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THE EMERGENCE OF A CIVIL DEFENCE STRATEGY IN THE UNITED KINGDOM FROM 1935 TO 1945

by

John F. Wallace
Director, Plans and Analysis
Emergency Planning Canada

The paper which will be reproduced in this and succeeding issues of the Digest, was one of the requirements for a Master of Arts Degree in the War Studies Department, King's College, University of London. It was prepared when I was awarded a Sabbatical leave during 1973/74.

When asked to provide a foreword and disclaimer to the paper, I reread the document and came to the conclusion that I might better have titled it "The Backward Move Forward", and rather than title this opening a Foreword to the series, it might better be titled "An Afterthought".

It is essentially a story of planning. Today, fifty years after the era of this analysis, planning has become a pretty much worn out word in the era of management by objectives. The theories of planning were well known then as they are now but then as now sometimes little understood; the theorists proved to be long on theory and had little or no experience in practice. This certainly comes out clearly in the stumbling and even fumbling way in which emergency 'planning' got underway in the United Kingdom, starting as early as 1924. Yet, as I reread this history for the umpteenth time, I find that fifty years later, the same type of ivory tower thinking pervades emergency planning processes throughout the Western World. As Gertrude Stein is credited with saying "A rose is a rose is a rose", so a "disaster or an emergency is a disaster or an emergency". No amount of SA (not sex appeal but system analysis) will produce the plans and preparations unless those who expound such themes understand the problems. In many cases emergencies and their courses are unpredictable, yet the problems not systems are at the forefront of all emergencies and disasters — and these problems are inherently people based problems.

Planning in the United Kingdom became effective when it got out of the clutches of central government with preparations being made by those who were to be confronted with the problems, the local governments and the population. (An article "United Kingdom Civil Emergency Planning" by Duncan Buttery, to be published in the next Digest refers to the current U.K. view in this regard.) But goodwill of local government in those days could not produce the actual preparations for even then, money had to be provided. Sometimes the 'arrogance' of central government thinking concerning the competence or lack of it in local governments is somewhat amusing, and even today perhaps repetitious.

The latter part of the Twenties, were days of peace, as the last half of the Seventies seems to be caught up with the euphoria of détente. In both eras, emergency planning and preparedness takes second place to what are considered higher priority programs. In the peacetime Thirties it was a simple task to assign responsibility for emergency planning and it was just as easy to evade it when disaster (or war) was not your ever present neighbour. Such was the case in the United Kingdom before the Second World War. Is there a lesson to be learned today?

The operation of the United Kingdom Defence Requirements Committee in the 1930's, painted an alarming picture of the Defence of the realm — would such honesty of appraisal be acceptable to governments today?

There were many events or people which helped to propel Air Raid Precautions (ARP) into a viable force but would such have been the case if it had not been for Munich when reluctance toward the hard task of planning was finally tossed aside. Will we again have such a 'tangible' indicator of what is to take place?

War, in the first half of the Twentieth Century meant gearing the total economy and establishing and sticking to priorities and changing them when necessary. Decision-making (a 1960 buzz word) meant just that — not endless submissions, justifications and committee studies. What committees were established were there to get things done and not to talk the problems out of existence.

During the Second World War, the overriding objective was the successful prosecution of the war, and by keeping the objective firmly fixed, the correct priorities were maintained or changed as need arose. For the future, should deterrence fail,

what should be that objective, because only when that is determined will effective plans be developed. On the other hand, peacetime emergencies and disasters are with us — albeit on a minuscule scale in relation to war. But even so, there is a need to have objectives clearly established for peacetime emergencies and for those brought on by international conflict. To mix them, you obtain about the same results as when you mix oil and water.

In writing this foreword, some two years after preparing the story, I unhesitatingly state that anything contained in the foreword and story are not necessarily the views of my government or the government of the United Kingdom.

Ottawa, December 1975.

Preface

From 1924 to 1935 Air Raid Precautions were studied by Sub-Committees of the Committee of Imperial Defence. In effect during those eleven years nothing was produced beyond a few basic planning concepts, certainly nothing in the sense of practical operational capability. From 1935 through to 1945, a Civil Defence Strategy emerged, and a variety of organizations and measures were created which successfully met the air threat posed by Germany during the Second World War.

The purpose of this essay is therefore to examine the assumptions, events and conditions which created the need such a strategy, and to trace the development of the major themes which together constituted it. In this the peacetime preparations were all important and it is upon this aspect that much attention will be devoted. During the war years, the pattern which had been established had to be adjusted as lessons were learned, or when enemy bombing tactics were changed.

Introduction

One year after the conclusion of the First World War, the Cabinet had directed that strategic military planning would be conducted on the assumption that there would be no major threat of war for at least ten years. Yet, as early as 1921, the Committee of Imperial Defence (CID) studied, among other matters, the vulnerability of the United Kingdom to the 'continental air menace'[1]. The single countermeasure discussed was the development of a Home Defence Air Force. It was not until three years later that the CID considered another countermeasure, namely air raid precautions, to be of sufficient importance for study. Based on its recommendation, Ramsay Macdonald, the Prime Minister, appointed Sir John Anderson to be Chairman of an Air Raid Precautions (ARP) Sub-Committee of the CID[2].

This appointment did not result in a burst of feverish activity. Indeed what eventually emerged as Civil Defence some fifteen years later came to fruition in an exceedingly slow and almost haphazard manner, with all Sub-Committee discussions conducted in secrecy. This was a constraint on the Committee but if fitted in neatly with the almost pacifist foreign policy of British Governments. It was only late in March 1934 that the House of Commons was informed, by the Prime Minister, that the Government had been considering ARP for ten years, as "an essential accessory to the arrangements for home defence"[3].

In any case the nineteen twenties were hardly the times during which to develop any enthusiasm for defence measures be they civil or military. The war to end wars had left a distinct disinclination in the minds of the British to have anything to do with war. There was also a deep concern about finding a solution to the problem of the malfunctioning of the economy which had brought on industrial depression and high levels of unemployment. The General Strike of 1926 was in a sense the culminating point of industrial and labour strife. And five Prime Ministers in that period hardly spelled stability. On the international scene peace and harmony were the by-words. This was the era of the Disarmament conferences, the Locarno Treaties, the admittance of Germany to the League of Nations, and the Kellog-Briand Pact outlawing war. It was hardly a propitious period to contemplate measures against air attacks!

The first meeting of the ARP Sub-Committee was held on 15 May 1924. One should not be misled into believing that it was motivated by any sense of urgency to find ways to protect the civil population. Sir John Anderson made that clear at that first meeting when he said "it was for the Com-

1. Records of Meetings of CID for 1921, Public Records Office.
2. 4 February 1924.
3. H of C Debates, Vol. 287, Col. 1240, 21 March 1934.

mittee to investigate and elaborate means for the cooperation of civil authorities in order to make the policy of the Fighting Services effective"[4]. The guide to the magnitude of the problem which was to face ARP planners was provided by the Air Staff which postulated the scale of attack which an enemy might launch on the United Kingdom. Their calculations were based on the results of air attacks on Britain during the First World War which, although later proven to be inaccurate, worked out to 50 casualties per ton of bombs[5].

The problem which occupied much of the Committee's attention revolved around the type of central organization the government should have to get essential planning done in peacetime, and to exercise effective coordination in wartime. It frowned on any idea having to do with the creation of a central department being responsible for ARP functions, and, instead, opted for a dispersal of responsibility for planning ARP functions to the central departments of government. This it was hoped would result in an efficient transition from peace to war and it would ensure that inherent departmental expertise would be brought to bear in peacetime on war emergency planning problems. But assigning responsibilities is one thing and having them carried out is another matter, and this was to be the nub of the problem for ten years.

But by 1935 as a result of a combination of events such as the activities of the Defence Requirements Sub-Committee of the CID[6], which had painted "an alarming picture of the state of Britain's defences"[7]; changes on the international scene; the rearming of Germany; a somewhat more realistic attitude[8] about local authorities, as well as the failure of the ARP Committee and Departments to make adequate progress in planning, the Cabinet agreed to the establishment of an ARP Department in the Home Office. At the same time the Government recognized that "some expenditure would have to be incurred . . . if schemes were to be properly completed"[9], and authorized for the year 1935-36 an expenditure of £91,000 for ARP Services. On 16 April 1935 the creation of the Department was announced to the House of Commons, and E. J. Hodsoll[10] was appointed to take charge of it. Until 1938 the Department would report to the Cabinet through the new Minister for coordination of Defence.

The results of the first eleven years were not particularly gratifying in that no effective non-military defence plans were produced. It would not be fair however to suggest that the deficiencies were the result of ineptness. The lack of finances, the lack of a real threat to the nation before 1930, the pacifism of the nation, and the basic fact that committee work is notoriously slow on execution were the main factors contributing to the lack of plans. A review of the Records of the ARP Committees' Meetings[11] reveals after 1929 a real depth of understanding and soundness in the concepts being explored. Many of these would be implemented by the new ARP Department.

Leading to Munich

The New Image and New Approaches

For those engaged in ARP the events leading up to the Second World War had a ring of inevitability about them. Certainly the Defence White Papers of those years showed the growing concern of the Government. An indication of that concern was the Government approval of a submission in October 1935 which would lead to providing a gas mask for every citizen. By 1937 the priorities of British Defence Policy were shifting[12] with Home Defence receiving closer attention and the Head of ARP being included in the councils of the Chiefs

4. Record of Meeting No. 1, ARP Sub-Committee, May 15, 1924, Public Records Office, London.
5. Sir Charles Webster and Noble Frankland, The *Strategic Air Offensive Against Germany 1939-1945, Vol. I, Preparation*, H.M.S.O., London, 1961, p. 62 & 63. The estimate for 1925 was that in the first 24 hours 1700 could be killed and 3300 inured; and in the next 24 hours 1275 killed and 2475 injured.
6. T. H. O'Brien, *Civil Defence*, H.M.S.O., London, 1955 p. 48.
7. Peter Dennis, Decision by Default, Routledge & Kegan Paul, London, 1972, p. 35.
8. In December 1932 the ARP Committee had dismissed the idea that the LCC and Borough Councils had the competence to perform ARP functions, and for two years experimented with an Air Raids Commandant Organization.
9. T. H. O'Brien, op. cit., p. 51.
10. Sir John Hodsoll, 1894-1971, RNAS, World War I, RAF 1918, Asst. Secretary CID 1929-33, Asst. Under Secretary Home Office, in charge of Air Raid Precautions 1935-37, Inspector General Civil Defence 1938-53, CD Adviser to NATO 1954-61.
11. ARP Sub-Committee, ARP (Organization) Committee and, the ARP (Policy) Committee which existed as a Ministerial Committee from 1929-35.
12. Michael Howard, *The Continental Commitment*, Temple Smith, London, 1972, p. 114-116.

of Staff Committee whenever Home Defence matters were discussed.

By 1935 Germany no longer a hypothetical enemy had, according to the Air Stff, the capability of delivering 150 tons of bombs in the first 24 hours. By 1936 it would be able to deliver 600 tons in the first 24 hours, and in 1939 it would have the capacity to deliver 3500 tons[13] in a knockout blow. The assumed load distribution would be 50% high explosive, 25% gas, and 25% incendiary bombs.[14] In spite of enemy precision bombing which would destroy critical targets of government, industry, communications and power, there would be some hundreds of thousands of casualties. This then constituted the threat against which plans for the defence of the nation were to be created.

To the ARP planners the magnitude of this threat demanded preparations which would lead to the mobilization of the nation. Thus where up to 1935 the planning emphasis had been on the organization of the central government, it would now be reversed with the major effort being directed toward organizing the local authorities wherein lay the resources and manpower to deal with the physical and human problems of disaster. But because of the immensity of the problem, a greater effort would be made to secure public participation. There were of course collective measures of defence such as warning, lighting, etc., which would require resolution at the centre, and finally decisions needed to be taken for the central machinery for war. The Department had set the end of March 1939 as the date to complete the nationwide ARP scheme.[15]

As if to emphasize the growing importance of ARP the original staff of 13 had, by 1939, increased to over 600[16], with 13 regional offices throughout the nation. As well ARP's annual estimates increased from £92,000 in 1935/36 to £477,000 in 1936/37 and to over £4,600,000 in the next year.

To gain some idea of the resource requirements for ARP, the Department, using Air Staff attack data, divided the country into risk areas based upon vulnerability. Using this and the casualty data of fifty per ton of bombs an estimation was made of the magnitude of the casualty and other related problems. This enabled the Department to determine the quantities of equipment required, as well as the size of ARP services which would need to be recruited and trained. With these calculations the Department in March 1937 prepared a memorandum of the Financial Aspects of Air Raid Precautions which forecast a requirement for £35 million. The Warren Fisher Committee[17] not only substantiated the requirement but made important recommendations which would enhance the program.[18] It clearly defined what were to become the three aims of the ARP program viz., to maintain the morale[19] of the people, to ensure the continued functioning of the services needed to prosecute the war and sustain the life of the people, and to reduce damage and destruction of the people and property.

The new ARP approach was directed at obtaining grass roots participation and the first two years were spent enlisting, on a voluntary basis, the cooperation of local authorities, industry and the public. The intention was to graft ARP functions onto the existing local governments agencies. Although later years were to bring some compulsion, the basic principle of voluntary service and of grafting responsibilities onto existing agencies remained cornerstones of the program.[20]

An Element of Compulsion and the ARP Act of 1937

By the end of 1936, having spoken to all the principal authorities in the nation, Hodsoll was able to report that over 117 authorities were preparing ARP schemes. But success was mixed with failure. The lack of financial help hardened many Councils against moving too quickly toward the unknown frontiers of ARP, and considering that the country was not at war, the every day task of administering their jurisdiction took precedence. At the centre, the new department acting like a poacher was found to be invading the jealously guarded preserves of casualty care and shelters belonging to the old entrenched Ministries of Health and Works — with a degree of enthusiasm never in evidence during past planning!

In 1937 ARP officials held some initial but informal meetings with local authorities to discuss financial and other matters. The message was clear. If ARP was to become workable there would have to be an element of compulsion suitably sweetened with financial inducements. The ARP Bill which

13. Ibid., p. 111.
14. T. H. O'Brien, op. cit., p. 114.
15. Ibid., p. 62.
16. Ibid., p. 175.
17. Established under the CID in 1937 to examine all aspects of ARP.
18. T. H. O'Brien, op. cit., p. 92-99.
19. A subject of concern to military defence planners in the 20's and 30's and of equally great interest to planners of strategic bombing offensives in the 40's.
20. John Wheeler Bennett, *John Anderson, Viscount Waverley*, MacMillan, London, 1962, p. 190.

was in the making, and which was to make it compulsory for local authorities[21] to organize ARP, was modified so as to include what the Government felt were generous provisions. At the conclusion of the debate on the Bill, Herbert Morrison[22], who had fought hard for 100% financing, was promoted to say 'This is a regretted bill but it is a necessary bill'.

The Statutory Regulations which followed the Act defined the areas in which local schemes (plans) had to be prepared making the "fullest use of existing resources which could be adapted for wartime purposes"[23]. The list[24] which follows illustrates the full extent and nature of ARP at the local level.

- instructions and advice to the public,
- receiving information and giving air raid warnings,
- collection of information on casualties and damage,
- organization of the Warden Service,
- arrangements for dealing with casualties and organization of First Aid Parties, Casualty Collecting Stations, and Ambulance Services,
- clearance of debris and rescue of the trapped,
- detection of gas,
- decontamination,
- repair of highways, streets and utilities,
- recruiting and training,
- headquarters for air raid precautions services,
- provision of shelters,
- restriction and regulation of lighting,
- respirators,
- storage and maintenance of equipment, appliances and material,
- transfer of the civilian population,
- control and coordination of Air Raid general precautions.

From among these were created the army of ARP, namely the ARP General Services.

In addition, six regulations directed local authorities to organize an Auxiliary Fire Service and to make fire defence plans. The air raid fire risk had always been recognized as being serious. This, among other matters, prompted the Government to pass the Fire Brigade Act of 1938, making it compulsory for over 1600 authorities to organize Fire Brigades. Thus from 1938 two fire services were to be organized but relations between them were not always harmonious. As well, through a quirk of fiendish logic the Auxiliary Fire Service was equipped by the Central government, whereas the Brigades were equipped by local authorities. It was not until May 1941[25] with the creation of the National Fire Service (NFS) that these anomalies were to be resolved.

Major Items Under Way

One threat which received considerable attention was gas warfare. The existence of a Chemical Warfare Research Department provided solid information on which to build appropriate defences for the population. This was just as well because in the minds of the public it was the risk most prominently associated with air attacks[26]. Gas mask production which eventually exceeded 50 million was for some time the largest expenditure item in the Department's estimates. Having decided to provide every citizen with a gas mask, other protective measures were recommended. All this tended to reinforce the idea that there was a defence against gas warfare.

Convinced that the people must be taught personal protection against the hazards, and be encouraged to fill the ranks of the ARP General Services, the Department found itself immersed in diverse activities. In 1936 it established an Anti-gas School[27] to train instructors from local authorities, industry, private and voluntary groups, including medical and paramedical professions. By the end of 1937 over 40 local schools had also been established and some 100,000 received some form of formal training. The Department provided grants to the St. John Ambulance and the Red Cross to help organize casualty services and to teach ARP volunteers first aid. Other groups such as the Boy Scouts and the British Legion were encouraged to become members of ARP. In 1938 the Women's Voluntary Service was organized to stimulate women's participation. By 1939 a tremendous volume of publications covering most ARP subjects found its way into the hands of local authorities, industry and the public.

But it was the organization of the Warden Service which was to become one of the spectacular

21. The Act referred to scheme making authorities which were 230 odd boroughs and counties, designated non-county boroughs and some urban districts.
22. Morrison at the time was also Leader of the LCC.
23. C. W. G. Eady, Deputy Secretary of State, Home Office, *The Progress of Air Raid Precautions*, Journal of the R.U.S.I., Vol. LXXXIV, February 1939.
24. Ibid.
25. T. H. O'Brien, op. cit., p. 471.
26. H. M. Hyde and G. R. F. Nuttal, *Air Defence and the Civil Population*, the Cresset Press Ltd., London, 1937, p. 2.
27. At Falfield, Boucestershire, A second at Easingwold, Yorkshire. Later an ARP Staff School in London, and a Staff College at Stoke D'Abernon in January 1942.

successes of ARP. The street level relationship of the Warden with each household, being its communication and action link to the organized ARP services forged bonds which were to make Wardens unique. With their distributions of "The Protection of Your Home Against Air Raids"[28], to every household, ARP became everybody's business.

By 1938 events in Europe were driving parliamentarians to question some inadequacies of ARP planning, especially the lack of evacuation plans. Under pressure, the Government established a Committee under Sir John Anderson, to study the problem. The Committee reported in July 1938. It cautioned that "a wholesale evacuation of the main industrial centres . . . would cripple the nation's was effort"[29] but more importantly outlined basic principles which after being accepted by the Government were later that same year to serve as a guide for the development of a hastily conceived plan of evacuation. These principles suggested that evacuation be voluntary, billeting be compulsory, government aid be provided to the needy, special arrangements be made for school children, and that full publicity be given to any scheme of evacuation. The Report[30] "remained a secret document"[31] until it was released, after the Munich Crisis.

The same events which prompted action on evacuation resulted in further proposals for the 'control in war' problem which had perplexed planners since 1924. It followed the general lines of previous suggestions. A regional organization would be created comprising twelve regions each with a Regional Commissioner, the latter to be supported by representatives of the principal central departments. At the centre a Ministry of Home Security would be created to take charge of ARP activities. The Minister would be the presiding officer over a council of ministers, each of whom had major ARP responsibilities, and he would coordinate the whole machinery of ARP. This then was to be the superstructure for civil emergency operations in war[32], and it became known as "Civil Emergency Scheme Y" in the Government War Book[33]. At the bottom of the chain of command it was secretly planned that local authorities which had been the main organizers of ARP services, were to have operation control lifted and placed in the hands of Chief Constables who would be designated Air Raid Controllers[34].

By 1938 the main features of the warning system had been decided. Up to 1937 the Council Observers had been the eyes and ears of the system, but were now to be supplanted to a large extent by RADAR which became the backbone of the system. Fighter Command became operationally responsible for giving warning to the public and the one minute warbling wail on the siren was the signal to take shelter. Unfortunately, although the Government in 1937 had announced it intended to provide shelters to some and advice to others, there had not been any progress. Despite information on bomb effects from Spain, officials claimed they did not have sufficient on which to develop designs. In 1938 however information was made available to the public on how to build 'refuge rooms', and the Government said it would provide sandbags free of charge to authorities providing public shelter! At the same time they were urged to survey shelter space in large buildings, and make plans where to dig trenches.

To limit the effectiveness of precision bombing concealment plans were developed. Many would not be available until after the outbreak of war. The ARP Departments camouflage directorate would by 1945 issue instructions to thousands of installations on how to blend their facilities into local surroundings. A smoke generating organization[35] was organized to produce smoke cover over vital areas but by the time of Munich the only concealment plans in hand were those for lighting restrictions. Soon, no citizen was to be spared from the obligation toward blackout, and official efforts to ease its provisions were to encounter stiff opposition from the Air Staff and the public, both of whom were equally convinced of its importance.

Damage limitation came about on another front as a result of an experiment in 1937 during which a group of school girls from Barnes[36] successfully extinguished incendiary bombs with simple implements. Officials immediately concluded that householders could do a great deal to meet that threat. Further experiments led to the development in June 1938 of the Stirrup Pump which became "the householders chief implement against incendiary

28. J. B. S. Haldane, *A.R.P.*, Victor Gollancz, London, 1938. Contains pungent comments about the deficiencies of the publication.
29. John Wheeler Bennett, op. cit., p. 202-203.
30. Report of Committee on Evacuation, Command 5837, 27 Oct. 1938.
31. John Wheeler Bennett, op. cit., p. 204.
32. T. H. O'Brien, op. cit., p. 116-119.
33. The Cabinet's 'aide memoire' of major actions which should be implemented during crisis to ensure a smooth transition from peace to war.
34. In the County of London, the Clerk was designated ARP Controller.
35. T. H. O'Brien, op. cit., p. 149.
36. Ibid., p. 86.

attack"[37]. A later decision by the fire authorities not to train householders resulted in the task being assumed by ARP.

Although the Department was striving on all fronts to complete its national scheme by 1939, and in fact was making considerable progress, events in Europe by 1938 assumed crisis proportions. Munich was the culminating point of these events. This essay's interest in that Crisis centres on the lessons which were learned. Without question the Crisis was a mass dress rehearsal for the war yet to come. Just about every phase of ARP planning was put to the test. The broad plan appeared adequate. But when it came to detailed implementation a great deal was found wanting. The critical period of September 24 to 30, 1938, was one of crash action and mass improvisation. Behind the improvisation however it was apparent that what needed to be done was known to the planners and this prevented much wasteful blind activity which would have otherwise taken place. Thus, so far as the public was concerned, and despite the obvious confusion, things happened. Trenches were dug, gas masks were issued, sirens were tested, buildings were sandbagged, and thousands volunteered for ARP services. These were the positive things that could be seen, felt, and heard.

But when it came to the question of central control and the emergency plans of government departments one was left to wonder what had been going on for fourteen years. The need for secrecy hindered the implementation of the key features of the plan for control. This called for close cooperation between and among all elements within the span of control but because of secrecy few were able to say what needed to be said. However secrecy should not have hindered the development of department plans but the need for them had either been ignored, or the planners had not received the moral and other support needed from their superiors, or it was wrongly assumed that the ARP Department had the plans.

At the last moment in the Crisis, the Government issued a plan for the evacuation of two million from London. The next day it was cancelled. According to an official of the Home Office, the plan had been developed in two and a half days[38]. In retrospect the decision to cancel was a fortuitious one.

Even if the United Kingdom was supposed to be "further ahead in the protection of the civil population . . . than any other country in Europe"[39], there was no question but that the nation had been caught in an unhealthy state of unpreparedness. On the other hand, it had transformed what reluctance there was left, into a determined effort to get ready for the event which now had become inevitable.

(To be continued)

37. Ibid., p. 147.

38. C. W. G. Eady, op. cit.
39. Ibid.

NUCLEAR CIVIL PROTECTION PLANNING IN THE UNITED STATES

by Hon. John E. Davis
Director, Defense Civil Preparedness Agency
U.S. Department of Defense

Presentation to the Civil Defense Committee
North Atlantic Treaty Organization
Brussels, Belgium — October 16, 1975

I have looked forward to meeting again with you, my colleagues and counterparts from the nations of the NATO alliance. I should like to outline the new emphasis on flexibility and options we are adding to the civil Defense Program in the United States.

But first, a few words on what we are continuing to do:

As I reported to this Committee previously, since the early seventies we in the United States have stressed the need for "full-spectrum preparedness" — readiness for both peacetime and attack emergencies.

The reason a civil defense program exists at the Federal level in the United States is to develop nationwide readiness for attack emergencies.

However, one could not, even if one wanted to, develop attack preparedness without at the same time developing improved readiness for peacetime emergencies — the tornadoes, floods, hurricanes, earthquakes, and other disasters which each year affect hundreds of local jurisdictions across our country.

That is why DCPA is designated a "civil preparedness" agency, rather than merely "civil defense" — with our mission being assistance primarily to local governments to help them meet all kinds of emergencies.

Thus the U.S. civil defense program cannot help but be dual-purpose in nature, valuable for both attack and peacetime disasters. This was recognized in the February 1975 Annual Report to the Congress by James R. Schlesinger, our Secretary of Defense*, when he said:

> "Developing flexible-response capabilities for use in case of a severe crisis or nuclear attack requires that local jurisdictions throughout the United States be able to conduct emergency operations to support and assist their citizens. *This in turn generates, as a highly desirable bonus, improved readiness to conduct coordinated local operations in peacetime emergencies or disasters.* Such peacetime capabilities are accordingly a secondary, but important, objective of the Civil Defense Program."

Peacetime emergencies for which U.S. communities must be prepared are, of course, not limited to natural disasters. As examples, communities near large airports should be prepared for the possibility of a major aircraft crash. Others may suffer major industrial or ground transport accidents.

Also, there is growing need for emergency operations planning to safeguard against potential nuclear power plant accidents. The world energy crisis is giving ever more impetus to construction of such plants.

One of the requirements for licensing of a nuclear power plant in the United States is development of an emergency plan, including both the plant itself and nearby local jurisdiction.

Remote as the possibility may be, local authorities must be prepared for a worst-case incident, which could result in accidental release of radioactive material to the environment. This in turn could require evacuation of people, and other emergency measures, in affected areas. There also could be accidents during transport of radioactive materials.

My agency works closely with the States, with the atomic energy authorities of the Federal Government, and with others concerned to assist with planning for such peacetime radiological incidents.

As the range of possible peacetime emergencies expands, our responsibilities for assisting State and local governments also expand.

What about the potentially most damaging hazard of all, nuclear attack? Certainly attack upon

*Mr. Schlesinger held that position when this address delivered to NATO.

any member of the Alliance, including the United States, is unlikely; and we trust this will remain so. But, as Secretary Schlesinger said in his February report to Congress:

> "With the differences that exist between our own social system and that of the USSR . . . it would be surprising indeed if there were not an extended period of time between the first steps toward detente and the more deeply cooperative relationship to which we aspire. Meanwhile, we must anticipate that moments of cooperation and agreement will alternate with periods of dispute and competition. In such circumstances the risk of confrontation, crisis, and miscalculation will remain present — as has been the case in the recent past." And, "There is also the ever-present possibility that a conventional conflict might escalate into a tactical or even strategic use of nuclear weapons." And finally, "We should make no mistake about it: There is no conflict among detente, deterrence, and defense. They are inextricably bound up with one another in the maintenance of an equilibrium of power."

What is the place of civil defense in this strategic context, in which defense and deterrence are so closely bound up with detente? The Secretary's report could not put it more plainly: "Our Civil Defense Program is, and has always been," he said, "an essential element of our overall strategic deterrence posture."

And at another place in the report, "The value of the current (civil defense) program is that it contributes to deterrence in a crisis and offers the prospect of saving American lives in the event that . . . attacks should actually occur."

What, then, is new about the U.S. civil defense program? What is the new emphasis on flexibility I mentioned at the beginning of these remarks?

At various times in the history of our program, there has been a tendency to concentrate perhaps too single-mindedly on a single tactic. In the early 1950's, it was shelter. Then in the latter 1950's it was "tactical" evacuation — getting people out of the cities, insofar as possible, in the 3 or 5 hours believed possible between the detection of a manned-bomber attack and the actual arrival of bombers over U.S. cities (and let me say that this approach made a great deal of sense, at least in most parts of the country, in view of the threat at that time). In the sixties we had the advent of the shelter program, concentrating on the hazard of radioactive fallout.

Today, we believe the U.S. program has attained a perspective and balance well-suited to the needs of the times. It contemplates a spectrum of possible contingencies, and it stresses flexibility of response. Thus, the program is being designed to protect the American people in case of a variety of possible attacks, delivered either rapidly or after a period of crisis.

One possibility is a short-warning, all-out attack. This obviously would require that people in targeted cities take the best shelter they could reach in 15 to 20 minutes. People in non-targeted areas would have more time to seek fallout protection.

The possibility of short-warning attack is one of the reasons we have developed a new "all-effects" shelter survey. In cities, this survey identifies best-available protection against blast effects as well as fallout; and in rural areas it identifies best-available fallout protection.

But a short-warning surprise attack "out of the blue" has been said by the Secretary of Defense to be" . . . quite unlikely under the current circumstances . . . A nuclear attack on the United States . . . would most likely be preceded by a series of crises, and certainly by a sharp deterioration in our relations with the Soviet Union."

Thus, the U.S. civil defense program must be designed also against the possibility of such periods of crisis or confrontation. An obvious way to protect people against a potential threat is to move them away from the threat.

This is not news to people who live on or near the coast of the Gulf of Mexico, where precautionary evacuations are conducted from time to time when a hurricane threatens.

Hurricane Carla in 1961, indeed, gave rise to the largest movement from hazardous areas the United States has ever seen, with half to three-quarters of a million people leaving the threatened areas on the Louisiana and Texas coasts.

We have seen evacuations since, though not on so large a scale, in the face of other hurricanes, of floods, and of potential hazards from the release of chlorine or other toxic substances.

If time permits, it obviously makes sense to get people away from what may become hazardous areas.

It also clearly makes sense, in the United States, to develop a capability to help people move, during periods of severe international crisis, from areas which could face the risk of enemy attack.

What might such areas be? One obvious set of "risk areas" is communities which lie near bomber

or intercontinental missile bases — in short, key military installations. If there should be a threat of attack on these strategic offensive (so-called "counterforce") installations, we would need the ability to help people move from these areas and then to protect them — and the rest of the U.S. population — against radioactive fallout.

Another option also is needed: the ability to assist people to move from all of the major metropolitan areas of the United States, as well as from the military "counterforce" areas. The fundamental reason we need this capability is that the USSR has given a great deal of attention to civil defense, including, as the Secretary put it,

> ". . . not only the construction of shelters . . . but the preparation of plans for evacuation of the bulk of the population from its major cities in the event of a crisis . . .
>
> "We believe the United States should have a similar option for two reasons: (1) to be able to respond in kind if the Soviet Union attempts to intimidate us in a time of crisis by evacuating the population from its cities; and (2) to reduce fatalities if an attack on our cities appears imminent."

To recapitulate, the Department of Defense sees the need for civil defense *options;* for flexible response as the situation may require, which include:

- Ability to protect people in-place (that is, at or near their places of residence); and
- Ability to help people move from risk areas during a crisis — either (a) on a selective basis, should key military installations be threatened; or (b) from all metropolitan areas as well as areas near "counterforce" military installations.

These flexible-response options are what the Secretary is referring to when he talks of civil defense as being "an essential element of our overall strategic deterrence posture."

We have decided to mark the change to this flexible-response posture by introducing a new term "Nuclear Civil Protection" (or NCP) planning. On August 4, 1975, we issued a Civil Preparedness Circular which points out that Nuclear Protection planning will provide for the two options of (1) protecting the population in-place; and (2) orderly relocation of people from some or all high-risk areas, should national authorities elect to implement relocation plans during a severe crisis — and should time and circumstances then permit relocation — as well as the reception, care, and protection of the relocated people in low-risk host areas.

I emphasize that while we have started development of these flexible-response options, we have only started — and we propose to move in careful and prudent fashion, a step at a time, over the next several years.

It is one thing to assume that 70 percent of the U.S. metropolitan population could be relocated to lower risk areas, maintained there for a week or more, and be protected from fallout.

It is another thing to do the detailed planning required for movement and traffic control, providing for reception and care of relocated people, and protecting them from fallout.

We have been conducted research and pilot projects on crisis relocation for over 2 years, however, and are confident that credible and workable plans can be developed for most parts of the United States — certainly for all but the most heavily urbanized areas on the East Coast and in California.

And as I shall outline in a few minutes, we are also starting feasibility studies to develop special solutions for these areas.

Based on pilot work in San Antonio, Texas, started over 2 years ago, we developed a manual for the first phase of crisis relocation planning. This includes allocation of the risk-area population to surrounding host areas, and development of standby information for the public — to be published during a crisis — on "where to go and what to do" should relocation be implemented.

Using the planning manual as a basis, we trained Federal-State teams, and they since have completed the first phase of crisis relocation planning in nine additional pilot-project areas, in States from New York and Massachusetts in the eastern United States to Montana in the West.

We continued in Texas with the second phase of relocation planning, which involves reception and care of people who are relocated. We assisted State and local government authorities in developing plans for operation in so-called "host" communities — rural counties outside cities such as San Antonio, Waco, and Port Arthur, Texas.

There are, of course, a number of problems involved in developing contingency plans for the relocation of millions — potentially scores of millions — of people during a period of severe international crisis.

As an example, how can people be fed in host areas where the population could be doubled or tripled in a few days?

And, is there any way to predict just how many people actually would leave major cities or other risk areas during an intense crisis, even if national authorities advised them to relocate?

A question that comes immediately to the mind of any local civil defense professional is how enough fallout protection can be provided or developed in host areas, when not many non-metropolitan counties have enough existing shelter for their own people? This is an especially acute problem in our southern States, where there are few basements.

The answer, in general, to this final question is to find the best existing protection, and then determine what can be done during a crisis to improve it.

Therefore, we have developed and are now conducting a "host-area survey." This identifies three types of protection for use by State and local planners: The first is "congregate-care" space. This includes buildings in which evacuees can be housed temporarily. Some of the first choices are schools, churches, motels, and also commercial structures.

The other two types of space identified by host-area surveys are best-available existing fallout protection, and buildings where the fallout protection (or PF) could be upgraded by work done during a crisis.

Thus, the host-area survey produces a one-sheet form, for each building examined, which shows not only the existing PF but also the amount of earth that would have to be added at the sides of the building and overhead to improve the fallout protection to PF 20, and where feasible to PF 40.

Results of host area surveys conducted in the summer of 1974 make us optimistic that in most areas fallout protection for evacuees *could* be provided during several days of severe crisis. The surveys found enough existing or upgradable space for more than the total of host area populations plus city evacuees. In fact, the overall figure was 123 percent of the total requirement!

As for existing space, substantially more fallout protection was found than previously was known to exist. In more rural counties, the inventory of identified shelter was doubled — though it still isn't adequate in many rural counties.

As for upgrading existing buildings, if appears that by actions taken during a crisis it should be feasible to add large amounts of shelter with a protection factor of 20 or greater.

The amount of earth needed averages about half a cubic yard for each space upgraded — more for some buildings, less for others. That's a considerable amount of earth to be moved, but not an overwhelming amount. It would total something like 40 or 50 buckets full, on the average, for each PF 20 or greater space produced.

So, it appears there are reasonably feasible solutions to the problem of fallout protection, in most parts of the United States. Similarly, I can report there are good grounds for confidence that solutions can be developed also for other operational problems, such as movement, or provision of food or medical care for evacuees.

Time does not permit discussing these matters in detail, but we do have research projects underway in these and related areas, and there is every indication that the problems associated with crisis relocation can be solved, given adequate effort invested in planning.

The Northeast section of the United States, California, and a few other highly urbanized parts of the country obviously present special problems: and just as obviously require special solutions.

In what we call "The Northeast Urban Corridor," from Washington, D.C., through New York City and Boston, the bulk of the people live in larger cities that could be subject to attack.

If most of the people in these cities were relocated during a crisis, the host jurisdictions could experience a quintupling of their population. Problems of feeding, temporary lodging, sanitation, and medical care thus would be more difficult than in less densely urbanized States.

For these reasons, we recently have commenced a special feasibility study for the Northeast Corridor. Even here, initial analyses suggest that viable solutions can be developed for crisis relocation.

In the year ahead, we shall be analyzing the movement capacities of automobiles and of rail and other transport in the Northeast. We shall direct our inquiries also to housing, food distribution, sanitation, medical care, and fallout protection.

We expect to be making these analyses with advice and assistance from State civil defense personnel in the Northeast, and we will be reviewing, with the State Directors concerned, options resulting from the feasibility study. If State officials agree that the study points to the general feasibility of crisis relocation operations in the Northeast, we then will move on, with them, to more detailed joint planning.

At this time, the consensus of State Directors in the Northeast is that we should press ahead with the feasibility study. If an unprecedentedly severe international crisis should arise, the Governor of each State would turn to his Civil Defense Director for advice on what instructions should be given to the public.

People undoubtedly would be seeking advice and instructions; and a great many could evacuate sponteaneously — a reaction to potential danger seen in many countries during the second World War and since.

While we thus are making special studies to develop solutions for the Northeast, we are moving ahead with initial planning for other parts of the country. We are working with the States right now to develop schedules and approaches for Nuclear Civil Protection planning for the year ahead.

A final question may occur to you: What do elected governmental officials think of the idea of Nuclear Civil Protection planning, especially of contingency plans for relocating people from larger cities during a period of severe crisis?

I'm glad to report that without exception local officials we've heard from to date agree that crisis relocation planning makes sense; and that it's far better to have a plan and hopefully never need it, than to need a plan and not have it.

To summarize, we are broadening the scope of the civil defense program in the United States:

- We are continuing to assist local and State governments in planning and preparing for a variety of peacetime emergencies and disasters.
- We are continuing to assist them in planning for the use of nearby shelter — against radioactive fallout in all parts of the country, and against both direct effects and fallout in the high-risk areas.
- Lastly — and this is a new addition — we are starting, in cooperation with the States, to develop contingency plans for relocating people from selected risk areas, or from all risk areas, should a severe crisis arise.

In closing, I would like to stress that the two options just noted — for protection under conditions of nuclear attack or of increased threat of attack — are complementary. Neither option can be sole reliance for survival.

In fact, we are emphasizing to the States that some degree of what we have called "in-place protection" would be needed for city residents in *all* situations.

In a short-warning situation, most or all of the people would need nearby shelter, that is, "in-place" protection.

In a longer crisis, relocation might not be decided upon. In this case, most people would remain in the cities and would need in-place protection. Or, relocation might be called for, but attack come so rapidly, that a substantial number of people would still be in the cities.

Finally, even an attack coming after successful relocation of people would still find a certain number in the cities and needing "in-place" shelter. Examples could be employees of key services or industries. In addition, there undoubtedly would be some people who would not leave their homes and livelihoods, no matter how threatening the situation.

Our motivation in developing the two-option approach in Nuclear Civil Protection planning is, of course, the great potential payoff in saving lives. Protecting people in-place has the potential of saving up to 30 million people in the United States, as compared to the total killed if there were no civil defense.

Effective crisis relocation from risk areas could add an additional 65 or 70 million survivors.

Beyond the life-saving capabilities of civil defense is its role in deterrence. As Secretary Schlesinger has pointed out, civil defense "contributes to deterrence in a crisis."

While the mainstay of deterrence is provided by strategic offensive forces — bombers, and land-based and submarine-launched missiles — we surely would be remiss if we failed to develop those civil defense capabilities which can add to deterrence . . . and which have proven value in peacetime disasters as well. ▲

THE LONDON UNDERGROUND DISASTER

Chief Inspector B. E. Fisher, M.B.E.

"Send an ambulance to Moorgate Station, a train driver has been injured". This single "999" emergency call to the London Ambulance Service Controller on duty at 0848 hours on Friday, 28th February, 1975, was just another normal emergency call, nothing to become alarmed about, despatch two ambulances though as this is the rush hour and there might be other problems. To an experienced Controller there was nothing unusual in this message, none of the flood of "999" calls to the one location that could indicate anything serious.

Although unknown at the time, that brief cryptic message was to herald the start of a six day disaster intervention operation by 1,324 firemen, 80 ambulancemen, 240 police officers, 16 doctors, three hospitals and numerous other personnel from many services and organizations.

The Location

Platform No. 9 at Moorgate Underground Station, situated 52 feet below ground. A terminal platform ending in a blind tunnel 66 feet long and used by six-car trains on the Highbury Branch of the Northern Line.

The Accident

At 0846½ hours a signalman working in his signal cabin at the north end of Platform No. 9 heard a train approaching the station. On looking out of his cabin he saw the train entering the platform at a fast speed (later estimated to be between 39½ and 40½ M.P.H.) and almost immediately heard a loud bang and the sound of breaking glass. He ran from his cabin, saw the apparent extent of the incident and, returning to his cabin, initiated the one and only emergency call notifying the incident to the emergency services.

*ABOUT THE AUTHOR

Chief Inspector Brian Edward Fisher, M.B.E., is the Emergency Planning Officer for the City of London Police, England. He has been involved with Emergency Planning since 1968. Since that time he has lectured to many police forces and other organizations throughout England and Wales. He has made an extensive study of the Swiss and German Intervention Systems and has been called upon to present papers at International Conferences in Geneva, Switzerland; Mainz, Germany and more recently in Beirut, Lebanon. He is the Secretary of the London Emergency Services Joint Planning Committee, which is responsible for the co-ordination of contingency planning for all the emergency services in the London area.

In February, 1975, he was at the scene of the Moorgate Underground Disaster shortly after it occurred and was the Police Incident Officer responsible for co-ordinating the life-saving, rescue and recovery operations. The incident continued for six days, during which time the officer remained at the scene except for brief periods of rest of a few hours during the quieter periods of the operation.

The Scene

Having failed to stop at its normal stopping point, the train had continued to travel through a sand drag, demolished a hydraulic buffer stop on entering the tunnel at the southern end of the platform and had then left the track. The front of the train had struck the upper half of a solid wall at the end of the 66 foot tunnel. The impact had severely distorted, crushed and bent the first car into the shape of a hockey stick, it's centre being on the railbed and it's rear being compressed against the tunnel roof. The second car had partially buried itself under the rear of the first car, causing severe compression of its roof. The third car had ridden over the rear of the second car, causing it's roof to impact with the tunnel roof. The floor of the third car had come to rest at an angle of 20° and about one third of the car was within the tunnel. A total length of 118 feet of train had become compressed within a 66 foot long tunnel. The train had been fairly full of passengers and it has been variously estimated that a total of around 300 passengers were aboard at the time. A third of these had been travelling in the first two cars.

To the first observers on the platform it appeared that a four coach train had entered the tunnel and that the leading coach (in fact the third coach) had jammed itself into the roof of the tunnel some 18 feet inside the tunnel.



The City Police Control Vehicle in action at the Scene.

Alerting of Emergency Services

The Ambulance Service had received the first (and only) emergency call at 0848 and had dispatched two ambulances to the scene.

The first notification to the police was at 0850 when a passer-by tapped on the window of a police patrol car stationary in traffic some 150 yards from the station and said to the crew "I think there is an accident at the Underground Station" indicating Moorgate Station.

The crew immediately attended Moorgate Station to find no outward appearance of an emergency. Officers spoke to station staff and were told there had been a "little accident" on No. 9 platform. Even then, the extent of the accident was unknown. Unlike the majority of major incidents there was no possibility of observers gaining a



The author and the Ambulance Incident Officer.



The scene that faced the first rescuers on their arrival at the platform. Photo show the rear half of the third coach, the first two coaches are embedded into the tunnel.

general impression of the whole incident at one glance. The following report of one of the first officers on the scene well describes the situation:—

"As I went down the escalator all appeared normal, passengers were travelling up and down the two escalators. When I reached the platform I saw an underground train standing at the platform. At first glance all that appeared abnormal was the lack of carriage lights and a pall of black smoke and dust in the atmosphere. I noticed people walking along the platform, I genuinely thought they were all West Indians or Africans as they were completely black. Seconds later I realized they were covered in soot and grime. I started to assist persons who were helping walking casualties, I still did not realize the extent of the incident. Someone called for help from the front of the carriage in the tunnel, I went into the train to find him, then I saw a mass of twisted steel in the reared up coach. As I moved forward in the coach I realized that there were further coaches in front of it. Having ensured that a fellow officer was relaying information



Looking down the tunnel during the recovery operation.



Rescuers removing a casualty from the scene some 12 hours after the incident.

to my Control Centre I crawled through the coaches to assess the situation. As I moved forward I helped injured persons back through the train. I could not reach further than the rear of the third coach inside the tunnel. The full impact of the situation hit me and I know there would be a lot of fatalities discovered before very long".

With information now flowing back to ambulance and fire control centres the seriousness of the incident was becoming apparent. The fire service were informed at 0857 and from this point onwards the build-up of emergency intervention services commenced in earnest.

The Build-Up of Operations

The City Police purpose — designed incident control vehicle, equipped with all necessary communication equipment, and support items, to cover the first hour of any major incident operation, was immediately dispatched to the scene, where much of it's equipment was put to immediate use. It established a joint services control area at surface level and was joined by fire and ambulance service control vehicles and personnel. In view of the nature of the incident a combined forward control point was established on the platform where the incident had occurred.

A casualty loading point was established by the ambulance service at the station entrance and an ambulance parking point some 100 yards north ensured that the immediate area did not become saturated with waiting vehicles. From the outset police imposed a firm control on the parking of all emergency vehicles and thus ensured an orderly and free approach and departure route from the scene throughout the operation. British Transport Police officers were soon in attendance and assumed direct responsibility for police operations within the station area, assisted by officers of the City Police throughout the operation.

A prime necessity in the early stages was some form of lighting of the scene. Stockpiled police emergency lighting was installed quickly and provided sufficient light to enable the rescue operation to be carried out. This lighting was later replaced by more permanent lighting installed by the London Transport Executive.

It is a known fact that radio communications are severely restricted once transmitters are moved below ground level and by 0915 hours it was apparent that such failure would severely hamper contact between the forward and base controls. Police and fire personnel installed field telephone communication between the two controls. This communication remained in operation throughout the incident. The previous expertise of police retained since the days of Mobile Column Training was put to good use in installing the equipment. The Fire Brigade introduced an experimental radio communication link known as "Figaro" which had been specifically designed for underground opera-

tions. In the event this link proved completely reliable and ensured rapid communication for the essential fire service commitment during the incident.

The rescue and removal of casualties was the prime consideration. Having ensured a feed-back of information to the Police Control Centre, the first police officers on the scene quickly became involved in the removal of casualties from the incident. Initially a first aid point was established at the platform foyer. The early flood of lightly injured, shocked and bruised casualties were treated at this point and then moved in groups escorted by police, fire and ambulancemen to the surface for removal to hospital. The first casualties left the scene by ambulance at 0904. A mobile medical team had been dispatched from the designated hospital and upon arrival at the scene established a supportive treatment centre on an adjoining platform, further mobile medical teams later attended in support of the first team. With the removal of lightly injured casualties being completed a triage point was established at the platform foyer area where the more serious and trapped casualties now being extricated from the wreckage were assessed by doctors. If supportive treatment was required this was given at the nearby emergency centre before casualties were removed to the surface.

It should perhaps be mentioned that the rapid organization and co-ordination of intervention was greatly enhanced by the fact that senior officers of all services were personally known to each other through their frequent contact and exchange of ideas throughout previous years when plans were being formulated and exercised.

As sufficient fire and ambulance personnel attended the scene to take up their acknowledged rescue responsibilities the police officers already engaged on such duties were, by pre-planning, withdrawn and reallocated to their specific duties as police officers.

Under the pre-planned procedures streets in the vicinity of the incident had been closed to traffic by the traffic division of the Force and ambulance routes to and from the various hospitals were policed at all junctions to ensure the smooth and unhampered passage of casualties to hospitals and specialist treatment without undue delay. Each ambulance or group of ambulances was additionally escorted by two police motor cyclists.

By midday 70 casualties had been removed from the wreckage. The rate of removal then slowed down as the degree of trapping in the wreckage became more acute. In the next hour 6 casualties were removed and a further 5 in the following hour. By 1515 it was generally accepted that only two persons were left alive in the wreckage. These were both severely trapped and fire rescue teams worked non-stop to release them. They were subsequently released during the late evening.

Following release of the last casualties a period of silence was imposed over the scene whilst a call-and-listen procedure was carried out to confirm there were no more signs of life. All coaches and track areas were searched for victims and all bodies detected were examined by a doctor for signs of life. Fire brigade and railway engineer's personnel then commenced the task of removal of debris and the release of trapped victims. From the outset of the incident a police property post had been established to receive property found in the wreckage and this post remained in operation throughout the recovery phase. All items of property were logged and placed in plastic bags by British Transport Police officers.

The rescue of living persons having been completed, City Police operations became mainly confined to duties on the surface whilst British Transport Police remained responsible for operations at platform level. However a continuous and close liaison was maintained between the two Forces throughout the remainder of the operation.

The Second Day

Throughout the day fire brigade and engineers personnel made steady progress in cutting away wreckage. Ventilation problems had become more acute. Whilst living casualties had remained in the wreckage cold cutting equipment had been used, now flame cutting equipment was introduced into the operation, thus using up valuable air supplies in the tunnel. Already a new smell — decomposing bodies — was mingling with the heat and smoke in the tunnel. London Transport Engineers installed power fans and ventilating ducting bringing in fresh air from booking hall level and this had eased the situation. The Ambulance Service supplied "shell" dressings soaked in mild antiseptic which rescuers secured around the mouth and nose, thus effecting the arrest of a considerable amount of dust and foul air. In spite of this artificial ventilation the atmosphere was still steadily deteriorating. News media publicity of the working conditions prompted many offers of solutions to the problem and of assistance with equipment being received from various organizations throughout the country. All offers were recorded by the

police and the information passed to London Transport engineers. In some instances offers of equipment were accepted and in particular the offer of an air refrigeration plant. As a result of this improved equipment some degree of easing in the atmosphere resulted.

The Third Day

Twenty six bodies had so far been recovered and fifteen bodies were known to be still within the wreckage. Rescuers were still not sure whether there were further victims trapped beneath the train. The City Police, by reference to their list of missing persons, estimated that the final death toll would be 41. In the event this subsequently proved to be the case, although two casualties had later died as a result of their injuries.

Whilst there had initially been no fire in the wreckage, the use of hot cutting equipment continually started small fires in spite of the removal of most combustible materials from the coaches. These were quickly extinguished and only on one occasion was there a need to evacuate the scene whilst a fire was brought under control.

The oxygen content of the tunnel was sometimes as low as 16% in spite of continued forced replacement of air. A further aide to circulating air was the shunting of an empty train backward and forward between the adjoining platform and the next station along the line. Anti-tetanus injections were being advised for all rescue personnel involved in the tunnel operations. At 1155 the doctor present insisted that all staff not engaged in rescue work be moved to the surface. Forward controls were withdrawn to booking hall level. Essential workers were only to perform 20 minutes work in the tunnel and then spend 40 minutes in fresh air on the surface. They were to wear face masks and gloves. All cuts were to be reported and personnel sustaining such cuts not to be allowed to extricate bodies. Personnel check points were set up by the police to enforce these limitations.

At 1500 hours a heads of services conference was held at nearby Wood Street Police Station. Progress reports were given and it became evident that extrication of the remaining bodies would be a protracted operation and working conditions would become increasingly more difficult and unpleasant as the working face proceeded deeper into the tunnel. It was also essential that the motorman's cabin be recovered without undue damage in order that railway accident investigators could gain the maximum evidence for their task.

Some systematic form of decontamination was deemed necessary, together with suitable protective clothing and equipment. Services reported that their stocks of protective clothing and equipment were now becoming very low. It was agreed that the City Police should act as quartermaster and that all requests for equipment outside the internal capabilities of services should be made through the police. The police would ensure that suitable equipment was obtained from commercial and Government suppliers and thus avoid a duplication of effort and excess of equipment at the scene.

A simple decontamination procedure was initially adopted at the scene. All personnel leaving the working area were required to walk through dams containing disinfectant and water for rinsing. Dirty clothing was deposited adjacent to the dams to await removal and recycling or destruction. The police established an equipment post adjacent to the station entrance and all personnel going to the scene were issued with protective clothing from this point. Substantial face masks with purpose designed expendable filters were obtained from a private supplier and the Ambulance Service assumed responsibility for ensuring their issue and correct fitment to all personnel proceeding underground. Notices giving personnel instructions as to personal protection and decontamination were displayed in the station entrance.

The Fourth Day

Early in the day the Health Authorities directed that rescuers engaged in removing bodies should completely change their clothing and have a shower on leaving the station. The decontamination dams remained and portable shower units provided by a private supplier and the Royal Army Ordnance Corps were sited adjacent to them. Two large single deck public service type vehicles were additionally sited alongside the showers for use as changing rooms. Police officers, using their hygiene skills from Mobile Column training days, erected a battery of portable toilets for use by the rescuers. Protective clothing continued to be cleaned and recycled and in this connection City Police cadets provided an invaluable service.

It was realized that the extrication of the remaining fifteen bodies would become an increasingly unsavoury task. Bodies had now swollen considerably, heads had taken on a grotesque size and exposed skin was blistering. By virtue of the swelling, bodies were becoming more secure in their trapped position. The heat in the tunnel was not allowing normal rigor mortis to set in and heavily

damaged parts were beginning to break open. By the evening it was realized that identification of bodies would become increasingly difficult. It was therefore decided, after consultation with H.M. Coroner, that pre-planned Air Crash Identification procedures, as laid down by the Board of Trade Aircraft Accidents Investigation Branch, would be instituted when dealing with the remainder of the bodies.

The Fifth Day

During the course of the day the remaining fifteen bodies were removed from the wreckage. An extrication drill had previously been formulated by the fire service in consultation with the police and ambulance services and all engaged personnel had been briefed in the procedures to be followed upon the recovery of each body. The system worked well, very little was said in the way of orders or general conversation during each removal.

Extrication of the motorman was a lengthy task as this body had to be carefully moved in order not to destroy possible evidence. After winching back the front of the train, police photographers were able to photograph the driver in situ, the Coroner was able to examine the motorman and his cabin and technical investigators were able to observe and record the position of the driver, controls of the train, etc. The body was then removed for pathological examination at the mortuary.

The Sixth Day

With the removal of the last body engineers were then able to remove the remainder of the wreckage, much of the fore part of the train was preserved for future examination at the London Transport Neasden Depot.

In so far as the emergency services were concerned, the major part of the day was occupied with recovery of rescue equipment and general withdrawal from the scene. Remaining road closures around the area were lifted in the early evening.

General Information

The majority of police activity at the scene was divided into two distinct sections. British Transport Police had, since the early part of the incident, been responsible for operations at platform level. These operations did not cease with the conclusion of the intervention by the emergency services. Officers of that Force spent many weeks obtaining the necessary statements and evidence for presentation at both the public enquiry into the incident and the Coroner's inquest into the cause of death of the victims.

City Police activity at the scene had, following the first day, been mainly confined to general security of the area, co-ordination of the whole operation, the provision of essential items of equipment and protective clothing and the supervision and control of decontamination procedures. In conclusion perhaps a few words on particular aspects of other activities connected with the incident are worthy of mention.

The Press and News Media

The incident occurring in the City close to the centre of the press world naturally attracted strong representation of the press and news media from a very early time. In accordance with pre-planned procedures a police Inspector was appointed "Police Press Officer" from the outset. He was always readily identifiable by his tabard and his allotted task was to closely liaise with London Transport Press Relations staff and senior officers of other services present in order to produce an accurate picture of the incident.

Formal press conferences were held at street level at regular intervals when confirmed information was released. Press representatives were also given the opportunity to seek confirmation on the many and often varied stories that they had knowledge of. On specific occasions, when a technical aspect of the incident was spoken about, representatives of the particular organization most suited to give such information conducted interviews in the presence of the Police Press Officer.

Due to the confined and enclosed nature of the incident itself it was not practicable to afford the press and new media continuous access to the platform level. Even to have allowed groups of all interested parties to visit the scene at specific times would have completely obstructed the rescue effort. In co-operation with the London Transport Press Relations Officer a representative body of some six to eight reporters and cameramen were escorted to the site by police at predetermined intervals. Once at the site they were permitted reasonable access to enable them to gain an appreciation of the incident and to obtain photographs. During the period that casualties were being removed from the station photographers and reporters had been given reasonable controlled access around the casualty loading point.

The willing co-operation of the press and news media representatives throughout the incident

subsequently drew favourable comment from all the intervention services involved.

Police Central Casualty and Enquiry Bureau

Under pre-planned arrangements the Bureau was established in purpose built accommodation at the Force Training Centre within 30 minutes of the incident occurring. It was staffed by trained police officers drawn from Force Training Centre staff (training had immediately been suspended when the incident occurred), and members of the City of London Police Fraud Department (this being a branch of police duty that can satisfactorily be suspended on such an occasion). Under pre-planned arrangements members of the Women's Transport Service (a voluntary Territorial Army Unit) were called in to increase staffing. This unit had been specifically trained for just such work by the Force and also provided a military radio communication link between the hospitals, the bureau and the scene of the incident.

The vagueness of early news media reports generated a total of some 2,000 enquiries from the public during the first 12 hours of the incident. Although equipped with ten ex-directory lines, the bureau operations were quickly affected by the deluge of enquiries. Consequently the Post Office Corporation were asked for assistance and within a matter of two hours had installed a further twenty ex-directory telephone lines into the bureau. This enabled the continuous availability of outgoing lines to be accessible to bureau staff for informing next of kin, relatives, etc., of circumstances surrounding casualties and victims.

From the outset police documentation staff had been dispatched to each hospital and the mortuary, where they recorded details of all casualties and victims received at each location. Completed documentation cards were then transported to the Central Bureau by police motor cycle dispatch riders.

In a few instances anxious relatives had proceeded direct to hospitals to enquire after their kin, such enquiries had been dealt with by the hospital itself and, where casualties were located at that hospital, the relatives were given facilities to visit them. Some of these relatives were later informed by police of the whereabouts of their kin after they had returned home, they having been unavailable when police had earlier made enquiry. This problem has now been resolved by ensuring that, in future incidents, where the hospital receives such relatives they will notify the police of the fact and thus avoid duplication of effort.

It is of interest to record that, although the accident happened to a reasonably localised mode of transport, enquiries were received at the bureau not only from places throughout the United Kingdom, but from Australia, New Zealand, Thailand, Malaysia, Singapore, Japan, the United States of America and the West Indies.

Although the main work of the bureau was completed in the first three days, the number of outstanding enquiries necessitated the bureau continuing in operation for a total of six days, even then 12 enquiries were still outstanding and were subsequently cleared up in the ensuing week.

The Mortuary

The majority of fatal casualties were initially examined at the scene of the incident by a doctor and certified as dead. This enabled their bodies to be transported direct to the mortuary. Others who were taken to hospitals and found to be dead on arrival were, by the authority of the Coroner, transferred to the mortuary. An initial rush of bodies had prompted police to establish a temporary mortuary, but this was quickly discontinued in the event proved to simplify the identification of victims by relatives in that they only had to visit one location.

Police officers of the uniform and C.I.D. branches of the Force performed duties at the mortuary. Many uniform officers were those normally employed on mounted duties (again this was a branch of police work that could be curtailed during such an incident). Procedures at the mortuary were under the charge of the Coroner and his regular Coroner's Officers. The following procedure for dealing with victims was established under previously made plans:—

- Body delivered to mortuary;
- Body allocated reference number and documented from visual examination only;
- Body transferred to Autopsy Room where officers stripped bodies of clothing and personal property, recording all descriptions on the previously partially completed documentation cards;
- Pathologists carried out autopsy whilst police officers recorded details of their examination at pathologist's dictation;
- Body placed in coffin and wherever possible clothing and property (in separate plastic bags bearing body reference number) placed in the coffin with the body;

- Body placed in chapel to await identification, property being discretely placed out of sight nearby;
- Body identified by relative or close friend;
- Persons identifying immediately attended inquest where Coroner took formal evidence of identification and released the body to the relatives;
- Relatives received personal property of victims. In most cases clothing was so soiled that the relatives were asked for permission to destroy it, which was invariably given. Clothing then destroyed by burning;
- Body released to private undertaker for burial arrangements.

By adopting this procedure a mortuary designed to take a normal maximum of 12 bodies was able to successfully deal with all 41 victims. However this had only been possible because of the staggered arrival of bodies and in other circumstances might have been found impracticable.

Conclusion

In giving this account of the incident detail has been concentrated on the involvement of the full time services. It should be recorded that valuable assistance was also received from the Women's Royal Voluntary Service, Salvation Army, British Red Cross Society, the clergy, general medical practitioners and many other full and part time services.

Lessons Learnt by the Police

1. In spite of extensive pre-planning for major incident intervention, the situation posed by this incident had not been foreseen. Plans had however, deliberately been kept simple and capable of adaptation by the police officer in charge to suit any situation with which he was faced. The incident clearly showed the value of such simple plans.
2. If control and co-ordination at an incident is to be established effectively, all necessary control systems and equipment must be despatched to the scene immediately so as to become available to the Police Incident Officer from the earliest possibly time.
3. Ideally, each service should appoint a quartermaster for ensuring adequate supplies of back-up equipment. The police are probably the best service to act as quartermaster for supplies required by any service which they cannot obtain from their own resources, thus avoiding any duplication of effort. To effectively perform this task police plans must include a continually updated list of agencies capable of providing specialist services or equipment.
4. Police plans should include a scheme for reallocation of duties at the time of a major incident. Planning should allow for non-essential police tasks to be curtailed and for pretrained staff to be allocated to pre-determined specialist duties in connection with a major incident situation.
5. The rapid co-ordination of various intervention services and organizations can be greatly enhanced by the meeting of senior officers of those services/organizations during the preplanning process, thereby enabling a direct personal approach to co-ordination being achieved at an incident.
6. The immediate availability of field telephone communication facilities and pre-planned emergency Post Office communication arrangements will ensure a positive line of communication from an early time following an incident.
7. Intervention planning must accept and allow for the natural human reactions of police officers. Police officers first on the scene WILL become involved in rescue of casualties. Plans must therefore provide for the subsequent withdrawal from such automatic activity as soon as the accepted rescue services are present in sufficient numbers.
8. All information regarding the incident, casualties, etc., should ideally be channelled through one outlet, thus ensuring a comprehensive and accurate release of information at all times.
9. Regular training of police, and supporting outside organizations, not only in their major incident procedures, but also the background procedures of other services, must be carried out and exercised if an incident is to be policed and co-ordinated successfully. ▲

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