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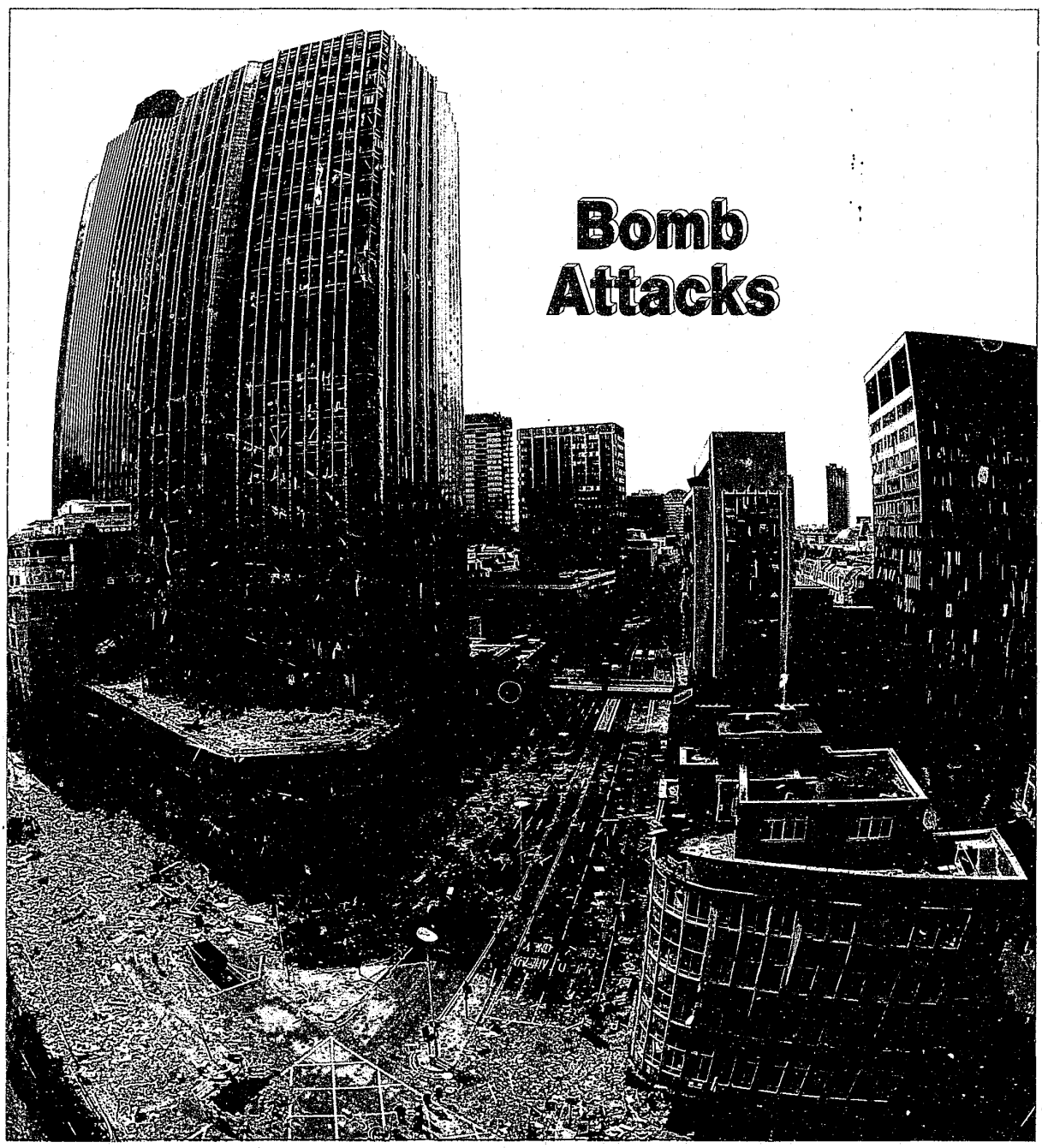
Bomb Attacks



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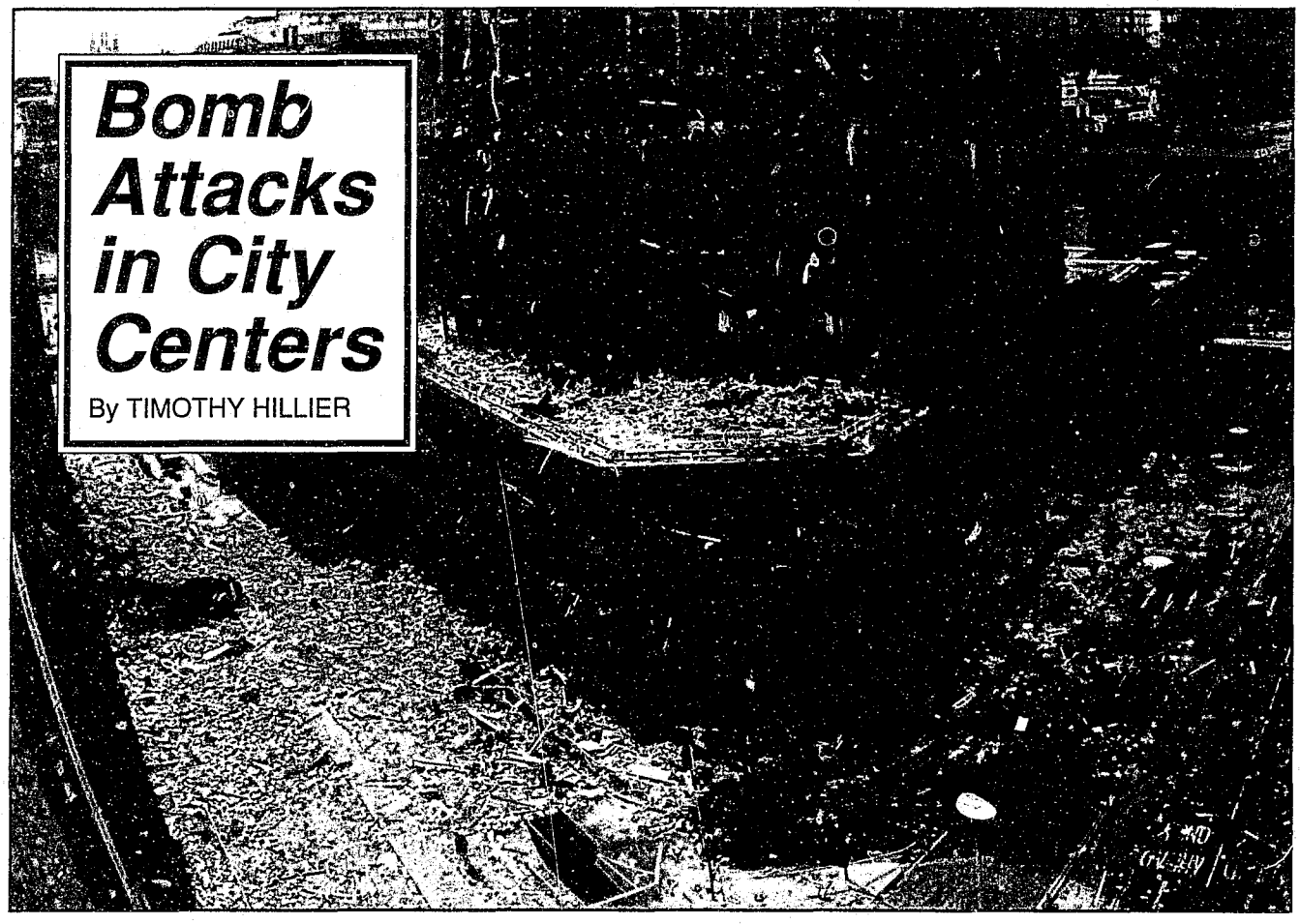

Bomb Attacks in City Centers

By TIMOTHY HILLIER

Massive explosions in London, New York, and other major cities worldwide clearly demonstrate that important financial districts have become prestigious targets for terrorist organizations, regardless of their motives. In addition to causing significant loss of life, these bombs can severely disrupt trade and economic transactions. Further, modern satellite communications broadcast grisly bomb scene images around the world within minutes, adding to the lure of this type of target for groups seeking media publicity.

The primary law enforcement objective must be to keep such incidents from occurring. However, as vividly revealed in London and New York, a democratic society with freedom of movement makes prevention difficult, at best. Therefore, police departments must be prepared to deal with the aftermath of bomb detonations in highly concentrated business districts to reduce deaths and injuries, to preserve the crime scene, to investigate the crime successfully, and to help local businesses recover quickly from the damage.

While the device detonated in New York's World Trade Center caused substantial problems, the injuries and damage undoubtedly would have been far worse and spread over a wider area if a similar or larger device had exploded in the street at the same time of day. Yet, the inevitable tightening of security within buildings will make the street bomb more likely in the future.

Within the past 2 years, two massive bombs rocked the streets of London's financial district. Terrorists used a truck to deliver the April 10, 1992, bomb that exploded in front of the Baltic Exchange. Just over a year later and only 200 yards away, a similar truck bomb exploded in front of Bishopsgate on April 24, 1993. Both devices contained homemade explosives consisting of ammonium nitrate

> "Police...should educate business owners and building managers and help them to develop individual contingency plans."

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fertilizer and sugar ignited by a commercial or military explosive, such as Semtex. Just as effective as military explosives, homemade explosives require more to get the same result. The bomb in Bishopsgate is estimated to have weighed between 2 and 4 tons.

Two aspects of the London explosions stand out: The scale of the damage, especially the amount of glass broken over such an extensive area—more than 400 meters (437 yards) in each direction—and the unpredictability of the blasts. The City of London Police learned lessons by dealing with these detonations that can help other cities prepare for such attacks. This article discusses how law enforcement can develop contingency plans for bomb incidents and prepare the business community for such a possibility.

DESIGNING A CONTINGENCY PLAN

When creating a contingency plan, police departments should take into account evacuation plans, pre- and post-bomb cordons, other emergency services, and changing bomb scene objectives. A thorough, well-rehearsed plan for coping with the aftermath of a detonation can help cities to reduce the devastating effects of a bomb, ensure maximum public safety, and return rapidly to normality.

Deciding Whether to Evacuate

When dealing with bombs in the street, London police previously had advised evacuation of the area in the face of a realistic bomb threat. However, significant problems prompted a revision of this advice. Difficulty in locating the bomb, the possibility of secondary devices (designed to attack police and placed where the terrorist believes police will rendezvous), unreliability of warnings (if given), unpredictability of detonation time, and the dangers of flying glass and debris make it prudent to include the option of not evacuating onto the street. After all, what is the point of evacuating people onto the street only to expose them to substantial injuries from flying glass, shrapnel, and falling masonry?

Instead, evacuation to previously identified safe areas within buildings away from glass, such as in basements, should be considered. This option proved itself when the Bishopsgate device was detonated, and persons near the explosion evacuated to a subbasement. Although shaken, occupants of the building sustained no serious injuries. In addition, experience has shown that a total collapse of buildings is unlikely, even for those structures close to the device.

Clearly, though, a direct threat to a building itself or a device planted within a building, as opposed to on the street, requires evacuation. It must be emphasized that only qualified structural engineers can give advice about safe areas. Not every building will have a suitable area, either in terms of safety or sufficient capacity, so evacuation planners should designate additional or alternate sites, if possible.

Pre-Bomb Cordons

Plans should be designed for both pre- and post-bomb cordons because the requirements differ. Pre-bomb plans assume the luxury of prior knowledge of the device, either through its discovery or a warning. Because warnings can be unreliable, extreme caution should be exercised. For example, London police received a warning about the Baltic Exchange bomb, but the tipster incorrectly placed it one-quarter of a mile from its actual location.

In the London Police Department's experience, large car bombs in the street require a minimum cordon of 400 meters (437 yards), or more than the length of four football fields. An explosion can cause injuries and damage even beyond this distance, so everyone should exercise caution near the perimeter. Considering this scale in the center of any city, the enormous difficulties encountered with pre-bomb cordons become apparent.

Occupants of the danger zone should be warned immediately so they may seek a safer location. Yet, to effectively warn the vast number of people in a large business area poses an insurmountable problem to police because people are bound to be missed. However, improvements in the warning mechanisms that require minimum input from police to reach the maximum area can help. The City of London Police has implemented two new warning systems—one high-tech and one surprisingly traditional.

First, the city established a dedicated pager system to warn people simultaneously throughout the city. Building managers or security officers can rent pagers that receive messages from police about suspected bombs. The messages indicate the device's location and size, if known, so that the recipients know whether their building is at risk and what precautionary measures to take.

Second, officers on the beat carry whistles again. Radios had replaced whistles some time ago, but when police tried to shout warnings to pedestrians, everyone ignored them. The loud, piercing sound of whistles, however, attracts attention and reaches farther, enabling more people to hear the warning.

Post-Bomb Cordons

The chaotic aftermath of a bomb presents a different set of considerations. Damage from bomb explosions usually covers a vast area, necessitating both inner and outer cordons.

The outer cordon marks the farthest extent of the damage and serves safety and security purposes. After the blast, tons of glass fall and continue to fall, often from great heights, presenting the most hazardous effect of the explosion. For example, at the Baltic Exchange bomb site, workers cleared 500 tons (1 million pounds) of glass shards and debris from the street. Glass and fragmentation cause most of the injuries, and therefore, should be foremost in the minds of those responsible for preparing contingency plans.

> ***"The whole thrust of the response must be multiagency coordination...."***

Several other factors impact the placement of the outer cordon. In addition to the street-level destruction, damage occurs to underground railway systems, electric and gas lines, sewer and water pipes, and telecommunications systems, either as a result of the initial blast or the subsequent ground shock. Vibrations from subway trains and from aircraft passing nearby can dislodge debris, adding to the hazards of the bomb scene, as could weather conditions. In terms of security, many offices, shops, banks, jewelers, etc., are blown open and become easily accessible to thieves.

The inner cordon marks the most severely damaged area and the crime scene. Officers must determine the extent of the crime scene as quickly as possible so that it can be preserved properly. As soon as it is considered safe, police must search this area thoroughly to recover bomb and vehicle parts and as much other evidence as possible. Of course, detectives may find some parts of the bomb outside of the crime scene area as well.

Emergency Services Coordination

The whole thrust of the response must be multiagency coordination, with all components (police, fire fighters, rescue workers, public works officials, and structural engineers) working in unison toward one goal—restoring normality. In the United Kingdom, the initial response to all such incidents, from train wrecks to bomb explosions, is the same, although the demands on the agencies will vary according to the different scenarios.

For every incident, the police control and coordinate the response, from initially ensuring public safety

Elements of an Explosion

Blast
Air being propelled at tremendous force and speed creates an over-pressure traveling outward in all directions away from the source for great distances.

Augmented Pressure
The pressure wave, reflected and channeled by the design of buildings and layout of streets. This causes the pressure effect to last longer and can increase structural damage.

Fragmentation
Any item that is part of or near to the bomb when it explodes becomes a projectile. The larger the explosive charge, the farther the fragments will travel. Fragments normally travel in a straight line but, like a bullet, can also be deflected.

Secondary Fragmentation
This occurs as the blast over-pressure hits and breaks structures, e.g., windows, doors, collapse of false ceilings, office equipment, etc.

Partial Vacuum
Return to normal pressure. At this stage, windows not destroyed by the initial blast may be sucked out.

Ground Shock
The transmission through the ground of the blast wave pressure. This causes problems with gas, water, electricity, sewers, telecommunications, etc., and may also cause structural damage to the foundations of buildings and subway systems.

(The density and height of buildings, the width of streets, the size of the device, the time of day the device is detonated, and whether a warning has been received exacerbate the effects of the explosion.)

through the final stages of investigation. Not trained or equipped to fight fires, deal with casualties, or advise on structural safety, the police must assist those who perform these duties. Regular meetings of all agencies working at the scene ensure that everyone works in unison.

Bomb scenes in the city immediately become hard-hat areas because of the damaged buildings. As a safety measure, all emergency services need to work under the advice of the local authority structural engineer, in coordination with the police. Use of heavy equipment to clear streets and shore up buildings should not occur until approved by local authority engineers. If these individuals are not readily available, recovery from the incident most likely will take much longer.

Fire and rescue teams must be able to access the area immediately. Therefore, although not a first priority, police must handle the traffic situation quickly, establishing alternate routes to ensure that emergency services can get to and from the scene and the hospitals.

As the dust settles, tremendous pressure comes from business owners to return to their premises as soon as possible. Indeed, in the zone between the inner and outer cordons, i.e., outside of the crime scene but inside the damaged area, the main aim should be for the dislocated tenants to resume responsibility for their own office space. To limit chaos at the scene, officials must plan carefully for the tenants' return and work closely with other services, taking into consideration safety and crime scene demands.

Changing Objectives

Primary concerns are to rescue casualties, to set up cordons, to evacuate everyone from within the inner and outer cordons, to preserve the inner cordon as a crime scene, and to institute traffic diversions. Yet, these objectives change as the incident gradually comes under control.

The emphasis shifts to making buildings safe and clearing the streets, minimizing cordons, minimizing traffic diversions, and returning tenants to their premises. As the objectives are achieved, the requirements for emergency services at the scene will be reduced. The area can be handed over gradually to city administrators to organize the structural recovery and to service the needs of the community for alternative accommodations, interim communications systems, etc. Contingency plans should prepare for the changing concerns in order to help make the transition safely and efficiently.

PREPARE THE BUSINESS COMMUNITY

While local authorities must be prepared to respond to bomb incidents, so should businesses that could be affected. Police, in conjunction with local authorities, should educate business owners and building managers and help them to develop individual contingency plans. Establishments located in potential target areas should prepare and practice contingency plans to deal with both pre-bomb and post-bomb incidents. Businesses should be made aware that film on windows and properly designed net curtains provide added protection and may reduce injuries.

Many emergency requirements apply to incidents other than bombs, such as fires, but it is critical to stress the differences as well. For example, there must be no confusion that fire procedures will always require evacuation, whereas bomb plans might not. Major problems will be encountered in moving the large number of people who occupy modern buildings, and these difficulties should be taken into account during the development of contingency plans.

> ***"The need to practice planned responses to bomb incidents cannot be overemphasized."***

Organizations (including emergency services providers) also need to consider the potential effect on their businesses if they are unable to use their premises for 1 or 2 days, a week, or maybe never. For example, contingency plans and computerized systems need to be stored or to have a backup at least one-half mile away. Security arrangements, identification of key personnel, telephone requirements, interim office space needs, and arrangements for contractors to make repairs and replace shattered windows all should be considered ahead of time to facilitate quick response to an explosion. By educating and working with the business community before a bombing takes place, police departments can help to make the response to such an incident run more smoothly, reducing casualties and minimizing the time required to restore order.

PRACTICE, PRACTICE, PRACTICE

The need to practice planned responses to bomb incidents cannot be overemphasized. In addition to the citywide plan, each of the emergency services must have its own contingency plan, which must be practiced, coordinated, and kept up-to-date.

These plans should include alternatives in the event that buildings housing the emergency services themselves (e.g., fire stations, police precincts, and hospitals) are damaged or destroyed. Just as businesses should prepare for being unable to use their premises, so should emergency response teams. Routine evaluation and revision of the city's contingency plan, as well as coordinated practice drills, should be scheduled.

CONCLUSION

All major incidents are demanding and stressful for both organizations and the individuals. This particularly applies to bombs, because they represent a deliberate effort to kill, maim, and cause the maximum damage, disruption, and cost. With appropriate planning and training, casualties can be reduced, and the main priority—restoring normality—can be achieved more efficiently and quickly. ✦