is disrupted and the object becomes unrecognizable.

To obtain satisfactory results it would not be sufficient if only one of the two methods is employed. Both methods will have to be used in skillful combination. Care should be taken to avoid repetition of treatment when dealing with a number of associated buildings. Camouflage is not intended to be applicable to all types of buildings. It is only justified in the case of premises likely to be special targets and so conspicuous as to necessitate concealment. It is essential that the future requirements of Camouflage should be taken into consideration while planning new Industries, Projects etc.

21.5 Camouflage Organisation

Camouflage schemes may be classified in two groups; the Field Camouflage and the Static Camouflage. The Field Camouflage includes all camouflage undertaken by the armed forces in the war fronts and is the responsibility of the military authorities. The field Camouflage includes all camouflage measures undertaken by the armed forces in the War front. Camouflage of Static Defence installations like ordnance factories etc., Civil Defence authorities will only be responsible for static Camouflage Scheme other than those falling under the responsibility of Defence Authorities. A Central or Regional organisation of the Government of India will examine and survey the areas in the States and prepare, in consultation with State Government or Ministry/Authorities concerned, schemes for State Camouflage of buildings, installations, etc., for which camouflage is considered necessary. The State Governments will then be expected to get these schemes executed, under the guidance of Central Camouflage Organisation. Necessary legal powers to compel the owners of buildings installations, etc., to adopt the schemes will have to be worked out.

PART-XXII

CIVIL DEFENCE IN INDUSTRIAL AND COMMERCIAL PREMISES

22.1 Introductory

Factories and other industrial establishments form distinct and highly important units within the frame work of the general organisation of the country and the planning of their Civil Defence measures calls for special consideration.

The general principles of protection of personnel and organisation of Civil Defence Services are the same for industrial undertakings as for local Civil Defence Areas. Factory Civil Defence services and local Civil Defence organisations will be required to co-operate with each other and render mutual support. It is therefore essential that they should be planned as far as possible on similar lines. In case of larger concerns the aim should be to provide complete self-contained Civil Defence units.

22.2 Object

The primary object of Civil Defence for industry is to provide insurance against the interruption of vital production owing to air attack and to keep essential production going.

22.3 Structural Measures

The structural measures for industry fall mainly under three headings, viz :-

- (a) Measures for the protection of general personnel, and the keymen. It would no doubt be necessary in many cases for some of the key personnel to remain on duty while an air raid is in progress to attend to their duties. In Factory, housing colonies, adequate protection for the families of the workers should also be considered. Absence of protective arrangements for the families of workers will have an adverse psychological effect on the minds of workers and is bound to affect their efficiency.
- (b) Measures for the protection of vital buildings and plants.
- (c) Measures designed to maintain productive efficiency and the health of workers, in spite of war conditions (e.g., the improvement of standards of ventilation and artificial lighting in consequence of the black-out.)

Services should be planned not merely with a view to providing all possible protection for workers against death or injury, but also with a view to repairing damage, clearing debris and enabling production to be resumed with the least possible delay. The maintenance

of morale is more important in the case of factory workers than among the ordinary civil population. A panic flight would have the immediate effect of delaying or even stopping vital production, whether or not the factory itself was damaged.

22.4 Main consideration for Planning

The factors which govern the extent and scope of C. D. planning in factories, etc., are :-

- (a) The liability to air attack of the area in which the undertaking is located.
- (b) Importance of factory's output in the programme of war production.
- (c) Whether the manufacturing processes have to be kept going even when the raid is on.
- (d) The nature and degree of risk arising from the type of commodities manufactured or stored on the premises.
- (e) The size, nature and layout of the buildings and plant.
- (f) Availability of men and material.
- (g) Possible interference with production resulting from installation of particular protective measures.
- (h) The extent and location of outside help.

22.5 Differences between conditions in industry and in local Civil Defence Areas

Apart from the overriding importance of maintaining vital production, conditions in a factory differ in many respects from those met with in an ordinary Civil Defence Area. Obvious examples are :-

- (a) *Factories as Potential Targets* – A vital factory is an important military objective, and may be signed out for special attack.
- (b) *Area* – Even the largest factories are considerably more compact than districts covered by local Civil Defence Schemes.
- (c) *Special Regulations* – Industry is affected in many cases by special legislation or regulations on such subjects as labour conditions, industrial welfare, accidents, fire precautions, etc., which do not apply elsewhere.
- (d) *Special Risks* – Certain factories contain large quantities of explosives, inflammable or noxious materials, the inherent dangers of which are increased by an air attack.

- (e) *Security Considerations* – Ordinances Factories, oil installations and many other important factories are protected places to which access to outsiders is normally prohibited. It is therefore necessary that their own C. D. Scheme should be as self-contained as possible. Questions of sabotage or "Fifth column" activity may be involved and in certain cases defence considerations may affect the lay-out of the C. D. Scheme in other ways.
- (f) *Scale of Shelter Provision* – In civil defence areas, protected accommodation is provided at public expense for all C. D. personnel also for a portion, but not the whole, of the remaining population. Factories, however, may be required to provide protected accommodation for all workers including C. D. personnel likely to be on the premises at any one time.
- (g) *Pattern of Organisation* – For the local Civil Defence Scheme it will be necessary to build up a special *ad hoc* organisation to deal with problems of Civil Defence. In industrial undertakings a complete organisation already exists for purposes of production, and the organisation can and should tackle the problem of ensuring the maintenance of production in the event of air raids. The C. D. organisation should as far as possible be dovetailed into the existing framework, e.g., it will make for smoother working if the Factory C. D. Controller is the same man who is responsible for its output. Similarly in particular concerns the Shop-Managers or Foreman are the right persons to act as Head Wardens, and the same pattern may be followed down the hierarchy.

22.6 Special Problems at Factories

- (a) *Protection of vital Buildings and Plant* – The collapse of a domestic building is important primarily for its effects on the Civil population, who may be buried in its ruins or rendered homeless by its destruction. The collapse of an important workshop, apart from its effects on personnel, will interrupt vital production and result in damage to essential and irreplaceable machines.
- (b) *Safeguarding of Essential Services* – Factories are to a certain degree dependent on the essential services such as electric power, gas and water. The protection of these services is of even greater importance than in a purely residential area. In some cases essential services may have to be duplicated entirely as an insurance against a possible breakdown. The restoration of damaged services to important factories after air raids becomes a matter of the greatest urgency.
- (c) *Obscuration and Ventilation* – In factories the necessity for prolonged working hours, including shifts in black-out conditions, raise acute problems of obscuration and ventilation which do not raise to the same extent in domestic premises.

- (d) *Glass* – In peace time to ensure good lighting factories are provided with large areas of glass, both in the form of wall-lights and roof-lights. In war time steps must be taken to eliminate danger to personnel, plant or products from shattered glass, and efficient lighting must be provided wherever possible by other means.
- (e) *Fire* – Factories should where possible have their own fire-brigades, and in order to make the best use of these Brigades they should preferably be prepared to fight fires in the neighbourhood, within certain agreed limits, outside the factory area also under mutual aid scheme. Arrangements will be necessary in factories to provide for fire fighting and fire watching outside working hours also, as the risk of fire is greater when the factories are unoccupied. The arrangements should provide for keeping every part of the premises under observation and tackling of small fires as soon as they are noticed.
- (f) *Key Personnel* — For every keyman operating the industrial machinery, an alternative man should be designated and trained so that he can take his place in the event of former becoming a casualty. During air raids the keymen and their alternative designates should remain away from each other to avoid the possibility of both being casualties at the same time. This step will ensure continued production.

22.7 C. D. Measures in new and in existing Factories

Satisfactory C. D. planning is inseparable from the planning of the Factory work as a whole. In the case of new factories it would be advantageous if C. D. aspects are considered while plans are still on the drawing board and at all stages of construction. The resulting layout will be more efficient and economical than if C. D. protection were added later as an after thought. The same general principles, should, however be applied with suitable modification to existing factories.

Furthermore, exact details of C. D. equipment which might be required in the emergency should be listed and a note made of the sources from which it might be obtained. If possible definite arrangements should be made to ensure that C. D. equipment can be obtained quickly and without fail. This is important in view of the heavy demand which might be expected in an emergency. The ideal course will be to stockpile at least a proportion of the equipment that would be necessary.

When a scheme has been worked out, the various tasks should be allotted immediately and a list of the persons so designated should be prepared and kept up to date.

Suggested headings which should form the basis of Civil Defence schemes for any particular industrial or commercial unit are given at Appendix **XXII-A**. It will be seen that in

industrial Civil Defence organisations all services need not necessarily be provided. For certain services it will be better to depend on the local Civil Defence organisation, e.g., a Factory C. D. organisation need not have copse disposal squads, but the Factory authorities need inform only either the Police or the nearest wardens post.

22.8 Workmen's Quarters

Some large factories have workmen's lines or estates close by for the protection of which the management is responsible. The conditions in such estates are usually comparable with conditions in an ordinary residential area, and the problem should be dealt with on the same general lines.

22.9 Public Utility Undertakings

Public Utility Undertakings will be concerned not only with the protection of vital buildings and plant at their own works, but also with protection and repair of mains, sub-stations, plant, etc. distributed over areas served by local civil Defence organisations. A large number of skilled personnel must be trained for the emergency and reserves of repair equipment maintained.

APPENDIX XXII-A

SUGGESTED HEADLINGS FOR C. D. SCHEMES IN INDUSTRY

1. **General Organisation**

Controlling authority in peace and war.
Instructions to works, keymen and C. D. Services.
Co-operation with local authority.

2. **Protection of Workers**

Shelters for workers.
Sign posts showing routes to shelters.
Protection of keymen who must remain on duty.
Protection for families of workmen in Factory Housing estates.

3. **Protection of buildings, machinery and plant**

Fire preventive measures including dispersal of inflammable stores.
Protection of water, gas and electricity supplies.
Provision of alternative sources of water and electricity.

4. **Control and Communication of air raid warnings**

Provision of extra telephones arrangement for receiving air raid warnings for 24 hours.

5. **Emergency Communications**

Runners and cyclists.

6. **Concealment of lights**

Pilot lighting for movement within the premises.
Screening of windows.
Shading of lights.
Extension of external lights.
Removal of external signs visible by night.

7. **Camouflaging**

8. **Medical Arrangements**

First-aid posts and their equipment.

First-aid parties and equipment.

Ambulances.

9. **Fire-Fighting.**

Augmenting Firemen for factory fire brigades and their equipment.

Fire practices.

Fire parties for detecting and fighting small fires.

Water supply in the form of static tanks.

Arrangements with local fire services.

Fire extinguisher for special fire risk.

10. **Rescue work, including removal of debris and demolition.**

11. **Arrangements for feeding the personnel on duty.**

12. **Wardens for reporting damage, for Shelters, etc.**

13. **Training of Instructors, Officers and Personnel in Industrial Civil Defence.**

14. **Repair of damage to buildings and plant.**

Augmentation of repair squads, their equipment and vehicles. Spares of vital parts and their storage.

15. **Emergency sanitation arrangements.**

16. **Mutual Assistance arrangement with neighbouring Factory Units.**

The scheme should provide for action to be taken.

(a) Peace stage,

(b) Precautionary stage,

(c) War stage,

(i) on receipt of air raid warning;

(ii) during an air raid;

(iii) when the raid is over.

PART-XXIII

CIVIL DEFENCE IN EDUCATIONAL INSTITUTIONS

23.1 Object

It can be safely assumed that, during a war, educational institutions are not likely to be specific targets of air attacks. In view, however, of the large congregation of students in such institutions, any chance hit, might cause unduly heavy toll of casualties if proper precautions are not taken. Besides, protective arrangements in educational institutions will assure the parents of the safety of their children and thus any cause for panic or fear will be reduced to the minimum.

23.2 General Considerations

- (a) Affording protection to students in schools/colleges from air raids should be the responsibility of the authorities in charge of such institutions.
- (b) The main basis of Civil Defence in educational institutions is to train students to take as far as possible self-protection measures and to inculcate self-discipline in the interest of their own safety and common welfare.
- (c) Activities of the organisations like the Boy Scouts, girl schools and the schools for the handicapped will lack necessary Man-guides, Junior Red Cross, etc. can be dovetailed with School Civil Defence Organisation profitably.
- (d) In the event of school premises being taken over temporarily for such purposes as First-air posts, Rest Centres and evacuation etc. the students may be allotted some alternative rules.
- (e) Certain educational institutions like the primary or elementary power for taking independent of self-sufficient protective measures.
- (f) Educational institutions generally function during day time and therefore normally for them most of the Civil Defence measures will not be required outside school hours.
- (g) Teachers provide the natural leadership for school students, whose safety could not be organised through the teachers.

23.3 Organisational Pattern

Larger educational institutions like Residential Universities or University Townships will generally have Civil Defence Organisations of their own, similar to the local Civil Defence

Organisations with which it should be fully co-ordinated. The Primary Schools and the Schools for the handicapped will, to a large extent, depend upon the local Civil Defence Organisation but must provide for minimum essential Civil Defence Functions, e.g., conducting children to shelters, reporting damage or casualties to the local Civil Defence Authorities. All other schools and colleges may have Civil Defence Organisations more or less on the following pattern :-

- (a) The Head of the Institution should be the head of the organisation with additional responsibility for training.
- (b) A senior member of the staff should be the next in command, and will also be responsible for Civil Defence equipment, its care, storage, accounting and inspection.
- (c) The Civil Defence Warden in an educational institution will have to perform also the duties of other services in the Civil Defence Organisation. Besides reporting damage and casualties, he will render First Aid and perform simple rescue jobs pending the arrival of trained local Civil Defence Services competent to handle the job. The members of the staff can conduct the school children to their appointed places in the shelters and check identification discs and keep their minds diverted. Only the Teachers and Senior Popular Students should be assigned the role of Wardens.
- (d) Fire Parties should be formed only from among senior students for fire watching and for fighting small fires. In case of big fire assistance of local fire services is to be called.
- (e) Welfare functions in schools include such tasks as evacuation of school students, feeding arrangements and general welfare, e.g., escorting the smaller children home after an air raid. As regards evacuation all children should be conveniently divided in groups of 10-15 and each group placed in charge of a senior student. Four or five such groups should be entrusted to the care of a member of the staff.

Chiefs for all the three services, e.g., Warden, Fire and Welfare, must be found from among the senior members of the staff.

Where possible, Civil Defence Committees, with the Head of the Institution as Chairman, should be constituted and the responsibility of guiding all Civil Defence activities in the Institution should be entrusted to the Committees.

A detailed plan for Civil Defence arrangements in every educational institution should be prepared on the lines suggested in Appendix XXIII-A.

23.4 Protection of Buildings

No two school or college buildings are similar in patterns, location etc., and hence the Civil Defence measures to be taken will vary from school to school. In general there are some common features of school buildings, whatever be the other factors, which require special consideration. The primary need is to provide a structurally safe place for children in the school where they can take shelter in an emergency. Laboratories constitute high risk and should therefore be segregated from the main buildings as far as possible. Stores and equipment should be dispersed to different part of the buildings. School buildings should provide many exit so that all the children could be evacuated in as little time as possible. In short, the protection of buildings include the adoption of such measures as :-

- (a) Protecting buildings against blast and fall of debris, e.g., proof against the combined effects of a bomb falling not nearer than 50 ft.
- (b) Provision of Fire Prevention measures such as alternative sources of water supplies for fire fighting, use of fire retarding paints, removal of combustibles and provision of access to inaccessible places.
- (c) Removal of glass to prevent glass splintering.
- (d) Concealment of lights for such schools as are running the night shift also.

Civil Defence Measures adopted by the educational institutions should be dovetailed and be in conformity with those planned by local Civil Defence Authorities.

23.5 Training

Frequent drills and exercises are needed to practise students in self protection measures and to raise the efficiency of the Civil Defence Services in educational institutions. Every student should know what to do in case of an air raid when on way to school, at school and at the play ground. Every member of the School Civil Defence Organisation should know what actions he should take on receipt of various air raid warnings. It is good to take parents into confidence and invite them to attend practices and rehearsals.

APPENDIX XXIII-A

SUGGESTED C. D. SCHEME FOR EDUCATIONAL INSTITUTIONS

1. **General Organisation**

- (a) Nature of organisation depends on the type of institution.
- (b) Co-ordination of plans with local Civil Defence Authority.
- (c) Setting up of School Civil Defence Committee.
- (d) Instructions for students and members of Civil Defence Staff.

2. **Protection of buildings, equipment etc.**

- (a) Main buildings including class rooms.
- (b) Laboratories.
- (c) Office premises.
- (d) Store rooms.
- (e) Out-houses.
- (f) Hostels and hostel's out-houses.
- (g) Educational equipment
- (h) Essential services, e.g., gas, water, electricity.
- (i) Machinery, if any.
- (j) Concealment of lights.
- (k) Fire hazards.
- (l) Structural precautions.

3. **Protection of Personnel**

- (a) Students – (i) at school, (ii) at play ground, (iii) on their way to school or on their way to home.
- (b) School C. D. personnel.

4. **Control and Communications**

- (a) Receipt of air raid messages.
- (b) Controlling procedure.
- (c) Means of communications.

5. **Fire Fighting arrangements**
 - (a) School Fire Parties.
 - (b) Fire Brigades organisation (for university townships only).
6. Wardens – for reporting of incidents and general care of students including rendering of simple rescue and Fire Aid assistance.
7. **First Aid Parties and Posts**
8. **Rescue Parties**
9. **Welfare arrangements**
 - (a) Feeding.
 - (b) Evacuation.
 - (c) General Welfare.
10. **Equipment and Uniforms**
11. **Training**
 - (a) Training in self-protection measures for all.
 - (b) Training of School C. D. Services.
 - (c) Co-ordination of School C.D. Training programmes with local C. D. authorities.

PART-XXIV
CIVIL DEFENCE FOR RAILWAYS

24.1 Object

Railways play a very vital role in the life of any country in peace as well as during war. This role becomes specially prominent during war, as the continuance of Railway operations with minimum dislocation is most essential for a successful war effort. The main objects of enemy attack on the Railways will be :

- (a) to dislocate the movement of raw materials and finished goods of the industry in the country thereby creating an obstacle to war production;
- (b) to interfere with the free movement of troops, evacuees, essential commodities, etc.; and
- (c) to shatter the morale of Railway staff and indirectly of the civil population.

The object of Civil Defence in Railway areas will, therefore be to –

- (i) ensure smooth running of trains and uninterrupted flow of traffic;
- (ii) protect vital points, e.g., control offices, signal cabins, railway work shops, Loco sheds, bridges, etc.; and
- (iii) protect railway personnel and bonafide passengers using railway facilities.

The Railway authorities will be responsible for the safety of all Railway property including Railway Stations, installations and Railway colonies contiguous to Railway Stations. The safety of Railway colonies that are at a distance and not contiguous to Railway stations may be included in the Civil Defence Plans of the local authorities by mutual arrangements.

24.2 Organisation

The pattern of organisation for Civil Defence on Railways will be generally similar to that of the local Civil Defence Organisations. The overall authority which will direct and control the Civil Defence on Railways will be the Railway Ministry.

At the Regional level also a special officer, responsible to the General Manager, will be appointed to execute, co-ordinator and enforce the various Civil Defence activities of the Railways.

Each Division of the Railway should have a Divisional Emergency Officer responsible to the Divisional Superintendent for Civil Defence Organisation over the Division. His duties

will be to see that various emergency operation and sub-operation centres are set up over the whole Division and also that the Departments responsible for maintaining various Civil Defence Services organise such services properly according to plans already prepared.

At important Railway stations where the need for a Civil Defence Organisation is visualised an Emergency Operation Centre will be set up under the charge of an Emergency Operation Officer. This Emergency Operation Centre will be identical in functions etc. to the Control Centre of a Civil Defence Organisation in a Town.

24.3 Liaison with Local and State C. D. Authorities

Normally, the Civil Defence Organisation on Railways will act independently under the control of the Divisional Superintendents at the Divisional level and the General Managers at the Railway level and ultimately be responsible to the Government of India through the Railway Board. However for these organisations to function efficiently in close co-ordination with the activities of the State Civil Defence Organisations, it is necessary that a constant liaison is maintained between these organisations and those set up by the State Governments. To achieve this the Railways should take the following steps :-

- (i) There should be a Liaison Officer on Co-ordination Committees as and when set by the State authorities in connection with Civil Defence.
- (ii) The District Magistrates should be kept fully informed of the situation in Railway areas, this should be the responsibility of a Senior most Railway Officer in the Head Quarter town of the District.
- (iii) At local level the senior most railway officer who should be responsible for liaison with the towns Civil Defence Organisation. A representative of Railways should be available in the control Room of the local C. D. services for consultation and co-ordination.

24.4 Evacuation

Another important matter where close co-ordination between the State authorities and Railways is necessary is the matter of evacuation of Civil population. Additional facilities may be needed by way of running additional trains, increasing booking facilities, augmenting drinking water, refreshments etc., safety precautions, control of crowds, medical facilities etc.

24.5 Fire Fighting Organisation

Although Railways generally have a separate fire fighting organisations, it is likely that the number of fires would be beyond the scope of its peacetime strength. The Fire Services should therefore be suitable augmented and the local Fire Services should render mutual

assistance. The most important areas which need greater attention from fire risk point of view are the coal dumps, goods yards, petrol wagons etc.

24.6 **Medical**

Additional bed accommodation should be considered to provide for air raid casualties. Though such hospitals are generally intended to provide hospital facilities to the Railway staff only, the casualties from non-railway staff may also be admitted if accommodation permits, and the local hospitals should likewise admit the casualties among the railway staff, where necessary. As far as possible the medical facilities of all hospitals in the areas should be pooled.

24.7 **Unexploded Bombs**

The reconnaissance of unexploded bombs in Railway areas having their own fulfilled C. D. organisation is the responsibility of the Railway Civil Defence organisation, who after confirmation of the existence of a UXB will intimate directly to the State Government. Where no such organisation exists, assistance may be obtained through C. D. organisation of the nearest town. The State Government will, then, after fixing its priority, advise the local military Division Area Commander for despatch of a Bomb Disposal Unit.

24.8 **Transport, Rations, etc.**

The Railway authorities may be required to arrange transport of food; rations and other emergency supplies on priority basis. Railway schemes should make adequate provision for the same. Similarly any assistance needed by Railways in respect of food supplies etc. may be obtained through the District Magistrate.

An outline of a typical Railway's local plan may be seen at Appendix XXIV-A.

APPENDIX XXIV-A

SUGGESTED HEADING FOR C. D. PLANS FOR RAILWAYS

1. **General Organisation**

Controlling Authority in peace and war.

Co-operation with adjacent C. D. units and co-ordination with other plans.

Nature and pattern of organisation – units and scales.

2. **Air Raid Warnings**

To be relayed to the railway stations by Railway Head-quarters from Emergency Operation Centres.

List of recipients of warning and instructions for personnel regarding action to be taken on receipt of warning.

Location of Sirens.

3. **Communications**

Alternative means of Communications e.g., provision of messengers, etc.

Control Room and alternative site for it.

Communication arrangements from Wardens Posts, Hospitals, Sheds, etc. to Emergency Operation Centres.

4. **Wardens for reporting damages**

5. **Reconnaissance Parties for detecting UXBs.**

6. **Medical Arrangements**

Additional beds in Railway Hospitals.

Base Hospitals for giving full treatment to air raid casualties.

Ambulances.

F. A. Posts and parties and their equipments.

Emergency sanitation.

7. **Disposal of the dead**

8. **Rescue parties and equipment for recovering casualties removal of debris and demolition.**

9. **Emergency feeding and Welfare arrangements for staff.**
10. **Evacuation Arrangements**
Restriction on luggage, reservation,
Special trains and their time tables, etc.
11. **C. D. training to Railway staff**
Instructors, equipments, and accommodation.
12. **Fire fighting**
Fire Practice.
Fire parties for detecting and fighting small fires on trains.
Alternative sources of water supply.
13. **Observance of lighting restrictions and arrangements for camouflaging of vital targets.**
14. **Structural precautions**
15. **Protection measures**
Protection to the staff resident of Railway colonies and passengers.
Protection for key staff.
Protection for Rolling stock.
16. **Maintenance of Services**
Arrangements for augmentation of repair services, line staff etc.
Reserves of spares, coal stock, oil etc.
Designation of alternates for keymen.
Control of essential staff.
Alternative sources of essential supplies e.g. electricity, water etc.

PART-XXV

MAINTENANCE OF ESSENTIAL SERVICES

25.1 Importance of essential services during air raid

Under air raid conditions essential Public Utility Services are brought into evidence more than in ordinary circumstances. Destruction of these services will seriously impede the working of other services as well and disorganise the normal life of citizens. The following are the main public utility services, the smooth functioning of which is essential from the Civil Defence point of view :-

- (a) Water.
- (b) Electricity.
- (c) Town Gas.
- (d) Sewers.
- (e) Telephones.

25.2 Measures for maintenance of essential services

It is essential to war effort to keep the essential public utility service going. All undertakings should therefore prepare individual plans on the line of industrial undertaking (*vide* Part XXII). These plans should be co-ordinated with the plans of local Civil Defence authority. The question of how work could be carried on if the essential services interrupted by damage should be carefully considered.

Arrangements should also be made for augmenting, at short notice, the existing facilities for dealing with damage to machinery and building and essential stores. Responsibility for restoration of essential services would be that of the utility managements concerned. There should be a representative for each one of the utility services who should work in close co-operation with the C. D. Controller for co-ordination of the emergency repair and restoration of essential services.

In general, undertakings should :-

- (a) Survey their works and installations to ascertain what vital plant or machinery should be protected;
- (b) Estimate the extra labour which would be required to cope with the increased demand for repair consequent on air raid damage, arrange for its recruitment and training and generally augment arrangements for repairs. In estimating man power needs possibility of casualties to the personnel should always be

considered. (All repair units of essential services are required to be mobile. They must be equipped with suitable vehicles).

- (c) Obtain stocks of spares considered necessary. Arrange for the disposal of stores to different store yards and take precautions against fire.
- (d) Consider whether any obsolete plant should be renovated in view of the possibility of damage to the existing plant.
- (e) Arrange for the housing of essential key personnel near or within the premises of the undertakings.
- (f) Arrange for independent power supply (like Diesel or Steam power supply etc.) where necessary to supply motive power for plants worked on electricity.
- (g) Arrange for alternative sources of water supplies for fire fighting etc.
- (h) Make arrangements for mutual and with neighbouring utility concerns so that in the event of severe damage to one of them assistance could be secured from other concerns.
- (i) Select personnel for emergency duties during air raid and prepare a chart showing the assignment of each individual and the way he will function. Prepare a suitable insignia (e.g., arm band etc.) to allow for easy identification and unobstructed movement to the staff during an emergency. Work out procedures for action to be taken when attack is imminent, and when it is over.
- (j) Consider the need for setting up an alternative Head-quarters of the utility concern in case the existing one is destroyed and make suitable arrangements for spares, personnel, furniture, communications, records, maps, map boards etc. Take steps to provide a safe repository for all essential records and maps or duplicate them and keep the duplicates in some other locality.

25.3 Electrical Undertakings

Electricity has so permeated every phase of modern life that it will difficult to do without it even for a short time. Functioning of production machines, essential hospital equipment and some of the public utility service in many cases depend on uninterrupted supply of electricity. Therefore any interruption of this service will affect several other services which must be kept going. Some of the points which need special consideration are :-

- (a) It is essential to maintain electrical supplies without interruption in time of war. This may be done by having inter-connections between different neighbouring electrical undertakings, so that in case of damage to any generating station the system can be fed from generating stations of neighbouring undertakings.

In the event of air raid damage, causing dislocation and possible reduction of the available supplies, the consumers engaged on work of national importance should receive priority. Wherever possible provision should be made for portable generating sets. Ample stocks of emergency repair equipment should be provided such as; repair parts, spare transformers, line hardware connections conductors, poles, tools and wire including welding machines.

- (b) Special precautionary measures are needed to protect all such vital points as generating stations, main sub-stations, switch-houses and switchgear, control rooms, out-door transformers, pump houses etc. In large undertakings it will be desirable to consider the question of provision of duplicate control rooms. Below are given some of the suggestions for protecting essential plant and machinery :-

1. *Generating Plant* :- Strengthening of existing structures to increase their ability to withstand the effects of war weapons including the erection of blast walls at entrances and concrete or steel protective housings over turbines and generators.
 - (i) Provision of blast and fragmentation protective walls around switch board control panels and instrument boards.
 - (ii) Provision of shelters for all workers on duty and other personnel.
 - (iii) Construction of Barriers around out-door transformers and switches for protection against blast and splinters effects.
 - (iv) Provision of Independent means to start up an electric plant.
2. *Transmission and Distribution Plant* -
 - (i) Barriers around transformers, switches and other small equipment against the effects of explosives and splinters.
 - (ii) Fireproof barriers between transformers, switches and ensure against complete loss of communications with Central Power Station.
 - (iii) Protective shelter for personnel.
 - (iv) Rules for switching and phasing at the sub-stations in case of complete loss of communications with Central Power Station.

25.4 Water Undertakings

Maintenance of water supply is most essential in war-time, as water will be needed for fire fighting for drinking, cooking and washing, sanitation and for several industrial

undertakings. Most of the considerations which apply to electricity undertakings also apply to undertakings supplying water. In particular the authorities should explore the possibility of alternative methods of maintaining supplies. Other ways to maintain these supplies which require consideration are :-

- (a) Use of wells and hand pumps. Hand pumps are to be set up where they can be maintained properly. (Note :- Where old wells already exist but are not being used, they should be covered with a concrete slab with a manhole in the centre, so that well could be used in emergency. It is a mistake to close such wells entirely.)
- (b) Development of natural ponds and tanks.
- (c) Provision of more water tanks and reservoirs.
- (d) Carting of pure drinking water supplies to certain distribution points in area of scarcity.
- (e) Laying of overground mains (six inch steel pipe), in case of emergency.
- (f) Relaying of water by fire pumps both for fire fighting purposes and augmenting water supply.

It should be considered whether by provision of connections some portable plant can be brought into operation in an emergency. Also the possible means of improvisation should be worked out. All such measures should be co-ordinated with the plans of local fire services.

Wherever water pumps are worked by electricity the authorities should consider the advisability of having some independent source of electricity by providing some Diesel power supply units etc.

Water mains are less likely to be damaged if they are laid offlyuscfile deep.

25.5 Sewage Systems

Failure of Sewage system can have very serious repercussions on public health and well being. It will also several hamper the carrying out of essential civil defence operations. It is therefore essential that measures should be devised whereby the disposal of sewage can be maintained should any part of the system be damaged by air attack. Below are given some suggestions as regards the measures necessary for the maintenance of sewage system :-

- (a) Prepare a list of vital places, buildings, culverts, machinery, plant, equipment, inflammable stores, special fittings, sluices, penstocks, valves or other material,

etc. which, if damaged, might either completely or partially paralyse the reception and/or disposal of sewage and storm water.

- (b) Prepare for each of the places listed in accordance with (a) above, detailed plans for affording either physical protection and/or alternative methods of maintaining sewage services such as :-
 - (i) Erection of splinter proof partitions, sand-bagging, etc.
 - (ii) Cross connections, where practicable, between sewers and culverts, additional sluices, valves, penstocks, etc.
 - (iii) Sectionising machinery, sewers and culverts, etc.
 - (iv) Diverting sewage to other pumping stations.
 - (v) Diverting sewage to rivers or creeks.
 - (vi) Provision of portable pumps, etc.
- (c) Prepare a list of vitally important spare parts and plans for obtaining them in time of war. Also plan for the material and tackle required to repair fractured mains and vital parts of machinery, and work out possible methods of improvisation.
- (d) Prepare a diagram showing the principal sewers, pumps, pipes, sluices, penstocks, valves, etc., used in the working of the Pumping Station and a map showing area which are liable to severe flooding in the event of the Pumping Station being out of action and take necessary precautions.
- (e) Prepare a general plan of the sewerage system indicating all sluices, penstocks, and valves by which the sewage and storm water can be diverted (a) into other sewers, (b) into natural streams and any places where the levels will permit such diversions by works that can be quickly executed.

25.6 Telephones

It should be remembered that most the services intended for relief cannot operate unless they can get report of damage and must therefore depend on telephones for this. Similar measures as outlined for other public utility services are required for Telephones undertakings also. Wherever considered necessary duplicate switch boards should be provided or kept in reserve. In the event of complete break-down some alternative mean of communicating should be explored e.g., Radio telephones. Arrangements would also be needed for setting up duplicate Exchanges to function in case the existing Exchange is put out of action. It should also be considered whether any direct lines are required and if so for whom.

25.7 Gas Undertakings

Damage to gas may give rise to the possible risk of fire and explosion. Maintaining of this service in order will also help to solve fuel problem, which may become acute during war time. Gas undertakings should also prepare plans as outlined above. Some of the suggestions which may be found useful are :-

- (a) It may be necessary to work out priority arrangements for consumers who may be engaged on work of national importance.
- (b) In view of the possibility of failure of power required for gas plant, consideration should be given to the possibility of obtaining electric power from another electric undertaking, or the feasibility of use of Diesel power units may be considered.
- (c) Independent source of water supply is necessary to carry on in the event of failure of the public water supply.
- (d) Duplication of certain plant and machinery may be necessary. Wherever duplicate plant is provided it should be located at some distance from the existing plant.
- (e) Wherever possible, arrangements should be made to enable the bypassing of meters, and non-essential plant.
- (f) Safety blow-off seals or automatic valves should be installed where necessary to disperse into the atmosphere the flow of gas from the report houses when the plant is damaged.
- (g) A quick method isolating a damaged gas holder should be provided.
- (h) Appropriate measures must be taken to protect vital points such as :-

Report Houses; Steam Raising Plant; Electricity Generating Plant and Water Pumps; Exhaustor Plant and Booster Plant; Condensers; Extractors and Washers; Oilstores; Benzol Recovery Plant; Exposed Gas Mains and Valves.

Note – Specific instructions will be issued by the Government of India at the appropriate time for preparation of plans as envisaged in this Chapter.

PART-XXVI

MUTUAL AID AND REINFORCEMENTS

26.1 General

The problem of Civil Defence is so vast and manifold and that a mere provision of a Civil Defence Organisation is no solution to it. The Civil Defence protection should be organised at all levels such as :-

- (a) Individual or Self-Protection.
- (b) Area Protection.
- (c) Mutual Aid from neighbouring areas.
- (d) Reinforcements by Civil Defence Mobile Force.

Thus the intention is to create several rings of defence each more solid than the other. As far as possible each individual will be encouraged to undertake the task of taking adequate measures for self-protection. When the individual efforts are unequal to the task the area protection organisation will step in to assist. The latter is nothing but a form of extended self-protection in which the individuals of an area join together to help the community at large generally. When this form of protection fails the area protection organisation (*i.e.* the local Civil Defence Organisation) may request the assistance of a neighbouring area organisation. It is only as a last resort that the assistance of reinforcements from Civil Defence Mobile Force will be called upon. The latter will be a highly trained and equipped unit of Civil Defence Services, at the command of the State Government and it can be quickly moved to any scene of disaster. It will be seen that throughout the principle of selfhelp is the basis of Civil Defence protection in one form or the other.

26.2 Individual Self-protection

The basic concept of Civil Defence is self-help. Self-help is based on the first law of nature – the law of self-preservation. In the event of war, destruction may be caused simultaneously in many localities. Therefore, it is incumbent on every individual to protect himself, his home and family, irrespective of any external aid.

The Principle of self-protection has to be extended from the individual to include mutual self-protection on the part of groups and communities.

26.3 Area Protection

The idea of self-help is further extended when individuals of an area join together and set up organisation for their collective security. This is best done by means of local

voluntary Civil Defence Organisation, the aim of which is to pool and direct the individual efforts aimed at self-protection for the common good of all. Thus truly speaking Civil Defence becomes defence of the people by the people. The scope of local Civil Defence Services is limited to the area to which it belongs except when they are called upon to assist a neighbouring Civil Defence Area on mutual aid basis.

Some of the services such as Fire, Police and Health exist as peace time services. For the purposes of Civil Defence they will need augmentation considerably. But there are still some essential functions to be performed, when there is a raid, such as reporting of damage, rescue of trapped persons, dissemination of air raid warning evacuation, welfare of victims of air raid, etc., for which either no peace time counterparts exist or exist simply in a nucleus form which will be unequal to the task in emergencies like air raids. The local Civil Defence Organisations are intended to fill up this gap, and work in close co-operation with other allied services such as Police, Health, etc.

26.4 Mutual Aid

Mutual aid is defined as voluntary arrangements by which the protective services of organised areas assist each other in times of need, usually by prior planning and voluntary agreements, between the areas concerned on mutual aid basis. This again is another form of self-protection, by which one assures his own protection by providing protection to others under similar circumstances. The extent of protection widens itself by spreading from home to home town and from home town to all areas surrounding the home town.

The need for mutual assistance will arise for several reasons such as (i) to cope with a situation for which the local resources are not sufficient; (ii) to give relief to exhausted personnel; (iii) to supplement the deficiency, as no areas can be self sufficient in all respects. Particularly when extensive damage has been sustained by an area it will be a great relief to get some kind of assistance from areas which are less unfortunate or which have escaped the attack entirely.

Schemes for mutual aid must therefore be prepared in all area where such assistance is possible in order that, when needed, help may be forthcoming. The other authorities with which local Civil Defence authority may arrange mutual aid arrangements are :-

- (a) Other Civil Defence Authorities of neighbouring area
- (b) The P.A.D. authorities, etc., etc.
- (c) The Railway and Port Trust C.D. Authorities, etc., etc.

All such schemes should provide for the following points in their arrangements :-

- (a) Giving of preliminary caution to all such areas included in a definite mutual aid group of area.

- (b) Deciding the number of services to be earmarked for such purposes (usually 25 per cent of the total resources of each service). Effort should be not to put all the available services into action as soon as a raid occurs 25 per cent of them should be kept in readiness to help a neighbouring area if a call is received or may be used to relieve the over-worked parties.
- (c) Selection of points where the mutual aid Reserves will first assemble before going over to the other area and where they will be received, before deployment. Some facilities will be needed at each point.
- (d) Replacement of services sent out as Mutual Aid. (This may be done by calling up the Reserves).

The Services sent under Mutual Aid should, for administrative and operational purposes, be allocated to some Depot in the reinforced Area. The Tally Board of the Control Room should show the strength, arrival and departure of mutual aid services clearly.

Care should be taken not to overestimate the requirements when calling on mutual aid reserves, not only because the forces may be urgently wanted elsewhere but also because unnecessary fatigue may be caused to the personnel and may result in wear and tear to the transport and waste of petrol. A careful reconnaissance of the entire situation should first be made of the requirement before venturing a call for mutual aid reserves, and advance plans must be prepared to deploy them immediately on arrivals so that it is not kept waiting for want of plans.

26.5 Procedure for Mutual Aid

- (a) *Starting Point.* – All services detailed for mutual aid will first assemble at the starting point in the reinforcing area. From there they will proceed as a convoy to the area to be reinforced. Some officer should be placed in charge of the whole convoy which should be provided with rations for at least 24 hours, enough drinking water, sleeping kit and petrol to cover the journey. The starting point should have a telephone, it should have facilities for doing clerical work and should not be situated at the route which is itself overloaded with traffic. In a town where the assistance is to be rendered from one depot to the other depot there may be no need for a starting point. (Please see diagram of the moves in Appendix **XXVI-A**).
- (b) *Reception Point.* – This will need the same facilities as the starting point in addition to some more facilities for refreshments and lavatory arrangements as well as marshalling arrangements for vehicles. Here the convoy will first be received, checked and tasks assigned to them and from here they will be directly deployed to the incident or incidents.

- (c) *Reassembly Point.* – On their return move the assisting reserve will first reassemble for check up in the reinforcement area at a point called Reassembly Point, which in most cases may be the same as Reception Point. From here the Services will return as a convoy to the home depot or depots. (For Diagram of the reinforcement moves, see Appendix **XXVI-A**)

26.6 **Mobile Force**

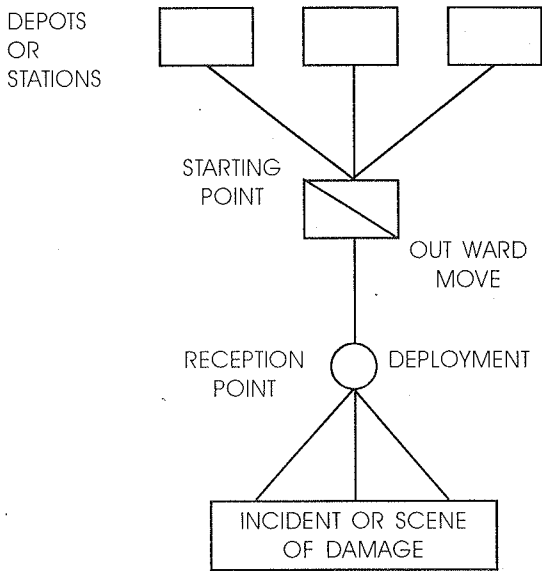
- (a) *Object and Functions.* – The local Civil Defence Services are to carry out the Civil Defence duties for a particular area or a city to which they belong and give mutual assistance when necessary to the neighbouring areas. These services therefore will not have to move far away from the areas to which they belong. It is however possible that at times the neighbouring areas may themselves be occupied and so may not be able to come to each other's assistance or the forces and equipment available there are not sufficient to meet the emergency, or there is failure of local services for one reason or the other. In each State, therefore, there would be a self contained Civil Defence Force, which will provide mobile support to any local area within the State or if necessary to a neighbouring State. They will thus act as a second line of Civil Defence Services. The main functions of a Civil Defence Mobile Force are :-
- (i) Rescue of persons, temporary shoring, demolition and clearance of debris, necessary to rescue work.
 - (ii) First Aid to casualties and transport of seriously injured cases to hospitals.
 - (iii) Fire Fighting and water relaying duties.
 - (iv) Assistance in reconnaissance and Incident Control duties.
 - (v) General assistance, e.g., Assistance in evacuation, setting up of camps, controlling panic, restoration of public utility services, etc.
- (b) *Composition.* – Civil Defence Mobile Force will consist of Civil Defence Battalions, each Battalion having not more than four companies. In each company there will be following platoons :-
- (i) Company Head Quarters Platoon.
 - (ii) Rescue Platoon.
 - (iii) Medical Platoon.
 - (iv) Fire Platoon.

Each Company is expected to consist of 200 persons roughly, for whom arrangements must be made at the receiving end. The procedure for moving the Mobile Force reinforcements will be on the lines of Mutual Aid Reserves and therefore same arrangements will be required for them when they are called out.

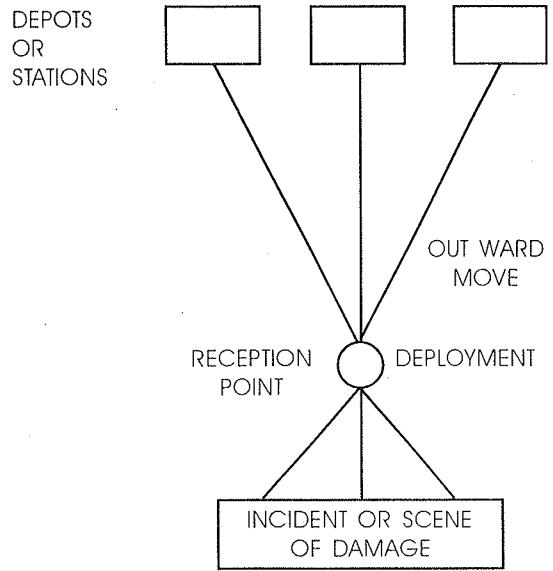
The Mobile Force is the last step in the principle of self protection when the area of self protection widens itself from home to the home State.

APPENDIX XXVI-A
REINFORCEMENT OF C.D. SERVICES
DIAGRAMS OF THE MOVES

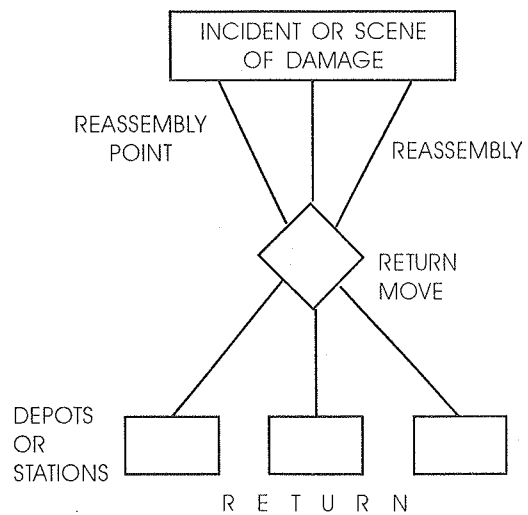
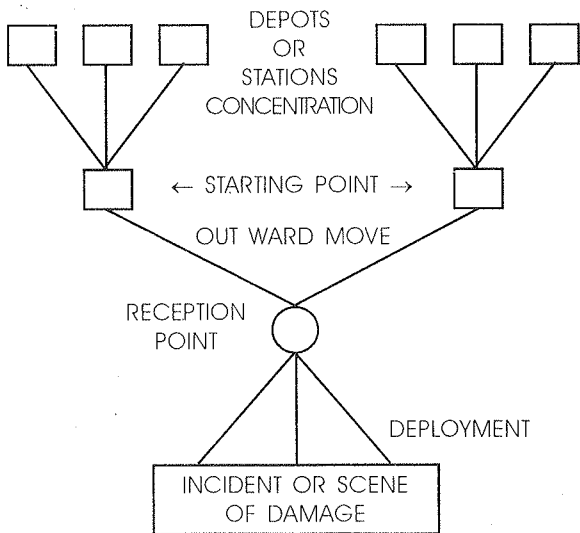
A. MOVE WITH STARTING POINT & DISPERSAL



B. WHERE THE DEPOT IS THE STARTING POINT



C. WHERE THERE IS MORE THAN ONE STARTING POINT



NOTE : ON OCCASIONS A LOCAL RENDEZVOUS OR ACTION DEPOT MAY BE INTERPOSED BETWEEN THE MAIN RENDEZVOUS & THE INCIDENT

PART-XXVII

CO-OPERATION WITH THE POLICE AND DEFENCE SERVICES

27.1 The Police are the civil defenders in normal times. The Defence and C.D. Services are complementary to each other in facing an emergency. The co-operation of all the three services is very essential for tackling an emergency successfully.

27.2 The duties of police are the same both in war and peace time but with a variation in magnitude. The peacetime duties will be protection of life and property, prevention and detection of crime, traffic control and maintenance of law and orders. War only increases the duty of the police enormously. For the discharge of the increased duty there are C.D. services, Fire Brigade, etc. to augment the police. The police will have to enforce the C.D. rules and regulations involving legal powers, and regulate the traffic to facilitate the smooth movement of the essential services.

27.3 The co-operation of the police will be needed before, during and after air raid in respect of :-

(a) *Pre-Raid :*

1. Enforcement of lighting restrictions.
2. Acquainting themselves with the location of the various C.D. services to guide the public.
3. To know the places of special danger where inflammable things are stored.
4. Up-to-date knowledge of C.D. rules.
5. Diversion of traffic from congested roads.

(b) *During Raid :*

1. Directing people to take shelter.
2. To stop vehicular traffic other than essential services.
3. Enforcement of lighting restrictions.

(c) *Post-Raid :*

1. Control traffic and crowds coming out of shelter.
2. To cordon off places of danger.
3. To hand over all dangerous and stray animal to Municipal authorities.

4. To make enquiries about deaths at the site of accident.
5. Control and direct the exodus of panic stricken people.
6. Reporting of unreported damages.
7. Guarding shops and other premises against looting.
8. To take necessary action in cases of deaths due to unnatural causes.
9. Collecting and keeping valuables from unclaimed bodies until disposal.

27.4 The help of the police will be required in connection with the detection and disposal of unexploded Bombs and crashed aircraft in the search for the exact location and in enforcing of safety measures.

PART-XXVIII

PUBLIC CO-OPERATION

28.1 Object

Civil Defence is essentially the defence of citizens by citizens and unless the common man and woman is made civil defence-minded, the organisation will fail to achieve its object. Civil Defence can only be as effective as the people make it. It is very necessary to secure maximum public co-operation for the following reasons :-

- (a) To ensure minimum loss of life and property by educating people to understand and carry out measures devised for their safety.
- (b) To fight panic.
- (c) To keep up the morale of people.
- (d) To counteract enemy propaganda the object of which is to demoralize people and put the war effort out of gear.
- (e) To help recruitment of C.D. volunteers by ensuring full individual participation in C.D. activities.
- (f) To organise maximum self-help.
- (g) To make the task of services easier and to supplement their efforts.

The main objective should be not only to educate the citizens in self-protection measures but also to inspire them and retain their confidence.

28.2 Main Considerations

The task of securing public co-operation is by no means easy. Efforts should be made to keep Civil Defence outside all controversies, social, religious or political. Emphasis should be on the humanitarian nature of work, the protection of our hearths and homes, the alleviation of human suffering and misery and saving the lives of innocent men, women and children. The approach to people will depend upon the type of individual—a city bred man will be perhaps more amenable to reason whereas the villager is apt to be sentimental and conservative. Sensationalism and scare tactics must be avoided as also the officious attitude and all show of authority. Patience, sympathy and tact to turn a wrath into a smile are the best means to win public confidence. The public should be made to feel that they are partners in a common enterprise.

28.3 Ways and Means

There are various ways in which Civil Defence organisation can secure public co-operation. Some of these are :-

- (a) Formation of non-official Civil Defence Advisory Committees on which local popular leaders are represented.
- (b) Participation by Civil Defence Services in social service activities at the local fairs, festivals, and such situations as floods, etc. and organising relief measures such as tracing lost children, rendering first aid, maintaining order and so on.
- (c) Personal example of the services who by their discipline, capacity for public service, selfless devotion to duty and exemplary conduct can do more to win the confidence of the people than any amount of propaganda and publicity.
- (d) House to house canvassing by Wardens.
- (e) Associating recognised leaders of the society with all kinds of Civil Defence activities and appeals on Radio or otherwise by such leaders. They should voluntarily accept some active role in the organisation so that people may follow them.
- (f) Associating the Press by organising Press conferences, issuing Press Communiques and Press Notes and inviting Press representatives to attend all important Civil Defence functions.
- (g) Holding public displays and demonstrations of Civil Defence drills and exercises.
- (h) Distribution of leaflets, folders and publicity literature.
- (i) Propaganda in schools and other organised bodies.
- (j) Use of the radio, films, slides, publicity vans and such other means.
- (k) Publishing photographs of services in action.
- (l) Organising dramas depicting the role of Civil Defence in life.
- (m) Devising attractive and appealing slogans, poems, etc.

To do all this it is important to work out a carefully planned public information and public relations programme.

28.4 Public Relations Officers

At the State Government level, where necessary, there should be Public Relation Officers whose duties *into alia* should be :-

- (a) To Co-ordinate all Civil Defence publicity work in the State.
- (b) To publish Civil Defence publicity literature.
- (c) To ascertain public opinion on various Civil Defence measures and advise Government on all policy matters effecting the people.
- (d) To work out detailed programmes of public education, information and relations.
- (e) To remedy public grievances relating to Civil Defence.
- (f) To devise suitable appealing slogans in the local languages.
- (g) To develop co-operation between Civil Defence and important public and social institutions such as trade union, commercial corporation, social and professional organisation, sports, clubs, scouts, etc.

In cities and other areas of a Civil Defence authority, apart from the normal publicity channels the Training officers and Instructors will assist in instructing the public in protective and precautionary measures. Wardens may shoulder the task of addressing meetings of local residents, to house to house canvassing and advise people on elementary precautionary measures. They should also organise 'Self help' parties to assist them in various miscellaneous duties. No amount of effort should be spared to utilize every opportunity for informing and instructing the people and keeping Civil Defence constantly before the public eye. In fact each member of Civil Defence Organisation should consider himself a potential crusader in the matter of removing any ignorance about Civil Defence from the minds of public. Welfare service will also do best to disseminate useful information on Civil Defence to the public and help in recruitment of Civil Defence volunteers.

28.5 Women in Civil Defence

The work of Civil Defence is such that it is most eminently suited to women. It is they who can assist most in Civil Defence at home. First Aid and Nursing and above all fighting panic. On account of the Purdah custom and other prejudices, educated women as a rule will be the persons to carry C.D. in to the homes. They should be encouraged to actively participate in C.D. Work. The various advisory committees on Civil Defence should include representatives from leading women's organisations. To secure their co-operation, women's organisations should be supplied with current Civil Defence literature and advice on integrating the activities of their associations with civil Defence programmes.

The following duties can very appropriately be entrusted to women :-

- (a) Educating women in the essentials of Civil Defence by house to house visits and by arranging demonstrations and lectures.

- (b) Nursing and First Aid.
- (c) Working as telephone operators.
- (d) Organising House Fire Parties.
- (e) Enrolling for Wardens Service.
- (f) Welfare work in post raid conditions such as care of women and children at the time of evacuation, staffing of canteens, etc.
- (g) Clerical work.

Some of the ways in which the services of women may be utilised in Civil Defence are :-

- (a) by absorption of women volunteers as an integral part of the Civil Defence organisation;
- (b) by creation of a separate Civil Defence Service for women to be styled as Women's Auxiliary Civil Defence Service under a women Deputy Civil Defence Controller. Different Sections of this service may be entrusted with such functions as advice in house, Nursing and First Aid duties, canteen work, care of the homeless and so on.

PART-XXIX

NUCLEAR WARFARE-HEAT AND BLAST EFFECTS

29.1 General :

When a nuclear weapon detonates the entire bomb is rapidly transformed into a hot expanding ball of fire, which keeps on expanding forming the characteristic mushroom cloud. The energy released manifests itself in the form of :

- (i) Blast
- (ii) Light and heat radiation
- (iii) Immediate and delayed radiation

29.2 Warning in case of Nuclear Attack :

In case of nuclear attack, the warning available will be same as for any other type of attack. Human Intelligence (HUMINT) from other sources might add to the warning available and might give indication of an impending Nuclear attack. Civil Defence plan, therefore, should have a provision of a two-way exchange of intelligence with the base/command's plan to cater to such a threat. Evacuation of population to underground bunkers/metro tunnels will need to be planned for civil population.

29.3 Introduction :

Nuclear weapons include Atom Bombs as used Hiroshima and Nagasaki during the 2nd World War and much more destructive Hydrogen bomb produced since then. The Atom Bomb used on Hiroshima on 6th August, 1945 severely damaged 5 square miles of area, killed 78,000 people, injured 40,000 and rendered a very large number of people homeless. 55,000 houses were burnt down by fire and 7,000 completely destroyed. The energy liberated during this explosion was equivalent to the explosion of 20,000 tons of T.N.T. This is known as a nominal or 20 KT Bomb. The Hydrogen Bomb is much more powerful. The one 500 times more powerful than the nominal bomb is known as a ten megaton or 10 MT bomb.

In nuclear explosions energy comes out of the inner core or the nucleus of the atom (for technical details please see appendix attached) by the conversion of matter into energy. Only a few of the known heavy elements like Uranium and Plutonium can liberate energy like this. Weight for weight, the nuclear explosive liberate vastly greater amounts of energy as compared to conventional high explosives. The total disintegration of one kg. Of uranium 235 produces an energy equivalent to the explosion of 20,000 tons of T.N.T.

29.4 The Atom Bomb :

Uranium 235 or Plutonium 239 when bombarded by neutrons release tremendous amounts of nuclear energy in the form of heat, Gamma rays, X-rays and visible light which comes out in the form of a light flash. The temperature reached is of the order of ten million degrees Centigrade which practically melts every thing around it and produces a pressure of several millions of atmospheres and come in the form of a blast. The flash of light is the first thing which is observed after the explosion and it lasts for a few milli seconds only.

29.5 Hydrogen Bomb :

Second in the series of nuclear weapons is the Hydrogen Bomb. The process of liberation of energy in a H-Bomb is just the opposite of Atom Bomb. In this, isotopes of light elements like Hydrogen and Lithium unite to form a heavier one. This reaction takes place at temperature of the sun. i.e. of the order of millions of degrees centigrade with the liberation of tremendous amounts of energy. This is known as fusion. Since temperatures of this order are produced by the Atom Bomb, it forms the inner core of the H-Bomb. The A-Bomb explodes first and gives the initial energy for fusion. This is surrounded by isotopes of Hydrogen which fuse to form Helium and hence the name Hydrogen or fusion bomb.

Weight for weight the fusion bomb liberates about two and a half time more energy than Atom Bomb. Another important fact about fusion bomb is that there is no theoretical upper limit of the size of the bomb, whereas the energy liberated in a fission bomb is limited by the critical size of the nuclear fuel. When a Hydrogen bomb having an atom bomb in the core, is encased in a heavy container of Uranium, this heavy casing also undergoes fission after the detonation of the Hydrogen Bomb, liberating still higher energies. This is known as fission-fusion fission bomb or dirty bomb.

29.6 Type of Burst :

Nuclear weapons can be burst in the air, on or near the ground and in shallow or deep water depending upon the nature of target to be destroyed and the intended hazards for the population. The distances of damage and the areas affected are measured from the point vertically below the place of explosion known as Ground Zero or G.Z.

- (i) **Air Burst** : When the bomb is burst in the air above the critical height i.e. the fire ball does not touch the ground, the blast acts vertically downwards. This causes maximum structural damage and, therefore, the Atom bomb is usually exploded in the air. There will be no significant fallout hazard except at places of heavy rainfall.
- (ii) **Ground Burst** : When the bombs are exploded on or near the ground, a huge crater is formed and a lot of earth and other material is sucked up by the fire

ball in the mushroom cloud. It causes serious damage to underground services and installations. Since an appreciable amount of total energy is used up in forming the crater and some of the initial heat and nuclear radiation is absorbed by the material lifted from the crater, the ranges of damage due to blast, fire, skin burn and the initial nuclear radiation are less as compared to air burst. Bigger weapons like Hydrogen Bombs are, therefore, exploded on or near the ground so that they may cause serious fallout problems without seriously affecting the ranges of damage due to blast, earth shock and fire which is still enough to destroy a large size city.

- (iii) **Underground Burst** : When the bomb is burst below the surface of ground a large crater is formed causing severe earth tremours and damage to building foundations. The fallout will be very limited.
- (iv) **Under water burst** : The bomb bursting under water would cause damage to port facilities flooding and rain in the neighbourhood due to water thrown high up in the sky which could be contaminated by fission products.

29.7 Designation of Hydrogen Bombs :

The power of a nuclear weapon is designated as tons of T.N.T. which can liberate energy equivalent to the energy liberated by the explosion of a particular nuclear weapon. Thus the bomb dropped on Hiroshima is known as a 20 KT bomb. Hydrogen bombs can be made of varying powers to suit a particular size and type of target. Bombs up to 500 KT are designated as kilo-ton weapons and the ones above it as megaton i.e. 500 KT is $\frac{1}{2}$ Mt, 1,000 KT is 1 MT and so on. A Bomb 500 times the nominal bomb is designated as 10 MT Bomb.

29.8 Heat Effects :

When a nuclear weapon detonates 35 percent of the total energy appears in the form of intense heat and light and is emitted from the fire ball. For an Atom Bomb the pulse of heat lasts for about $1\frac{1}{2}$ seconds, but the major damage is done during the first half a second. This comes in the form of a flash and travels with the speed of light, the sensation is like the momentary opening of a furnace door. The duration of this pulse increases according to scaling laws, for a 10 seconds. Because the thermal radiation is similar to light in behaviour it can be stopped by any opaque material. The variations in atmospheric conditions i.e. cloud, haze, fog and industrial dust will reduce the intensity of heat radiations considerably.

29.9 Primary and Secondary Fires :

Around the ground zero up to a certain distance every thing is completely destroyed by fire, this is known as the main fire zone. Around this will be a zone in which all combustible

material will catch fire and other non-combustible material will be heated to such a temperature that the combustible material in their contact will also catch fire. Fires a nominal atom bomb, air burst this will rage from $\frac{1}{2}$ to $1\frac{5}{8}$ th of a mile. For a 10 MT H-Bomb ground burst this may extend from $3\frac{1}{2}$ to 12 miles.

Fires will also be caused due to collapse of buildings, on domestic fires, breaking of gas pipes and short circuiting of electric wiring. These are known as secondary fires:

Many isolated fires are caused due to the primary and secondary reasons. In case of a nominal bomb air burst such isolated fire will be caused up to about 2 miles and for a 10 MT H-Bomb ground burst upto about 17 miles. The table-A below gives the range of the main fire zones and the limit of isolated fires for air and ground burst of nominal and the 10 MT weapons. It will be noted that air burst causes much greater damage than ground burst. The main fire zone is ring shaped. Within this range many fires will be extinguished by the general destruction of the houses and buildings.

Table-A

	20 KT		10 MT	
	Air Burst	Ground Burst	Air Burst	Ground Burst
Main Fire Zone	$\frac{1}{2}$ to $1\frac{5}{8}$	$\frac{3}{8}$ to 1	4 to 20	$3\frac{1}{2}$ to 12
Limit of isolated fires	2	$1\frac{1}{2}$	26	17

29.10 Effects of Heat Flash on Human Body :

Due to the heat flash skin burns of various degrees severity will be caused at various distance. There may be mere rendering (first degree) or a more painful blistering. (Second degree) to a still more severe charring of the skin (Third degree). The burns will depend upon the total amount of heat, area on which it falls and the duration of application of this quantity of heat to the surface. The range of heat effects on people exposed in the open for 20 KT and 10 MT bombs air and ground burst are given in Table-B below.

Table-B

Range of heat effects on people exposed in the open for 20 KT and 10 MT Bombs ground and air burst in miles.

Type of Burn	20 KT		10 MT	
	Air Burst	Ground Burst	Air Burst	Ground Burst
3 rd degree	$1\frac{3}{8}$	$\frac{7}{8}$	22	13
2 nd degree	$1\frac{3}{4}$	1	25	15
1 st degree	$2\frac{1}{2}$	$1\frac{1}{2}$	35	21

29.11 The Blast Effect :

When the nuclear bombs detonate 45 percent of the total energy appears in the form of blast and shock wave. The blast is of excessive over pressure of the order of thousands of atmosphere. With the air burst this is added up by the wave reflected from the ground. This appears in two phases. The pressure and the suction phase. Whereas in case of H.E. Bombs the suction phase is responsible for the structural damage in case of nuclear explosions most of the damage is done in the pressure phase itself which acts as a gigantic hammer on all objects. The pressure phase in case of H.E. Bomb lasts for 0.005 seconds. In case of nominal bomb it is about 0.7 to 1 second and for 10 MT bomb it lasts for about 5 seconds.

The ability of a building to withstand the shock of the blast wave depends on the strength, shape and openings in the building. The openings serve to relieve the pressure on the outside walls. The structural damage can be divided into four zones i.e. (A) Complete destruction. (B) Irreparable damage. (C) Moderate to severe damage, and (D) Light damage around the ground zero.

In case of Hydrogen Bombs a ground or near ground burst is more likely since it creates additional fall out hazard without seriously affecting the blast and heat effects, which still cover greater than most likely built up targets. The table-C below shows the A, B, C and D damage ranges for 20 KT and 10 MT Ground burst. Since the range of blast damage is much greater for an air burst than for ground burst, for practical purposes the ranges given in the table may be increased by 30 percent to get range for air burst at optimum height.

Table-C

Comparative blast damage to houses and blockage or streets for 20 KT air burst and 10 MT Bombs ground burst in miles.

Damage Zones	20 KT	10 MT
A Damage Zone-House totally destroyed Streets impassable.	0-1/2	0-3 1/2
B Damage Zone-House irreparably Damaged, streets blocked until Cleared by mechanical aid.	1/2-3/4	3 1/2-5
C Damage Zone-Severe to moderate Damage to house. Progress in streets. Made difficult by debris.	3/4-2	5-13

D Damage Zone-Houses lightly damaged.
Street open but some glass and tiles.

2-3

13-20

29.12 The Effects of Blast on Human Body :

Since the human body can withstand pressure, better than structures, there will not be much injuries due to direct blast but many people will be injured due to indirect effects of blast such as collapse of buildings, falling debris, flying glass and splinters. For a nominal bomb air burst these would occur up to about 2 miles. At greater distance the casualties due to flying glass will be more.

29.13 Radiation Effects :

On detonation of a nuclear weapon on or near the ground a lot of earth and other material is sucked up in the rising fireball. All this is turned radio active and falls down over a large area over which the mushroom cloud moves. This is known as residual radiation or fallout and constitutes $\frac{3}{4}$ th of the total radio active energy released. The part of the radio active released within a minute or so of detonation is known as immediate radiation and is only $\frac{1}{4}$ th of the total radioactive energy. The fallout constitutes the major radiation hazard of explosion for long periods.

Some of the elements like Radium give out radiations by themselves. The phenomenon is known as natural radio activity. Elements can also be made to give out radiations by making their nucleus unstable by the bombardment of neutrons and other particles. This is known as artificial or induced radioactivity. In natural radio activity alpha and beta rays which are particles and gamma rays which are radiations like X-rays are given out. But in artificial radio activity along with the above three neutrons may also be give out.

In a nuclear fission about 200 isotopes of some 35 elements are released. Practically all of them are radio active and give out radiations. At the same time a lot of dust and other material that is sucked up in the mushroom cloud is also turned radio active. Heavier particles fall down quickly, but the cloud and fall over a large area down wine. This is known as fallout. After the explosion radiations are emitted from the fire ball, from the radio active particles in the cloud and finally from the radio active particles in the cloud and finally from the radioactive fallout material deposited on the ground.

29.14 Nature of Radiation-Radio Active Decay :

Immediate radiation consists of neutrons and gammas rays, this is added up by the newly formed and intensely radio active fission products in the fire ball. Most of the neutrons are captured by the nuclei of neighbouring atoms after slowing down, turning them radio active. All the radio active, particles ultimately disintegrate giving out alpha, beta and

gammas rays and decay ultimately into a stable form a new micro seconds to millions of years. The process of decay cannot be influenced by heat, pressure or any chemical reaction. The rate of decay can of course be measured and is expressed as half life and is consist for a particular isotope. Radiation is measured in Roentgen (R) and the quantity of radio active material is Curie. As immediately at the time of explosion It is not possible to measure the radio activity for the sake of comparison the standard is usually taken as the strength at one hour or seven hours after burst. The rate of decay follows a seven tenths rule i.e. if R is the strength at one hour after burst, after 7 hours it will be $R/10$ roentgen, after 7×7 i.e. 49 hours it will be $R/100$ at $7 \times 7 \times 7$ i.e., about 2 weeks it will be $R/1000$ and so on. Thus it is evident that most of the decay takes place within first two days.

29.15 Effects Of Radiations On Human Beings :

The damage caused by the nuclear radiations to human body is by killing the body cell. This depends upon the amount of radiation received (called dose) and the part of the body which receives it. The biological effects of radiation on whole body may become apparent in four successive phases.

(i) **Radiation Sickness :**

This is caused by the damage to gastro intestinal tract. It may develop within a few hours to 24 hours depending upon the dose received. It may last for 2-3 days. Usually radiation sickness occurs at doses of 150 R and above. The earlier symptoms are fatigue, nausea. Indigestions, loss of appetite which may develop to vomiting, diarrhoeas, appetite which may be with blood etc. with higher doses.

(ii) **Delayed Effects :**

The delayed effects like loss of body hair with appearance of blood spots due to hemorrhages under the skin, occur after about four weeks or so, when the blood forming system is injured by radiation.

(iii) **Long Term Injuries :**

These are anaemia, blood cancer, bone or tissue cancer and tumours which usually develop many years after exposure. Premature ageing may occur. These dangers are not imminent below a does of 100 R.

(iv) **Genetic Damage :**

When the reproductive organs and germ cells which transmit the heritable characteristic to future generations are affected, genetic damage is caused.

The damage caused by radiations is directly proportional to total does received by the population i.e., whether a few get high doses or a larger number get lesser doses.

29.16 Radiation Hazard Due to Atom Bomb Explosion :

Initial Radiation :

These travel outward from the centre of explosion. They consist mainly of Gamma rays. Gamma rays are penetrating and they will produce dosages in case of a nominal all burst bomb as follows :

Distance from GZ	Total Dose	Effect on Human Body
At ½ mile	5000 r	Certainly fatal.
¾ mile	500 r	50% lethal, Majority victims get sick.
1 mile	100 r	Less than 1% few get sick.
1 ½ mile	5 r	Nil. No sickness.

In the case of underground and underwater burst initial radiation would be practically absent due to containment by earth and water.

Residual Radiations : The Fallout :

In the case of nominal air burst a bomb explosion the products of explosion are sucked up very high and dispersed in the atmosphere. By the time these come down to earth much time (years) is elapsed so that the radio activity is reduced to below harmful level. Hence no immediate fallout problem arises. However, when a bomb is exploded near ground level radio active particles contaminate larger and heavier particles of earth etc., and these are deposited quickly on ground. The deposited radio active material in the fallout area creates radiation hazards. If it comes into contact with body or clothing acute skin burns which are difficult to heal may result. In case it enters body through inhalation, or ingestion it is one of the deadliest poisons and will cause acute radiation sickness, genetic troubles and death due to these radiations. The radio active deposits might contaminate exposed food, water and crops and create serious problems of protection, control and decontamination. In the case of a nominal bomb ground burst this may extend to a couple of miles downward.

The table below gives the various doses of Gamma radiation received in a single exposure and the probable effects on human beings.

PROBABLE EFFECTS ON PEOPLE OF A SINGLE EXPOSURE TO GAMMA RADIATION

Single dose Range in Roenten (R)	Mortality at 24 hrs.	Mortality at 6 weeks	Number in capacitated within 24 hrs.	Probable time of unfitness for any duties of those affected
0-25	0	0	Negligible	2-3 days.
25-75	0	0	A few	2-3 days
75-100	0	Less than 0.1%	Up to half	1-2 weeks
100-150	0	Less than 0.5%	At least half	About 3 weeks
150-200	0	Upto 5%	At least three fourths	Not less than 3 weeks. Some very ill.
200-400	Unlikely to Be any	About one third	Probably all	Not less than 3 months.
400-600	Perhaps a few	About half	Probably all	Do
Over 600	Likely to Be same	Almost all	Probably all	Do

29.17 Radiation Hazard From H-Bomb Explosion :

Initial Radiation Hazard :

With the larger bombs the radio activity also increases. However, distance and shielding effect of intervening media do not allow the range of 50 per cent lethal dose for a 10 megaton bomb to go beyond 2 ½ miles and beyond 4 miles from ground zero there is no significant risk. Since these distances are within or near about the range of total destruction due to blast, the hazard from initial radiation could be ignored.

Residual Effects :

However, fallout from explosion of larger bombs can be very extensive and poses a serious threat to cities, villages, industries etc., which lie in the fallout area. The U.S. Atomic Energy commission in a report stated that the H-Bomb exploded at Bikini Island on 1st March 1954 contaminated cigar shaped area extending approximately 220 miles down wind and varying in width upto 40 miles.

29.18 Permissible Dose Of Radio Activity :

The peacetime, permissible dose for people working in atomic energy station is 0.3 R per week. This is not likely to create any long term effect on the body tissue or reproductory

system. The wartime dose is likely to be about 25 R absorbed in a continuous spell of a few hours. This can be increased to 60 R if uniformly spread over 3 days. The dose received for C.D. workers should be checked frequently to avoid over exposure.

29.19 Detection And Measurement Of Radiation :

The atomic radiations cannot be seen, heard, tasted, smelt or felt by touch. They are detected by their ionising effect on gases. Three types of radiac instruments are used in Civil Defence :

- (i) The individual dosimeter measure the total radiation received by an individual in a particular period. It is available in two ranges 0-5 and 0-50 Roentgen.
- (ii) The radiac survey meter measures the rate at which radiations are being received at a place. This is used for survey. The ranges are usually 0-3, 0-30 and 0-300 Roentgen.
- (iii) The contamination meter is a very sensitive Instrument. It measures the contamination of a person, equipment, foods or other things.

29.20 Protection Against Fall Out :

The protection from fall out depends upon three factors- time, distance and screening.

- (i) **Time** : Radio activity decays fast. As already mentioned it becomes 1/100 of its value within about 2 days, and therefore if the fallout is likely to reach the area after about 2 days or so it would have already decayed possibly below harmful level.
- (ii) **Distance** : From an uniformly contaminated area 1/3 rd of the total dose comes from a radius of 12½ feet-half the total dose comes from a radius of 25 feet and 3/4th of the total dose comes from a radius of 100 feet. If within these radius there are walls, obstructions or other buildings this dose will be reduces and hence it will be safer to be inside and safest inside a shelter or a trench possibly with overhead cover.
- (iii) **Screening** : The screening provided by various materials in reducing the dose depends upon their density, 2.2 inches of concrete reduces the dose by half, another 2.2 inches to one fourth, and so on. 6 inches of concrete is equivalent to 7½ inches of brick or 9 Inches of earth. Thus in the centre of a two storied brick building it becomes one fortieth. In a silt trench with one foot earth overhead to one hundredth and In a basement shelter to two to three hundredth.

29.21 **Detection Of Radio Active Fall Out Areas :**

The direction of movement of the mushroom cloud and the area likely to be affected can be predicted with the help of meteorological data. Besides, Radiological Survey Teams would be active in these areas for detection of abnormal increase in the radiation levels in the atmosphere and on the ground. The radiological survey meters will be constantly on the watch. Some of these will be remotely controlled so that the intensity of radiation is known while the observer is at a safe distance. The areas contaminated by the fallout could thus be delimited by suitable sign boards and adequate information supplied to Civil Defence Control Centre to issue suitable information to the public in general so that people can take protective measures. The people likely to be affected by the fall out would have to be issued with suitable warnings regarding probable time of commencement of the fallout, actual beginning of fallout, completion of fallout and no fall out risk warnings.

PART-XXX

CHEMICAL WARFARE

30.1 General :

The use of chemical gas against civilian population in any future war cannot be altogether ruled out because of their advantages over other types of weapons. It has a great demoralising effect on the people and though some of them may not be poisonous still they have a harassing value and herein lies the advantage over other weapons as they temporarily incapacitate workers. In view of this it is essential for all concerned with Civil Defence work to study the nature of chemical warfare, the first aid necessary and use of respirators etc.

30.2 Warning in case of Chemical Attack :

In case of Chemical attack, the warning available will be same as for any other type of attack. Human Intelligence (HUMINT) from other sources might add to the warning available and might give indication of a impending chemical attack. Civil Defence plan, therefore, should have a provision of a two-way exchange of intelligence with the base/command's plan to cater to such a threat. Evacuation of population to underground bunkers/metro tunnels will need to be planned for civil population.

30.3 History Of "Gas" Or Chemical Warfare :

Chemical warfare, in the modern sense, was first used by the German army against the Allied Armies in April 1915 on the western front in Europe. This being the first of its kind, it caught the allied armies unaware and this unexpected, surprise attack caused many casualties as protective measures were not thought of. The gas used at that time was Chlorine. Due to immediate improvisation of protective measures, mainly in the form of respirators, the German Army had to try other types of gases to penetrate the protective measures improvised by the allies. Thus, they tried "Phosgene" gas in December, 1915 and when this too was met with effectively, they resorted to "Nasal irritants" (Arsenicals) and "Blister Gas (Mustard Gas). Chemical Warfare was not used by any country during World War-II. It may be of interest to note that the use of chemical warfare is prohibited by the Geneva Conventions, (Geneva Gas Protocol of 1925).

30.4 Terminology :

- (i) **Gas** : While dealing with chemical warfare, the use of the term "gas" is made rather loosely. Thus this term is applied to any Substance, whether solid, liquid or true gas, which may be used in chemical warfare for its irritant, blistering,

burning, corrosive, choking or any other type of poisonous effect on the human body.

- (ii) **Contamination** : Contamination" in chemical warfare means the coming in contact of human body, Clothing, food, vehicle ground, furniture or any other inert item, with any of the "gases" in whatever concentrations.

30.5 Types of Gases :

These gases are divided into various groups :

- (i) **General** : The division of gases into "Persistent" and "Non persistent" groups is convenient as it is possible to decide whether the area in which the gas has been liberated requires special treatment or otherwise.
 - (a) **Persistent Gases** : These are in liquid form and give off dangerous vapours until the liquid dries up and becomes harmless.
 - (b) **Non persistent Gases** : These are used in the form of a vapour and are, therefore, rapidly dispersed by the wind. They are, therefore, dangerous at any spot, only for a short time.
- (ii) **Classification Based On Their Specific Effects On Human Body** :
 - (a) **Nerve Gases** : The members of this group such as "Tabun" or "Sarin" are persistent or semi persistent liquids which give rise to invisible vapours. These vapours have no smell. They are absorbed through the eyes, breathing passages and skin and cannot be detected except by their effects. But, the liquid can be absorbed through the skin and will penetrate through the clothing without causing any blistering or irritation. The symptoms begin with contraction of pupils, headache and tightness in chest. They cause death due to action of the nervous system.
 - (b) **Blister Gases** : These are generally liquids giving off invisible vapours. They are persistent and penetrate through the clothing. Mustard gas and Lewisite belong to this group. The onset of effects is rather slow but prolonged contact with vapour and liquid will cause serious injuries to exposed parts. "Mustards" produce painful blisters on the skin immediately as also damage the body cells, to produce leukemia and cancer as long term effects. Beside causing burning of the skin wherever the gas comes in contact, they may lead to permanent damage to the eye sight by action on the conjunctivate.

- (c) **Choking Gases** : Members of this group are liquid or true gases such as chlorine, phosgene. As they also cause swelling of the breathing passages, they are dangerous to life.
- (d) **Tear Gases** : The gases in this group take the form of solid invisible particles or as invisible vapour from persistent liquids. Ethylchloroacetate (K.S.K) and Bromo benzyl Cyanide (B.B.C) belong to this group. They have a harassing effect as they cause profuse flow of tears and intense spasm of eye lids. They do not cause any death.
- (e) **Nose Gases** : These are solid arsenical compounds dispersed by heat or explosion. They cause intense pain in the nose and chest. They have mainly harassing effect on the victims. Dipphenylamine Chlorarsine (D.M.) and Diphenylcynarsine (D.M) belong to this group.
- (f) **Hallucinogens** : These form a more recent group of chemicals which act on the mind and are also called psycho-chemicals. Lysergic acid diethylamide (LSD) was the first of the compounds thought to be used. An agent code named BZ, probably a substituted glycollate ester of an aminoalcohol has been mentioned in the literature. These compounds are intended to produce aberrant human behaviour.

30.6 Protection :

The respirator, in case it is in a serviceable condition and, having a proper fit, will protect eyes and breathing passages against nerve and mustard gases. Since, however, these gases act through exposed parts of the body, the whole body should be protected with suitable anti gas clothing. For the remaining three types complete protection is afforded by the respirator.

30.7 Likely Methods Of Attack :

- (i) **Aerial** : The most likely method of gas "attack" on civilian population would be by air. In this method, the chemicals are dropped down from an aeroplane in the form of a bomb which would burst open on falling on the ground and release the contents in a gaseous or liquid form. Persistent liquid gases will be sprayed from containers carried in aeroplanes as aerosols i.e., fine droplets suspended in the air which will fall like a short. shape shower or rain cover a fairly wide area.
- (ii) **Ground** : There is also a possibility of enemy agents (saboteurs) releasing these "gases" at suitable places, on the ground itself. These, of necessity would be used on a very limited scale. This will cause direct or sources of water supply and food godowns.

30.8 Factors Governing The Attacks :

- (i) **Air Movement** : It is obvious that a strong wind will rapidly dilute and disperse all concentrations of non persistent gases, while in the case of a persistent gas, the rate of evaporation will be increased due to increased air movement. On the other hand, with very little wind velocity, a high local concentration of gas may be obtained, with both types of gases :
- (ii) **Temperature** :
 - (a) **Warm Weather** : Warm, sunny weather reduces the effectiveness of a gas (non persistent) as it causes diffusion of the gas by convection currents. Persistent gas in liquid state will evaporate faster and unless strong wind is blowing may form dangerous concentrations locally.
 - (b) **Cold Weather** : Very cold weather, too reduces the immediate effectiveness of persistent gases by reducing the rate of evaporation of the liquid gas. Tarmac road surfaces, when warmed by hot sun readily absorb persistent gases.
- (iii) **Rain And Humidity** :
 - (a) Rain tends to destroy the persistent gases.
 - (b) Humidity retards the evaporation.
- (iv) **Terrain** : All gases hang about built up areas, jungles, valley etc., where they are less exposed to sun and wind. It can be said that persistent gases penetrate and persist in sandy or soft ground but evaporate easily from a hard open surface.

30.9 Characteristic Of Gases Used In Chemical Warfare :

The physical and chemical characteristics of gases likely to be employed for chemical warfare need a close study as this knowledge will help greatly in recognising the gases easily. For example, in absence of elaborate chemical apparatus the smell. Further, the knowledge of penetrating powers of individual gases gives a general idea of the types of protective measures needed against each. A summary of all such important physical and chemical characteristics and the effects they produce is given in appendix XXX-A. A careful study of these properties will enable us to handle the next task, i.e. : devising more intelligent and efficient protective measures.

30.10 Use Of Respirators :

Respirators give protection to face, mouth and breathing passages.

- (i) **Working** : The respirator is an apparatus which affords protection to the breathing passages of the human body against poisonous gases, vapours or smoke. It is

fitted on the face in such a way that it affords protection to the eyes also. The respirators which are used as a defence measure against chemical warfare operate by separating the poisonous substance from the air (with the help of absorbents and filters located in containers), leaving pure air for breathing. A non return valve is fitted to prevent exhaled air from passing through the cannister containing filters. Respirators are designed to give protection against war gases and they will not give protection against gases met in industrial process viz. Carbon Monoxide present in exhaust fumes of motor car.

- (ii) **Care Of Respirators** : Respirator is a costly item of equipment and needs careful storage and maintenance. Besides needing storage in dry, cool and well ventilated place (not inside a box), its rubber parts need a weekly massage with French chalk. The respirator must be checked periodically for its serviceability.
- (iii) **Improvisation** : In the absence of a proper respirator a certain degree of protection of air passages against vapours of gas (especially nerve gases) can be secured by breathing through a towel or a large handkerchief saturated with alkaline solution.

30.11 First Aid Measures :

The first aid to be given to a casualty suffering from exposure to gas should be done with the object of alleviating the suffering and to prevent casualty becoming worse. It would be desirable to remember the following general steps.

- (i) Allow plenty of fresh air,
- (ii) Give complete rest.
- (iii) Keep the patient warm
- (iv) Give a hot sweet drink
- (v) In case of breathing difficulties give artificial respiration.
- (vi) Apply suitable antidote to neutralise the chemical when in contact with the skin.
- (vii) Removing clothing :

In case of contamination of the eye, wash with plain water and apply castor oil. In the case of contamination of the skin by the liquid, gently dab away the visible liquid and quickly wash with soap and water. If any liquid is swallowed, the patient should be made to vomit by giving him large amount of salt water to drink. After vomiting, an alkaline drink such as milk of magnesia in water should be given to the patient to drink. The casualty should be sent to hospital in all case of serious contamination.

APPENDIX XXX-A

PHYSICAL AND CHEMICAL CHARACTERISTICS OF GASES USED IN CHEMICAL WARFARE

Gas	Properties	Method of Recognition	Effects on Human Body
(1)	(2)	(3)	(4)
(i) <i>Nerve Gases</i>			
(a)	TABUN Derivative of Cyano-phosphoric acid, Colourless, mobile liquid.	Very very faint fruity smell. Normally not detectable by smell but by chemical tests.	Disturbance with vision. Tightness of throat and chest, Lunc Oedema, cyanosis sweating, diarrhoea, death.
(b)	SARIN : Derivative of Fluro-phosphoric acid, Colourless, mobile liquid.	Odourless, detected by special chemical reactions.	Same as above.
(ii) <i>"Blister Group"</i>			
(a)	Mustard Gas. Oily liquid. Dark brown to straw colour. Penetrated rubber, leather, cloth, wood, very persistent. Easily neutralised by chlorine (<i>i.e.</i> , bleaching powder).	Smells of garlic, onions or raddish or mustard.	<i>Vapour effects</i> : Eyes get inflamed and swollen. Skin gets red and blitstered, Cough, loss of voice and later bronchitis or penumonia. <i>Liquid Effects</i> : Eyes no immediate sensation but very serious symptoms follow in a fe hours. Skin-redness in 2 hours and blisters in 12 to 24 hours.
(b)	Lewisite (Arsenic preparation) : Colourless liquid in pure form but brown in crudè form. Gives off an invisible gas. Greatly penetrative and persistent but easily destroyed by water and alkalis.	Smell of geranium (flowers).	<i>Vapour</i> : Irritation of nose, eyes and lungs. Less effective on skin in comparison to mustard gas. <i>Liquid</i> : Immediate and grave effects on eyes. Blisters develop on skin more rapidly than with mustard gas.
(iii) <i>Choking Gases</i>			
(a)	Phosgene : Almost invisible gas. Corrodes metals. Non-persistent.	Smell of decaying wet grass. Smoking becomes unpalatable.	Highly dangerous to life. First effects are cough, flow of tears, pain in chest, difficulty in breathing. Later pumonary oedema. Effects noticeable within 24 hours.
(b)	Diphosgene : Colourless liquid, semipersistent.	Like phospene.	Like phosgene.
(c)	Chlorine : Greenish coloured gas, corrodes metal, non-persistent.	Smells like bleaching powder.	Effects are similar to those of phosgene but more irritant and less toxic.
(d)	Chloropicrin : Colourless, volatile liquid, semi-persistent.	Pungent smell.	Similar to chlorine but more dangerous.
(iv) <i>Tear Gases</i> :			
(a)	K.S.K.: Dark brown liquid, invisible in gaseous state. Persistent.	By onset of effects. Fruity smell.	Similar to C.A.P. (below) but no effect on skin.
(b)	B.B.C. (Bromo-benzyl cyanide) : Yellow brown crystals in pure state. But usually used as brown liquid, persistent.	By onset of effects. Punget penetrating smell.	Same as K.S.K. above. (No danger to life).
(c)	C.A.P. (Chloro-aceto-phènone) : Colourless crystals, invisible in gaseous state, non-persistent.	Onset of effects.	Stinging of eyes, immediate and profuse skin irritation to some extent.
(v) <i>Nose-Gases</i>			
	Diphenyl-chlorarsine (D.A.) (D.M.&D.C. are similar). Colourless or bright yellow crystals. When heated give out odourless smoke. Invisibel except near source. Non-persistent.	By onset of effects only.	Sneezing Burning and aching pain in the chest, throat, nose and guns. Later mental depression. But effects take place within 5 minutes.

PART-XXXI

BIOLOGICAL WARFARE

31.1 General :

The Biological Warfare is the purposeful use of living disease producing germs or their products to cause death, disability or damage to the people, to the domestic and stock animals or to the crops of an enemy country. So far biological warfare has not been used by any nation against their enemies but from the knowledge of natural spread of the disease it can be said that the potentialities in this direction are enormous.

31.2 Warning in case of Biological Attack :

In case of Biological attack, the warning available will be same as for any other type of attack. Human Intelligence (HUMINT) from other sources might add to the warning available and might give indication of an impending Biological attack. Civil Defence plan, therefore, should have a provision of a two-way exchange of intelligence with the base/commands's plan to cater to such a threat. Evacuation of population to underground bunkers/metro tunnels will need to be planned for civil population.

31.3 Possibility Of Its Use :

Unlike the development of the Atomic Bomb and other secret weapons of the war the development of agents for biological warfare is possible in many countries, large or small, involving very much less labour and money. Moreover, this development might take place as a normal peacetime medical and bacteriological research.

31.4 Characteristics :

There are hundreds of disease producing organisms which could be used as biological agents but the organism must satisfy certain conditions to be really effective against the enemy. These requirements are :

- (i) **Virulence** : The germ must be virulent so that even small doses produce infection.
- (ii) **Power To Produce Disability** : The germ must be capable of producing diseases which lead to death or prolonged incapacitation. In case of crops it should cause considerable damage to crops.
- (iii) **Stability** : The germ must be stable under ordinary conditions of light, heat and humidity. It should withstand destruction and at the same time retain its virulence. It should be capable of storage and withstanding the explosion by which the organisms might be liberated from a bomb.

- (iv) **Resistance of People** : The population on which it is to be let loose must be susceptible to the disease and not immune to the same.
- (v) **Transmissibility** : The germ must be such that it can be disseminated in a convenient manner e.g. by air or through water, milk or food etc.
- (vi) **Availability** : The germ must be capable of mass production. Examples of germs which may meet these requirements are given at Appendix "A".

31.5 Types Of Biological Agents :

The biological warfare agents likely to be used would be of one the known type of disease producing germs. Like chemical agent these could be classified as persistent and non persistent.

- (i) **Persistent Agents** : These are comparatively few and more resistant. They are spore bearing germs and like a seed, dormant for long periods, for example spores of Anthrax.
- (ii) **Non Persistent Agents** : These are nonspore bearing all consequently tend to die rapidly under adverse conditions.

31.6 Energy Intention :

Biological Warfare will be waged particularly at the time evacuation of people or movement of troops and camps as at the times there is general deterioration in the standards of sanitation at personal hygiene. The object of the enemy will be :

- (i) Lowering morale and creation of panic.
- (ii) Incapacitation of selected groups of population such industrial workers etc.
- (iii) As a part of general attack on the population.
- (iv) In order to create food shortage through attacks on crops at livestock, India being an agricultural country there is a dang in this direction.

31.7 Methods Of Dissemination And Channels Of Infection :

The likely methods of dissemination to be used by the enemy are :

- (i) **Through Air Attack** : In this, the germs would be let loose by air burst B.W.Bomb. They could also be released from flying planes as "Aerosols" taking advantages of favourable wind conditions.
- (ii) **Through Saboteurs** : The enemy agents may contaminate water supplies, milk supplies or any other item of communicable feeding. They may also introduce arthropods (insects) which are carriers of certain diseases. Disease

producing germs which would attack animals and crops may be easily introduced in this manner without much suspicion being aroused.

31.8 Defence Against B.W.

Biological Warfare is a ghastly affair. The Defence measures required to be taken against a possible B.W. attack are somewhat comparable to those against chemical warfare. They include measures of a general nature as well as individual measures. All these are discussed in succeeding paragraphs.

31.9 Preventive Measures :

Prevention of an B.W. attack is largely a military problem but prevention of sabotage will require the vigilance of every citizen as well as the military police and health authorities. Water and food supplies would have to be rigidly protected. Thus, frequent bacteriological analysis and adequate chlorination of water supplies may be found to be extremely helpful in this matter.

31.10 Detection Of An Attack :

The bomb used for B.W. purposes may look similar to a gas bomb and on bursting would slowly give out a spray or a mist or liquid which may or may not be visible. The only other way it could be detected is when unusually large number of people become sick in a particular area due to the same disease.

31.11 Protection Of Community :

Protection of community fortunately would not be an unusual problem. Thus measures that are normally required to be taken in case of a naturally occurring epidemic would be found to be equally effective and useful for control of manmade or willful spread of infection. These measures, generally speaking fall into under mentioned categories.

- (i) Notification
- (ii) Isolation of suspected cases.
- (iii) Quarantining of contacts.
- (iv) Disinfection measures as regards (ii) and (iii)
- (v) Additional laboratory facilities to check samples of contaminated food, water etc.
- (vi) Strict supervision over food and water supplies.
- (vii) Active immunisation of the community, if vaccine exists against the disease concerned (e.g. typhoid, plague, cholera etc.)
- (viii) Destruction of certain such field crops and live stock as get heavily infected.

- (ix) Making available large stocks of antibiotic and Chemical therapeutic drugs: The edge of the biological warfare would be considerably blunted if hospitals have adequate stocks these drugs.
- (x) Decontamination : Personal hygiene and cleanliness essential. Contaminated places should be washed at sprayed with disinfectants.

31.12 Individual Protection :

The germs find entry into human body through ingestion in food at water, inhalation and by skin contact or through insect bites. I such all hygienic measures necessary in respect of food and drink are to be taken. Protection against air borne germs can be had tight Fitting face masks such as respirators. Nose pads impregnate with antiseptics may prove useful substitutes. Clothing impregnate with antiseptics worn all over the body may prevent contact of germs with the skin. Also shelters used for protection from effects of H.E Bombs will need sealing of cracks and crevices and arrangement for supply of germ free air.

31.13 Conclusion :

Although Biological Warfare has not been used by any as yet as weapon against its enemy our country cannot afford to neglect the possibility of such an attach in the future for reasons given below:

- (i) Modern sanitation and hygiene in itself is a defence against B.W. but in India. We cannot claim to have uniformly standards of sanitation. It means that areas having poor sanitary conditions would fall an easy prey to B.W. attacks.
- (ii) The resistance of individuals who are underfed or ill fed would be definately weaker than those who are wellfed. In a country due to various reasons economic, social and culture large groups of people remain under nourished. They would show easy susceptibility to or poor resistance against get attack.
- (iii) India being a vast country mainly agricultural, and having some waste lands and deserts, enemy would try to see saboteures and infiltrators without being detected.
- (iv) The masses of India, still do not fully understand the relationship of germs to diseases.

In face of a sudden epidemic, they are likely to become panic blaming everything else except germs as the cause of the epidemic The enemies object of causing panic and demoralisation would rather easily achieved if we are not prepared.

APPENDIX "A"

EXAMPLES OF GERMS LIKELY TO BE USED IN BIOLOGICAL WARFACE

A. AGAINST MAN :

(i) BACTERIA :

- | | |
|------------------------|-----------|
| (a) Bacillus Anthracis | (Anthrax) |
| (b) Salmonella Typhose | (Typhoid) |
| (c) Pasteurella Pastil | (Plague) |
| (d) Vibrio comma | (Cholera) |

(ii) VIRUSES :

- | | |
|----------------------------------|-------------|
| (a) Influenza Virus | (Influenza) |
| (b) Virus of Infective Hepatitis | (Jaundice) |
| (c) Vario in virus | (Small Pox) |

(iii) RICKETTANAE :

- | | |
|-------------------------|-------------------|
| (a) Rickettial Prowseld | (Epadivic Typhus) |
|-------------------------|-------------------|

(iv) TOXINS :

- | | |
|----------------------|------------------|
| (a) Botuinum Toxin | (Satuism) |
| (b) Stayloocus Toxin | (Food Poisoning) |

B. AGAINST ANIMALS :

(i) BACTERIA :

- | | |
|------------------------|-----------------|
| (a) Bacillus Anthracis | (Anthrax) |
| (b) Brucelin Group | (Cattle Plague) |

(ii) VIRUSES :

- | | |
|----------------------------|-----------------|
| (a) Foot and mouth disease | (Virus) |
| (b) Rinderpest Virus | (Cattle Plague) |

C. AGAINST PLANTS AND CROPS :

- | | |
|---------------------------------|--------------------|
| (a) Metiminthosporium oryzene | (Against Rice) |
| (b) Pirlcularia oxyzne | (Against Rice) |
| (c) Corynelacterium sepedonicum | (Against Potatoes) |

TECHNICAL APPENDIX

Note : The chapter on Nuclear, Biological and Chemical Warfare has been given in brief to give an introductory idea to the effects of this kind of weapons. The manpower required for mitigating the said effects has been given specially in GPCD.

1. Atom :

An atom is the tiniest particle of any chemical element that can exist by itself and retain the qualities that make it as that element. No one has seen an atom and probably no one ever will for it is too small and too nebulous, but you can think of it as made up of a sun (nucleus) at the centre and planets (electrons) around it, much like a solar system 10,000,000 atoms could be placed side by side in a row across a pin head.

2. Neutron :

Neutron is a particle without an electrical charge in the nucleus or core of the atom. Except that of Hydrogen. Having no charge, it can penetrate the electrical "defences" of other atoms and invade the nucleus. Its presence causes an upheaval. It can split the atom as in the case of uranium or make it throw out particles or rays, as in radio active isotopes i.e., render them artificially radio active.

3. Electrons And Protons :

An electron is a negative particle, to electricity. It is present in every atom and is one of the fundamental building blocks of matter. A proton is a positively charged particle in the nucleus. Just about as heavy as the neutron.

Characteristics of Atomic Particles

Name	Electrical Charge	Mass
Electron	Negative - 1	0,000548 MU*
Proton	Positive + 1	1,007575 MU
Neutron	Nil	1.00893 Mu

(*An atomic Mass Unit (Mu) is 1.66×10^{-24} grams)

4. Isotopes :

There are a hundred and live chemical elements natural and radio active. Different forms of the same element can have the same number of protons in the nucleus but different number of neutrons, in the case. Hydrogen Deuterium and Tritium (all isotopes of Hydrogen) all the three have only one proton in the nucleus, but none, one and two

neutrons respectively. Chemically these are similar but differ in physical properties. Other examples are uranium 235 and 238.

5. **Fission Chain Reaction And The Critical Mass :**

Certain isotopes of heavy element Uranium exhibit the property of breaking up into roughly two halves when hit by the sub atomic particle neutron. This is known as Fission. Moreover the fission of an U-235 atom is accompanied by release of neutrons of sufficient energy to break up the neighbouring atoms of U-235. In this way a chain reaction could be started in pure mass of U-235 provided there is a crowd of atoms. With less number of atoms the neutrons may fly out side the crowd and the chain reaction would die down. The quantity of material required to sustain chain reaction in pure U-235 is known as critical mass. In the construction of an atom bomb sub critical lumps of pure U-235 are suddenly brought together to make the assembly over critical when a stray neutron starts the chain reaction. The entire mass is held together for millionth of second by the heavy bomb casing in which a large number of U-235 atoms undergo fission and energy is released in an explosive form. The loss of neutrons is also reduced by provision of reflecting surfaces in the inside of the casing.

6. **Cobalt "60"**

Gamma rays are used to irradiate cancers and stop their growth. Radium is the greatest source of natural radioactivity. But a sort of "artificial" radium, Cobalt-60 an isotope of the metal cobalt, is a far cheaper and more easily available source of gamma radiation. It is made in atomic reactors, by bombarding ordinary cobalt with neutrons. If the bomb casing is made up of cobalt the residual radio activity would increase. This is a "Cobalt Bomb" added to nuclear weapon terminology.

7. **Fission Products :**

With the splitting or fissioning of the plutonium or uranium atoms of Atom and Hydrogen bombs, there are formed some 200 atomic fragments, Called fission products. They include isotopes of probably 35 different elements. All these atomic fragments or fission products radio activity consists in giving off unclear radiation in the form of Beta particles and Gamma rays. In addition to these fission products. There may remain from the explosion small amounts of unexploded unfissioned uranium or plutonium their atoms give off alpha particles as they decay. Eventually, the decay of these radio active atoms will end in the formation of stable atoms which are not radio active and which do not decay further.

8. **Fussion :**

Energy is liberated when two light nuclei joint together to form a heavier one. The fussion reaction for isotopes of Lithium and Hydrogen are as follows :

1. Lithium + Neutron = Helium 4 + Helium 3 + Energy

2. Tritium + Deuteron = Helium 4 + Neutron + Energy

9. **Thermo Nuclear Bomb :**

Fusion bomb i.e. Hydrogen bomb. The energy is obtained by reaction of atomic nuclei at very high temperatures.

10. **Critical And Optimum Heights Of Detonation :**

Critical height is the height of detonation at which the fire ball just touches the ground. Optimum height is that height of detonation at which there is maximum blast damage. This is always greater than the critical height.

11. **The Scaling Laws :**

The duration of blast and the linear distances of destruction vary as the cube root of the weapon yield i.e., to double the damage distances the size of the bomb will have to be increased eight times. In case of a Hydrogen Bomb which is 500 times the nominal bomb, the blast pressure lasts 8 times 0.7 second i.e., about 5 seconds and the distances for A,B,C, and D will also increase 8 times.

TECHNICAL APPENDIX
CHARACTERISTICS OF NUCLEAR RADIATION

Radiation	Type	Mass	Electrical charge	Remarks
Alpha	Particle	Roughly four Times the Nucleus of a Hydrogen Atom.	+2	identical to Helium atom stripped of its Electrons.
Beta	Particle	Roughly 1/1800 th of a Hydrogen Atom nucleus	-1	Identical to a high speed electron
Gamma	Wave	None	None	Electro magnetic wave of energy.
Neutron	Particle	Roughly equal to The nucleus of Hydrogen Atom.	Nil	

Geiger Counter :

The Geiger tube is filled with inert gas which get ionised when radiation passes through the tube producing a pulse of current which activate an electric circuit. Their primary use in Civil Defence Operations would be for monitoring food, water and people for radio active contamination. They are particularly adaptable for training since they can be operated in weak radiation fields minimizing radiation exposures to trainees.

Alpha Particles :

Nuclear radiation consisting of two protons and two neutrons and having a double positive charge. It is identical to a helium nucleus. Alpha particles can be stopped in a few inches of air, by a sheet of paper or the dead surface layer of the skin.

Beta Particles :

A negatively charged particle emitted from the nucleus of an atom and having a mass and charge equal in magnitude to an electron. Beta radiation may penetrates about a skin producing an effect similar to a burn Beta particles are more highly ionising.

Curie (c) :

The amount of radio active material which decays at the rate of 37,000 million disintegration per second. A millicurie (me) is one thousand of a curie, a microcurie (uc) one millionth.

Half Life Period.

The time required for a radio active substance to lose 50 percent of its activity by decay. Each radio active isotope has its own characteristic half life; It ranges for a millionth of a second to billions of years.

Ionization :

The process by which a neutral atom or molecule acquired either a positive or negative charge. A high speed particles passing through matter may cause the atom or molecule to divide into positive and negative parts called ions, destroying the electrical balance.

Roentgen :

A unit of radiation quantify, defined as that amount to X or Gamma radiation which produced one electrostatic unit of charge of either sign in one cubic centimeter of air at normal temperature and pressure.

X-Rays.

Penetrating electro-magnetic radiation identical to Gamma rays, but generally less energies, X-rays originate in the electron structure of an atom and may be produced by the sudden slowing down of high speed electrons in the X-rays machine or by the "jumping" of electrons from an outer to an inner orbit.

Dirty And Clean Bombs :

When the nuclear weapons leave behind material which is highly radio active. It is known as a dirty bomb and when the material left over is not radio active it is known as a clean bomb. Hydrogen Bombs are usually dirty bombs.

PART-XXXII
COORDINATION

Director :

- (i) The Director of Civil Defence on behalf of State Government will coordinate all Civil Defence activities in all spheres in the Categorized towns.
- (ii) He will be responsible for all Civil Defence measures in the categorised towns/cities in the State.
- (iii) The Controllers of Civil Defence in various Categorized Civil Defence Towns, for the purposes of CD activities, will submit Civil Defence Plans for their respective towns to the Director of Civil Defence, who in turn after scrutiny/suggestions/modifications approve on behalf of the State Government and will submit to Director General Civil Defence for information.
- (iv) The Director of Civil Defence is responsible for providing all inputs pertaining to lighting restrictions, internal, external warning and other connected technical job.
- (v) Director of Civil Defence shall regulate and coordinate financial requirements of the Categorized Civil Defence Towns in the State.
- (vi) Director of Civil Defence will be responsible to coordinate the activities of Civil Defence Advisory Committee and after getting the Policy approved by the Committee. He is responsible for getting it implemented in all Categorized towns in the State.