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Mrs L. R. Patterson

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CONCEPT OF EMERGENCY OPERATIONS
 LIFE-SAVING PERIOD
 APRIL, 1971.

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for

CONCEPT OF EMERGENCY OPERATION
 EPD
 REFERENCE BOOK
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Canada Emergency Measures Organization



Organisation des
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Canada

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CONCEPT OF EMERGENCY OPERATIONS

LIFE-SAVING PERIOD

APRIL, 1971.

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OTTAWA

CONCEPT OF EMERGENCY OPERATIONS

LIFE-SAVING PERIOD

INTRODUCTION

1. This paper sets out a concept of the emergency operations which could be directed by the various levels of government in the life-saving period to reduce the effects of an attack and assist the survival of the population.

2. It has been developed as guidance for planners in peacetime so as to provide a setting within which contingency operational plans and operating procedures for the various emergency organizations can be developed; these must take into account the area being considered, its resources and the structure of its organization for an emergency. It is applicable to all areas of the country and should assist in the recognition of, and correct reaction to, an emergency situation.

3. Other concepts are being developed for emergency operations which could be directed in a pre-attack phase so as to increase readiness and reduce vulnerability. Arrangements already exist for warning the public of the imminence of attack and its effects.

The Threat

4. Canada continues to be threatened by the effects of a major war. The threat is reviewed annually and changes are reflected in "The Threat to Canada" paper, which has been issued separately.

POST-ATTACK SITUATION

Attack Effects

5. A nuclear attack would have varying effects in different parts of the country, such as:

- a. certain areas suffering from direct effects including heavy loss of life and casualties;
- b. the same areas suffering damage to systems components with widespread effects, particularly to utilities such as power, water and sanitation;

- c. severe restrictions to movement in fallout areas resulting in:
 - (1) prevention of access to damaged areas, and,
 - (2) unavailability of organized assistance until the fallout had decayed to safe levels;
- d. possible voluntary movement away from damaged and fallout areas which would cause reception problems elsewhere together with traffic control problems in moving assistance from one area to another;
- e. damage to communications and transportation systems; and,
- f. all areas including those which escape attack effects, experiencing at least a degree of confusion due to lack of information.

6. The land areas that may be affected by the various attack effects are large compared with the dimensions of most local political subdivisions. An example is given at Annex "A" with notes at Appendix 1.

7. The immediate post-attack threats to life and property will be fallout radiation and/or fire.

Radiation Conditions

8. In considering fallout radiation conditions dose rate values of 0.5 r/hr and 50 r/hr are specified. Below 0.5 r/hr emergency operations could be performed with essentially no concern for the radiation field. Between 0.5 r/hr and 50 r/hr substantial doses could be received within a short period and could cause injury to unshielded persons. Above 50 r/hr the time available for unprotected operations drops to a value that makes effective outside action generally unfeasible.

9. For operational purposes, therefore, the fallout situation can be divided into the following:

- a. less than 0.5 r/hr - negligible radiation;
- b. between 0.5 r/hr and 50 r/hr - low radiation; and,
- c. over 50 r/hr - high radiation.

10. The foregoing guidance forms a general basis for operations under fallout conditions. It does not substitute for more detailed analysis of dose restrictions for specific missions which will be provided by RADEF staff. Additional guidelines are being developed for use at the local level by emergency services.

Fire Conditions

11. For operational purposes the fire threat is also divided. The basic difference between a high fire situation and a low fire situation is whether the fires are uncontrollable or controllable. This determination, to be made on advice from the fire services, hinges not only on the number of weapon-caused fires but also on such factors as what fire suppression capabilities remain, density of buildings, the availability of water and the debris situation.

Basic Operating Situations

12. Based on the above, nine basic operating situations are defined as shown in Annex "B". These vary from a negligible continuing threat (NEGRAD-NEGFIRE) to a condition involving severe fallout and uncontrollable fires (HIRAD-HIFIRE).

Other Conditions

13. Other conditions which could influence the conduct of emergency operations are, for example, floods, bridge collapse, inadequate traffic control, breakdown of law and order, failure of public utilities, spontaneous movement of population and public health problems.

EMERGENCY OPERATIONS

14. For ease in developing concepts the nine basic operating situations have been grouped into five dominant environments. The priority operations which might be conducted in each are outlined in tabular form at Annex "C". Additional notes are at Appendix 1.

15. The emergency tasks which may have to be carried out in each of the dominant environments have been listed at Annex "D".

RESPONSES TO THE SITUATION

Assumptions

16. It is assumed that:
- a. the public will respond to official advice and instructions; and,
 - b. in an immediate post-attack period any resources of the country, which are necessary and can be brought to bear, will be controlled and directed to emergency operations.

General

17. Capabilities for conduct of most emergency operations, but particularly fire fighting, rescue and medical aid, may be of two types self-help and organized forces.

18. Self-Help consists of emergency actions taken by individuals and small groups in response to obvious and immediate needs. Capabilities for such action are latent in all individuals and can be made more effective by prior education and minor preparations, especially during an increased readiness period.

19. Organized forces employ team organization, more intensive training, and specialized equipment and vehicles. They would be based on existing organizations such as government departments and public utilities, which together with their counterparts in the entire non-governmental sector of society, form the backbone of the organized forces. Such forces should be formed as cadre organizations to be augmented during an increased readiness period.

20. Immediately post-attack it will be difficult for the more senior levels of federal and provincial governments and their departments to obtain information about the situation in sufficient detail to act effectively and immediately. Initially, therefore, local government, local jurisdictions as detailed within each province to act in an emergency, must deal with the situation it faces in the best way it can using the resources immediately available with full cooperation from the local offices of the provincial and federal departments concerned.

Individual Response

21. Using general guidelines contained in emergency broadcasts and "11 Steps to Survival", individuals and families should act to protect themselves, to safeguard their households, to secure their immediate environment and wait for more specific instructions and advice from governing authorities. Fallout warnings will be available in emergency broadcasts from REGHQs.

22. Those who have accepted an assignment in an emergency service should act in accordance with the plan of that service.

Government Response

23. At the Local Level the authorities should endeavour to determine the local "basic operating situation" and act according to the full extent of their emergency services. They will report the local situation to higher authority.

24. At the higher levels of government the authorities should endeavour to determine the basic operating situations in their areas of responsibility. They will then establish priorities and control the assistance to be arranged to lower levels. This would include coordination of support and

the movement of personnel, supplies and equipment from one area to another.

25. Special Role of the REGHQ - This is the logical place for making early decisions on the priorities and feasibilities of emergency operations involving major movement of resources because:

- a. adequate attack effects information from both military and civilian sources will be available immediately; and,
- b. provincial and federal authorities with adequate powers of control are located there and can make estimates of remaining resources.

26. It is not to be inferred that all emergency operations will be conducted by local government. An examination of the possible emergency operations in view of the radiological environment will indicate that some operations may be conducted from the REGHQ or ZEGHQ.

27. A vital function for all governments is to keep the public informed.

Civilian-Military Relationships

28. It has been established that emergency operations will begin with local government taking action using their own resources. Should these be insufficient, a request should be made for assistance from outside. Available resources would be arranged for at the ZEGHQ or REGHQ and despatched to assist local authorities. These would be drawn either from civilian or military resources or both.

29. In this context, the Canadian Armed Forces have special capabilities which can be used in aid of the civilian authority. These are of two types:

- a. a command and control organization located in each province which is available for employment in support of a local government; and,
- b. military units and resources located in each part of Canada at the time and not required for the defence of the country which will have varying capabilities because of their specific organization and equipment.

30. If circumstances warrant it, the Regional Commissioner can request DND to use their command and control organization to direct and control one or more operations using resources allotted to it - civilian, military or both.

31. While the command and control organization is being developed with particular relationship to the responsibilities of DND in damaged areas or those seriously contaminated by fallout, it is flexible and mobile and has its own internal communications.

CONDUCT OF OPERATIONS

32. In the vicinity of a nuclear detonation some time would be available before the arrival of fallout, for actions which could have a marked effect on the survival of the population. More time would be available at greater distances.

33. Initial reports on the situation will be made from direct readings of radiation and/or observation of structural damage and fire by monitoring stations and other emergency services' personnel who will pass this information to their service emergency operating centre and thence to the Emergency Government Headquarters.

34. Under most fallout circumstances, either a single LORAD or HIRAD condition will exist throughout the jurisdiction of any local government. Where this is not the case, a boundary should be defined. The public will most likely first be warned of the possibility of fallout by broadcasts originating at an REGHQ. The staff at each REGHQ will be informed of NUDETS and their characteristics and will pass RADEF information through ZEGHQs to MEGHQs where it will be available for early decision making together with other factors. The effects of exposure to ionizing radiation are indicated in the table at Annex "E",

35. The fire situation could be either controllable or uncontrollable throughout a local jurisdiction. In large urban areas there may be both situations and a boundary should be determined.

36. The defining of basic operating situations within dominant environments will establish initial priorities for emergency operations in the area concerned. Actions and decisions will be based on the use of the surviving capabilities in the form of self-help instructions and those organized forces which can be brought to bear.

Assistance from Outside Sources

37. Staffs at higher levels will receive and evaluate local reports, which should indicate the basic operating situations and major problems. In the light of their knowledge of the broader picture, decisions on operational priorities and arrangements for assistance in operations would be made as practicable.

Reporting

38. An important function at the Zone and Regional Emergency Government Headquarters is to acquire, collate, evaluate and summarize information

and reports within their areas of responsibility and, apart from taking necessary action as indicated by these reports and by requests for assistance, to ensure that information of value to others is passed. It is important that operational information be as current as possible. When information is not forthcoming because of operational pressures at lower levels, it must be sought.

Principles

39. Effectiveness - The overriding principle is that operations must be directed to the saving of the maximum number of lives with the resources available.
40. Readiness - The effectiveness of immediate post-attack operations will depend in large measure on actions to take advantage of the warning available to government authorities so as to permit them to assemble the necessary manpower and equipment resources to expand their emergency services and to advise the public on self-help measures.
41. Speed with safety - Speed is vital if the maximum number of lives are to be saved. This requirement must be tempered by a realistic assessment of the radiological and other risks to the personnel engaged in the operation.
42. Immediate start of emergency operations - Emergency operations should be started immediately and personnel engaged should take cover when:
 - a. a predetermined dose or dose rate has been reached and is known to their service; or,
 - b. when advice to do so is given by RADEF staff.
43. Information to the public - An effective information service to provide warning, advice and instructions to the public is a vital part of all emergency operations. All levels of government may need to communicate with the public. The effects of fallout, or its threat, will make the public reluctant to take part in emergency operations until they are assured of their safety and that of their families; such information must be made available on a continuing basis.
44. Operational information - An effective intelligence gathering service is essential to permit assessment of the situation, establishing of priorities and decision making.
45. Flexibility and mobility - Plans must provide for the likely situations, be capable of quick amendment, and allow for the rapid re-deployment of emergency forces within and between jurisdictions as the situation demands. As a corollary to the principle of flexibility, units of the emergency services must be provided with the mobility necessary for rapid re-deployment.

46. Contingency planning - The minimum requirement is for well briefed and qualified leadership based on existing organizations and a reasonably detailed knowledge of the resources available. The existence of contingency plans does not obviate the need for decision making during the emergency.

Policy Considerations when Movement between Communities is Feasible

47. Elements of services which are moved, pre-attack, outside of their own jurisdictional boundaries to reduce their vulnerability, should remain under control of their own government.

48. Instructions from higher authority, located at ZEGHQ or REGHQ, would designate the local governments which are to organize and despatch emergency services with supplies, specialized personnel and equipment making use of the resource control agencies and their own operations staff to do this.

49. As a general rule, those communities closest to the area of operations should be tasked first to send support to other areas while those furthest away should be given the task of receiving evacuees. Depending on actual capabilities of the various emergency services, , a local government may be tasked in both roles.

50. Provision of initial components from the various emergency services which may be required should be in the following priorities:

- a. organized groups with leaders, transport and specialized equipment;
- b. a well-trained cadre which would provide a leadership element;
- c. specialized manpower and equipment to carry out a particular operational function; and,
- d. the untrained individuals who respond to a disaster situation and an appeal for help, but who may not be used in an effective way unless they are attached to an apparatus for organizing, controlling and directing them according to their abilities.

51. Organized "units" of emergency services should be assembled in their home communities and sent to the area of operations complete with sufficient transport, equipment and other resources to begin operations.

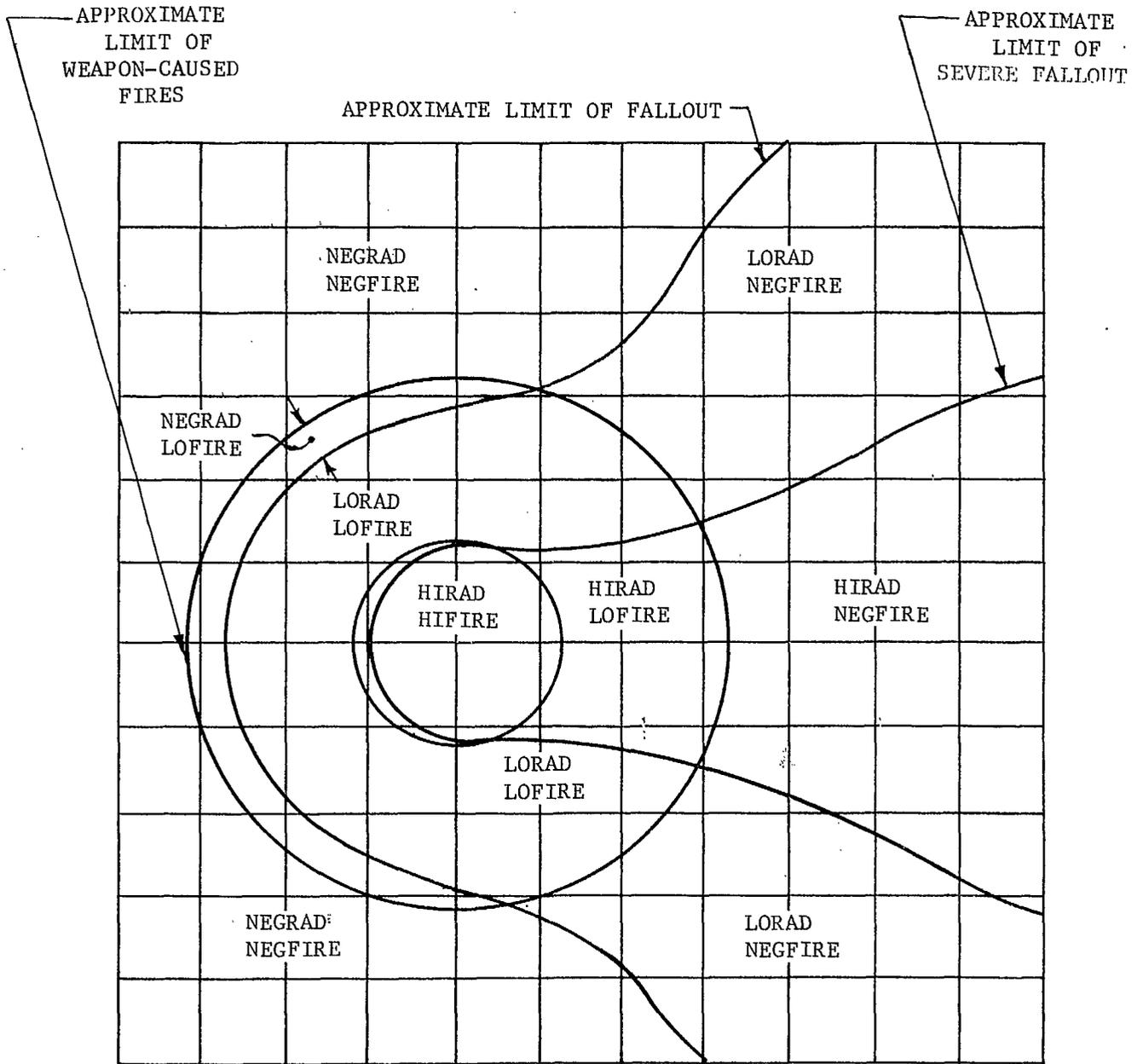
52. The authority controlling the operation should arrange:

- a. for receiving "groups" and for their operational control and instructions;

- b. for requesting resupply in bulk of such items as tools, lumber, food, clothing and POL;
- c. for the administration of emergency services including those sent in from outside, e.g., the preparation and distribution of food, and the distribution of items of bulk supply;
- d. the radiological control aspects of the operation;
- e. the communications necessary to control the operation; and,
- f. for broadcasting to the public in the area of operations.

53. For life-saving operations repair and recovery arrangements for road transport should not be specially arranged. Fuel points should be arranged, as necessary.

54. Welfare and medical services for persons requiring it in an area of operations should be the minimum necessary for life-saving. It is important that persons requiring to be moved arrive at a reception community as quickly as possible.



CLOSE-IN EFFECTS OF 10-MT SURFACE BURST
(15 mph wind speed)
(5 mile squares)

NOTES ON WEAPON EFFECTS - CLOSE-IN

1. Annex "A" shows the general dimensions of the "close-in effects of a single 10-MT surface burst displayed on a grid of squares five miles on a side. The effects shown are those defined in paragraph 12 of the paper. The extent of uncontrollable fires is arbitrarily taken as six miles in this illustration, indicating merely that the fires situation within a certain distance is much more severe than it would be at greater distances. The HIFIRE region could be smaller or larger depending on the weather conditions at time of attack, the fire defence capability, and other factors.

2. The area shown in Annex "A" encompasses about 3,000 square miles. Most areas of local government responsibility then, will experience at any one time during nuclear attack only one or, at most, a few of the basic operating situations. Some local governments may, however, find it necessary to use existing political sub-divisions as subordinate levels of control. These will be known as sectors. A case in point is where the size of a local jurisdiction or its geographical configuration suggests that two or more basic operating situations will cause control problems.

3. The general dimensions of an airburst weapon have not been put onto a diagram since the general problems would not be as complicated as those which would arise following a surface burst.

ANNEX "B" to
 Concept of Operations
 Life-Saving Period
 April 1971

	NEGLIGIBLE FIRE	CONTROLLABLE FIRE	UNCONTROLLABLE FIRE
NEGLIGIBLE FALLOUT	1 NEGRAD NEGFIRE	4 NEGRAD LOFIRE	7 NEGRAD HIFIRE
MODERATE FALLOUT	2 LORAD NEGFIRE	5 LORAD LOFIRE	8 LORAD HIFIRE
SEVERE FALLOUT	3 HIRAD NEGFIRE	6 HIRAD LOFIRE	9 HIRAD HIFIRE

NINE BASIC OPERATING SITUATIONS

<u>DOMINANT ENVIRONMENT</u>	<u>BASIC OPERATING SITUATION</u>	<u>DESCRIPTION</u>	<u>PRIORITY OPERATIONS</u>
FREE	NEGRAD-NEGFIRE	Negligible fires: radiation level does not exceed 0.5 r/hr	Keep public in available shelter initially; provide aid to other localities as feasible and prepare for reception of survivors. See Appendix 1.
MODERATE FALLOUT	LORAD-NEGFIRE	Negligible fires: radiation levels between 0.5 r/hr and 50 r/hr	Maintain population in shelter; conduct dose-limited essential operations including population control measures; provide aid to other localities as feasible.
SEVERE FALLOUT	HIRAD-NEGFIRE HIRAD-LOFIRE	Negligible or scattered fires; radiation levels higher than 50 r/hr	Make maximum use of available shelter; conserve resources; minimize outside operations; impose strict population control measures.
CONTROLLABLE FIRES	NEGRAD-LOFIRE LORAD-LOFIRE	Scattered fires: subject to potential control; radiation hazard may exist or be imminent.	Conduct emergency operations to control or suppress fires and rescue trapped personnel; treat injured; maintain population in shelter.
UNCONTROLLABLE FIRES	NEGRAD-HIFIRE LORAD-HIFIRE HIRAD-HIFIRE	Many fires beyond control capability; radiation hazard may exist or be imminent.	Relocate and protect population and rescue trapped personnel as feasible against fire and fallout threats.

PRIORITY OPERATIONS - ADDITIONAL NOTES

The Free Environment

1. The general public should remain in shelter until advised to leave, even though no immediate attack effects are being sustained. An in-shelter stay of a few days might be necessary for NEGRAD-NEGFIRE situations because the possibility of sustaining attack effects may continue for this period of time, however, priority operations would have few constraints. Provision should be made for maintaining limited public safety patrols, improving shelter and food and water supplies, controlling essential utilities and resources, and caring for any injured, sick and evacuees.
2. Other priority operations in free environments will be actions to render immediate assistance to attack survivors and actions to control the use of resources. Actions to render immediate assistance to attack survivors will predominate in localities near areas suffering direct attack effects. Some survivors, including injured, are likely to move spontaneously from a LOFIRE environment into adjacent NEGFIRE localities. Similarly, persons with substantial radiation exposure may have to be evacuated from a LORAD locality to an adjacent NEGRAD locality. Provision should be made for reception and care of injured and uninjured survivors, and for aid to nearby localities if this is directed.
3. Actions to control the use of resources will predominate initially in local jurisdictions more remote from areas affected by an attack. They must be implemented as rapidly as feasible so that support can be provided as quickly as possible to areas in greater need.

The Moderate Fallout Environment

4. In a major nuclear attack, much of the land area of Canada may experience at least moderate levels of fallout, but no blast or fire effects, i.e., the LORAD-NEGFIRE operating situation. These localities will remain in the LORAD-NEGFIRE operating situation until the dose rate has decreased to less than 0.5 r/hr.
5. If a HIRAD condition does not occur, the population in shelter with a PF of 10 are not likely to become casualties. Moreover, priority operations in the open can be carried out. These may last for minutes or hours depending on the actual conditions and maximum exposure policy. Such considerations will determine the extent to which contingency operational plans can be implemented for maintaining limited law and order arrangements, improving shelter and food and water supplies, controlling essential utilities and resources, and caring for any injured or sick.

Thus, the general operating doctrine for the LORAD-NEGFIRE situation should be to minimize unnecessary exposure of the general population by maintaining an in-shelter posture during the LORAD period while performing essential operations on an increasing scale as the radiation hazard decreases.

6. It should be noted that the period during which a LORAD-NEGFIRE situation prevails will consist of an initial time interval during which the dose rate will increase to a peak, followed by a longer time interval during which the dose rate will progressively decrease. Actions taken for the initial buildup of the LORAD period should be based on the assumption that a HIRAD period will follow; advice should be obtained from the RADEF organization as to the probability of a HIRAD situation occurring.

The Severe Fallout Environment

7. A number of localities will experience a HIRAD-NEGFIRE operating situation during a major nuclear attack. This situation is likely to occur close to the ground zero of a ground burst weapon. The HIRAD-NEGFIRE situation will be preceded by a relatively short (5 to 30 minutes) period of the LORAD-NEGFIRE situation. The HIRAD-NEGFIRE situation will persist for a period ranging from a few hours to about two weeks before reverting to the LORAD-NEGFIRE situation. For such a period, action must be based on maximum sheltering in the most protected areas available to the jurisdiction concerned, conservation of in-shelter resources, and cessation of emergency operations until radiation dose rates decrease to levels approaching that of a LORAD-NEGFIRE situation. At that point, LORAD-NEGFIRE actions could be carried out, with special consideration being given to radiation exposures sustained during the HIRAD-NEGFIRE period. Nearby localities experiencing only LORAD-NEGFIRE will be in or approaching the free environment on the same time scale. Planning should consider the problems of relocating people to localities experiencing lower radiation levels.

The Fire Environments

8. This will most likely occur where populations and economic resources are highly concentrated, or where military or other strategic installations place smaller centres at some risk. The impact areas would contain many survivors and recoverable resources which could be saved subject to the constraints imposed by fire and radiation. The fire constraint has two aspects, namely whether the fires are controllable (LOFIRE) or uncontrollable (HIFIRE) and these lead to two very different priority operations. However, these two types may have to be further refined to allow for situations where radiation may be a complicating or overriding factor.

9. During the increased readiness period, instructions to the public should emphasize that window blinds and shades should be kept closed, as there is strong evidence that most sustained fires occur in the interior of rooms exposed to heat flash. Similarly, plans for the control of gas and electric utility service could reduce the incidence of fires caused by blast damage.

10. Controllable - Close-in to a nuclear detonation, weapon-caused fires would be numerous. The basic concept of the LOFIRE operating situation is that immediate self-help action takes place to check initial combustion and spread of fire. As illustrated in Appendix 2, without such activity, the spread of fire will quickly become uncontrollable. Plans for the LOFIRE situation should, therefore, provide detailed arrangements for augmentation of fire defences during crisis periods with the organized fire service providing leadership, recruiting and training for ignition suppression teams for all occupied premises, especially buildings used as community fallout shelters. The primary objective of LOFIRE operations should be to maintain the usefulness of available fallout shelter by controlling the fire threat.

11. Uncontrollable - All or part of an urban area may be faced with an uncontrollable fire threat despite all fire defence preparations. This is likely near Ground Zero and also in congested areas where urban characteristics indicate moderate to high conflagration potential. Additionally, where self-help action has been inadequate, uncontrollable fires may develop.

12. The essential response to a HIFIRE operating situation is relocation of the population threatened to the best possible protection from fire and fallout, i.e., remedial evacuation but over short distances only. In relocating the threatened population by fire, it may be necessary to crowd shelter space and use areas with a low PF. Radiation doses in available areas would probably be sufficiently low that modest fallout protection would be effective. Efforts to move people over long distances should be considered only as a last resort because of the increased radiation exposure and likely difficulties of movement through damaged areas.

EFFECT OF TIME ON FIRE CONTROL CAPABILITY

(Residential Rooms)

<u>MINUTES AFTER IGNITION</u>	<u>PERCENTAGE OF ROOMS</u>	
	<u>BEYOND SELF-HELP</u>	<u>BEYOND ORGANIZED TEAM</u>
5	10%	--
10	50%	--
15	65%	5%
20	70%	40%

In this table, "self-help" means a team of two people equipped with hand extinguishers. An "organized team" means four men wearing protection clothing and trained in the use of small hose lines with mobile water supplies.

Source: Vodvarka & Waterman
AD 618414, IITRI
June, 1965

POSSIBLE EMERGENCY TASKS IN EACH DOMINANT ENVIRONMENT

TASK	Dominant Environment				
	Free	Moderate Fallout	Severe Fallout	Controllable Fires	Uncon- trollable Fires
Clothing	X *	X	--	--	--
Control Structure	X	X	X	X	X
Debris Clearance	X *	X *	--	X	X
Electric Power	X *	X *	--	--	--
Firefighting	X *	X *	--	X	--
Feeding	X *	X *	--	X	--
Law and Order	X *	X *	--	X	X
Lodging	X	X	--	X	--
Manpower Management	X	X	X	X	X
Medical	X *	X *	--	X	X
Natural Gas Supply	X *	X *	--	--	--
Operations Communications	X	X	X	X	X
Personal Services	X	--	--	--	--
Public Health	X *	X *	--	X	--
Public Information	X	X	X	X	X

(Continued next page)

* May also be needed to provide support to other environments.

- 2 -

POSSIBLE EMERGENCY TASKS IN EACH DOMINANT ENVIRONMENT

	Dominant Environment				
	Free	Moderate Fallout	Severe Fallout	Controllable Fires	Uncon- trollable Fires
RADEF	X *	X	X	X	X
Rescue	X *	X *	--	X	X
Registration & Inquiry	X *	X *	--	--	--
Sewage Disposal	X	--	--	--	--
Shelter	--	X	X	X	--
Supply	X *	X *	--	X	--
Traffic Control	X *	X *	X	X	X
Transport	X *	X *	--	X	X
Utilities - Essential Maintenance	--	X *	X	X	X
Water - Potable	X	--	--	X	--
Water - Firefighting	X	--	--	X	--

* May also be needed to provide support to other environments.

Note: - It is possible to have more than one environment in a local jurisdiction. In such cases the appropriate combination from the listings of Tasks must be considered.

WHOLE BODY GAMMA IRRADIATION EFFECTS GUIDE
FOR EMERGENCY OPERATIONS AND PLANNING

Dose in Roentgens During Any → ↓ Acute Effects To be Anticipated	one day	two weeks	one month	three months
	Work Performance Interference In 0% to 5% of Those Exposed (See Note A)	150R	200R	
Medical Care Required For 0% to 5% of Those Exposed (See Note B)	200R	220R	250R	300R
0% to 5% Deaths Amongst Those Exposed (See Note C)	300R	330R	400R	600R

NOTE A WORK PERFORMANCE INTERFERENCE LEVEL

This is the dose below which no appreciable number (less than 5%) of average individuals will develop radiation sickness symptoms (vomiting and diarrhea) sufficiently severe to interfere seriously with the performance of demanding tasks such as those of air pilots and controllers. This level is of importance for those individuals essential to immediate operations.

NOTE B MEDICAL CARE LEVEL

This is the dose below which no appreciable number (less than 5%) of average individuals will develop incapacitating radiation sickness where survival may be dependent upon medical care. This is the level above which there would be a significant increase in the load on the medical support services and a significant decrease in the available manpower. This level is of importance in planning and operations concerning the general public.

NOTE C MORTALITY LEVEL

This is the dose above which an appreciable number (more than 5%) of average individuals will die regardless of medical care. Almost all, (95% to 100%) of the remainder would be seriously ill. This level is of importance in serious risk situations such as those involving remedial evacuation.

