

"I congratulate Leeds City Council on its enterprise and commend the book to everyone who wishes to get some understanding of the horror of nuclear war . . ."—MICHAEL FOOT

"charming little book . . . well produced"—JOHN WELLINGTON Y.E.P.

"well researched and impartial"—BRITISH MEDICAL ASSOCIATION

"The first Local Authority in the country to publish in detail the predicted effect of a nuclear strike on the city"—GUARDIAN

"attempts to answer many questions"—YORKSHIRE EVENING POST

"the best booklet of its kind"—MONSIGNOR BRUCE KENT

"Its aim is to enable the people of Leeds to make up their own minds about nuclear weapons"—THE TIMES

"believed to be first of its kind"—YORKSHIRE POST

"It is admirable"—JAMES CAMERON

"Excellent"—MERLYN REES M.P.

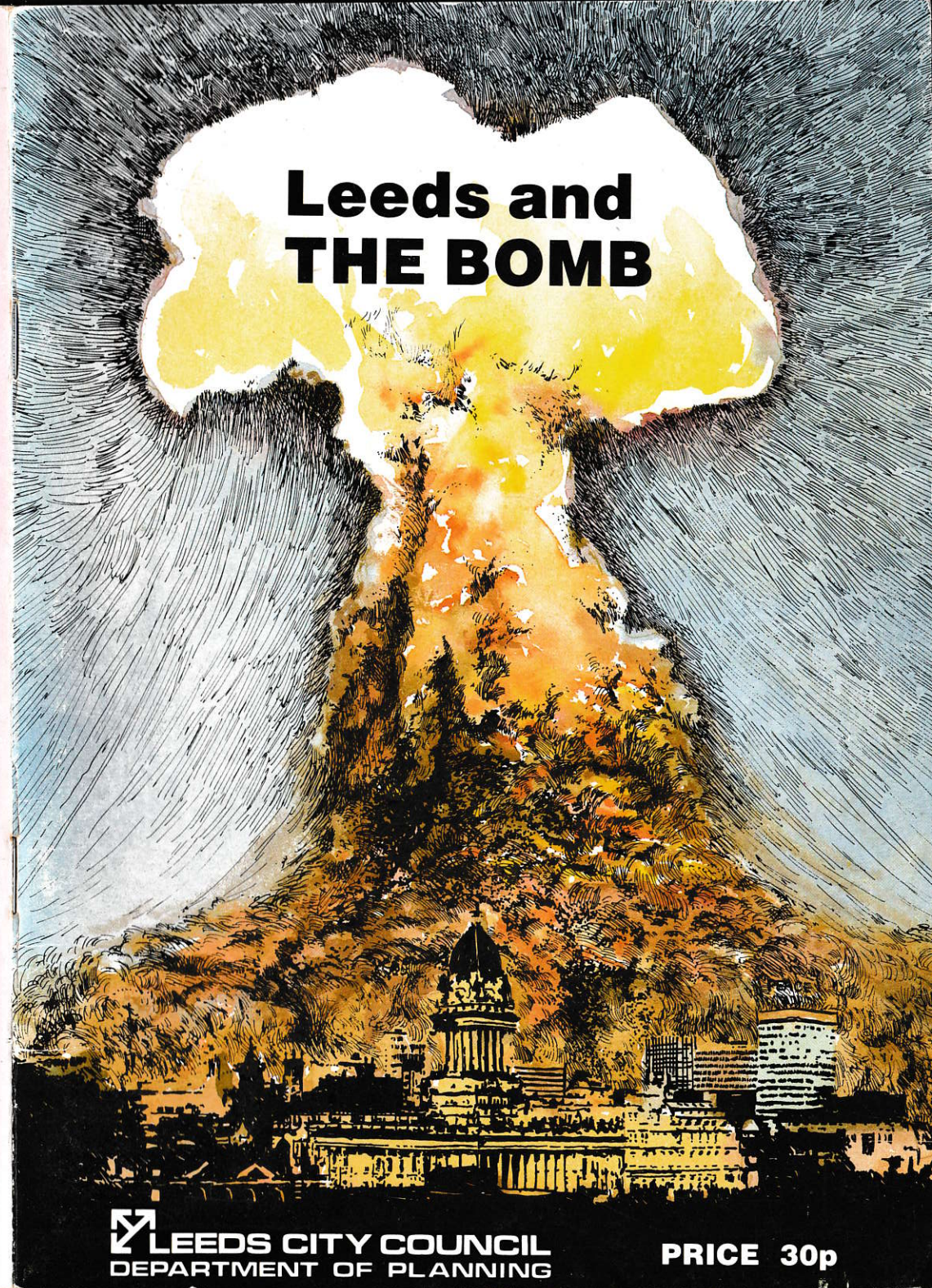
**Thirty six  
questions about  
YOU, THE BOMB  
and LEEDS  
answered**

**The A to Z of  
NUKESPEAK  
- nuclear jargon  
explained**

"It appears that the breakdown of specialised medical services would be complete after a major attack and that treatment would be limited to simple first aid measures and pain relief. The principle of most attention being given to those most likely to survive would replace the former concept that the most seriously ill should receive maximum aid. The health service in its present form would disappear after a major nuclear attack on this island."

BRITISH MEDICAL ASSOCIATION

Arthur Wigley & Sons Ltd., Cross Chancellor Street, Leeds LS6 2RT



**LEEDS CITY COUNCIL  
DEPARTMENT OF PLANNING**

**PRICE 30p**

## FOREWORD

Perhaps the greatest issue facing mankind today is the question of Nuclear Weapons. No one actually knows what would happen if there was a nuclear war. However, the City Council feels that it has a duty to ensure that the citizens of Leeds are aware of the possible consequences of a nuclear attack on the City. This booklet sets out an objective picture of what could happen to our community, family and friends.

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### DEvised BY AND EDITOR

Cllr Bryan North  
Chairman, Planning and  
Development Committee

### TEXT AND RESEARCH

Geoff Jones  
Research Officer  
Planning Department

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GRAPHICS: Mike Peace

MAPS: Richard Askham

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Planning Sub Committee

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**THIS BOOKLET USES OFFICIAL UNITED STATES  
GOVERNMENT INFORMATION ON THE EFFECTS  
OF NUCLEAR WEAPONS**

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Second Edition, May 1983

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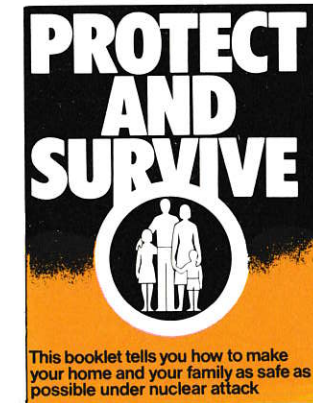
This booklet may be copied without the  
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## WHAT'S THE PURPOSE OF THIS BOOKLET?

You may already know that the City has been declared a nuclear free zone. In 1982, Leeds along with 140 other Local Authorities refused to take part in the Government's "Hard Rock" Civil Defence Exercise. The Government may now compel Local Authorities to take part in Civil Defence planning for a nuclear war. Home Office publications such as "Protect and Survive" appear to suggest that with a few simple precautions, the majority of people could survive a nuclear war. Another

Home Office publication, "Nuclear Weapons", in some scientists' view under-estimates the death and destruction caused by the bomb. Much objective research has been done by American and British scientists into the real effects and these present a very different picture. The City Council feel a deep responsibility that the people of Leeds should be made aware of the real chances of survival. The facts are set out in this booklet.



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## WHAT DOES THIS BOOKLET CONTAIN?

- p4-5, The Growth in Nuclear Weapons:** Ownership, power and types of weapons.
- p6-7, How a Nuclear War could start:** Escalation, overseas conflict, accidentally and the amount of warning.
- p8-9, The Effects of a Nuclear Explosion:** Types of explosion; light, heat, blast and fall-out.
- p10-15, What a one Megaton Bomb would do to Leeds:** Your chances of survival if the Town Hall were bombed.
- p16-17, The Prospect of a Real Nuclear War:** "Nuclear targets" in Northern England and what could happen to Leeds.
- p18-21, The Aftermath in Leeds:** Medical treatment, disease, water, food, energy, communications and government.
- p22, The Long Term Effects:** The chances of recovery, long-term health problems, dangers for the earth.
- p23-24, Civil Defence and Nuclear Deterrence:** How effective they really are.
- p25, What Ordinary People can do about the Bomb:** An invitation to make up your mind.
- p26-27, The A to Z of Nukespeak:** An explanation of nuclear jargon. If you come across a term you don't understand, turn to these pages.

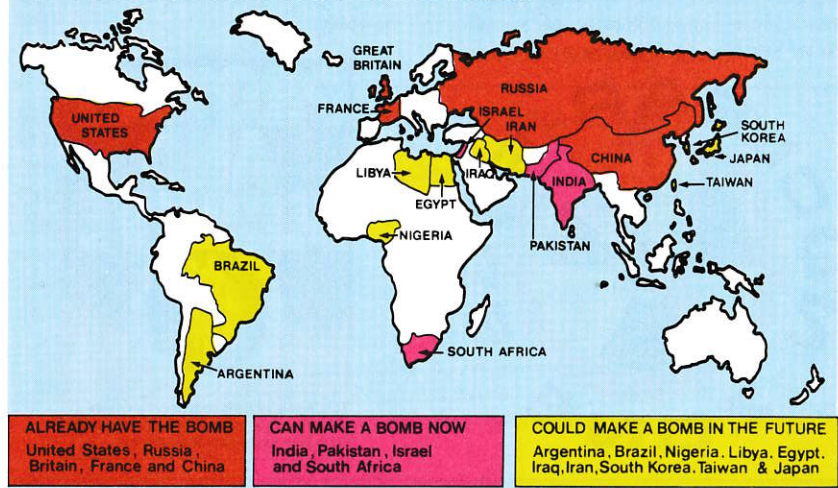
# THE GROWTH IN NUCLEAR WEAPONS

## WHO HAS THE BOMB?

The United States and the Soviet Union have the most nuclear weapons. In 1982 the United States had 9,500 strategic warheads and the Soviet Union approximately 8,500. These can be launched from land, from submarines at sea or dropped or shot from bombers. Britain, France

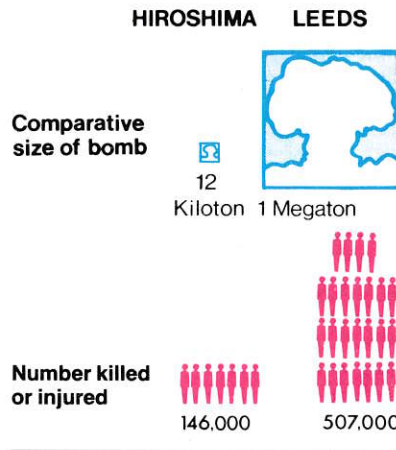
and China have them as well. India, Israel and South Africa may have them already. Argentina and Pakistan could get them in the near future. Others are developing them. Even terrorist groups may be able to make and deliver nuclear bombs. The general public does not know at whom all of these weapons are aimed.

The Countries which have or could make Nuclear Weapons.



## HOW POWERFUL IS THE BOMB?

The highly destructive power of nuclear weapons is usually referred to in terms of kilotons or megatons. One kiloton (KT) is equivalent to one thousand tons of the high explosive T.N.T. One Megaton (MT) equals a million tons of T.N.T. Trials have been held with nuclear weapons of up to 58 Megatons. The atomic bomb dropped on Hiroshima in the Second World War was about 12 Kilotons and it killed 68,000 people and injured 76,000. The bomb most likely to hit Leeds is a one megaton—70 times more powerful than the Hiroshima bomb. Such a bomb could kill or injure over half a million people in Leeds.



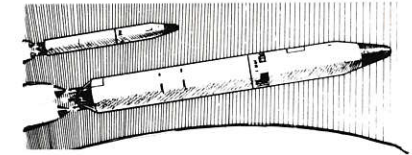
## HOW BIG IS THE NUCLEAR ARSENAL?

Between them, America and Russia have so many megatons of nuclear weapons that in a war they could produce about 4 tons of T.N.T. for

every person on Earth. Many different nuclear weapons have been developed but they can be divided into 3 main categories:—

### STRATEGIC WEAPONS:

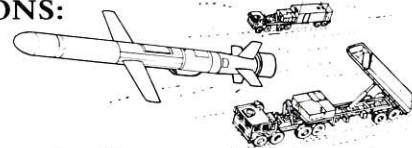
These are long range weapons. Land based missiles (ICBM's) have a range between 4,500 and 9,000 miles. Submarine launched weapons (SLBM's) have a range of between 1,500 and 4,500 miles but the new American Trident missiles have a longer range. The largest American missile is the 9 megaton Titan whilst the Russian SS-18 can carry a warhead of 10-50 megatons. Because they can totally destroy each other's cities they are sometimes called deterrent weapons. Some



missiles (MIRV's) carry a number of warheads which when released can accurately hit different targets. The total explosive force of all strategic weapons in existence is about 8,000 megatons. The number of strategic weapons trebled between 1970 and 1980.

### EURO-STRATEGIC WEAPONS:

Sometimes referred to as "Theatre nuclear weapons" or "Intermediate Range Ballistic Missiles" (IRBM's). These can be ground, submarine or air launched and have a range of about 500 to 2,500 miles. They include the very accurate Pershing II and the Cruise missiles soon to be deployed under the control of the United States in Europe. These new, more effective weapons, make all of Europe more



vulnerable to nuclear devastation. They carry smaller warheads but because of their accuracy they could be used as first strike weapons to destroy strategic missiles which are still in their silos.

### TACTICAL NUCLEAR WEAPONS:

These are short range nuclear weapons (up to 70 miles) intended for use on the battlefield. They include nuclear shells, small nuclear bombs and the neutron bomb. The USA has about 28,000 tactical weapons. Although not a direct threat to Leeds, these weapons have helped make nuclear war more possible by



introducing the idea of a "Limited" nuclear war in Europe. Europe, of course, includes Britain.

## HOW A NUCLEAR WAR COULD START COULD A CONVENTIONAL WAR ESCALATE INTO A NUCLEAR WAR?



If a conventional war broke out in Europe and NATO army divisions were overrun, then, in line with NATO's "flexible response" policy, tactical nuclear weapons could be used. In the ensuing chaos and destruction, communications could breakdown and the conflict could rapidly escalate. Russia might anticipate this escalation and could launch a full scale nuclear strike on Western Europe. Britain would be a prime target. Whether or not the Americans launched their inter-continental missiles or agreed to a ceasefire, it would be too late for Britain.

*"Our future on this planet, exposed as it is to nuclear annihilation, depends upon one single factor: humanity must make a moral about turn".*

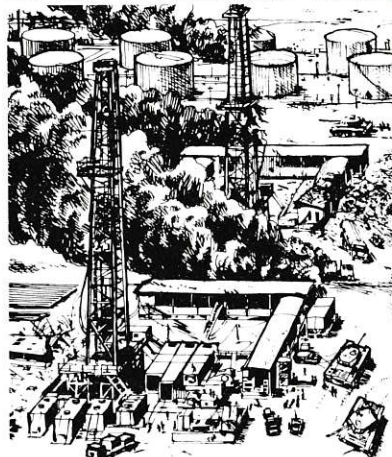
Pope John-Paul II 25/2/81

*"We fought World War I in Europe, we fought World War II in Europe and if you dummies let us, we will fight World War III in Europe".*

Admiral G. Le Rocque  
EX-US Strategic Planner

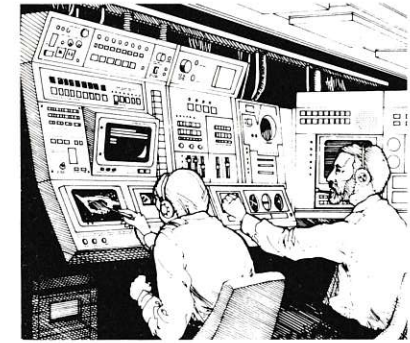
## COULD IT BE THE RESULT OF AN OVERSEAS WAR?

Imagine that the West's oil supplies are threatened by a revolutionary uprising in one of the Oil States. The U.S. government might believe the Russians are behind the revolutionaries and could send in NATO's Rapid Deployment Force. The Russians could respond by sending their own forces to the area. If the revolution intensified, NATO or Russia may intervene. Almost inevitably the other side would respond. The Russian response could be to attack NATO supply points in Europe. Whether or not nuclear weapons were used first in the Middle East or Europe, the conflict could escalate to a "Limited" European Nuclear War.



## COULD IT HAPPEN BY ACCIDENT?

The Americans are going to deploy Pershing II and Cruise Missiles in Europe. Pershing II can reach Russian targets in 5 or 6 minutes. The Russians have responded by threatening to adopt a "launch on warning" policy so that their own missiles cannot be destroyed in their silos. As a result of an accident or computer failure, the Russians might believe that an attack has been made against them and launch their own missiles. In 1980 American computers detected three nuclear attacks which were not actually taking place and began preliminary launch procedures. The complexity of modern technology has increased the chances of a nuclear war starting by accident.



*"It would be our policy to use nuclear weapons whenever we felt it necessary to protect our forces and achieve our objectives".*

R McNamara, US Secretary  
of Defence, 1961

*"so I repeat in all sincerity as a military man I can see no use for any nuclear weapons which would not end in escalation, with consequences that no one can conceive".*

Lord Louis Mountbatten, 1979

*"Nobody knows which dictator, madman or military junta will be able to put a finger on the button next. Or where that target will be".*

Daily Mirror

26/1/83

## HOW MUCH WARNING WOULD THERE BE?

This would depend on the circumstances in which a nuclear war broke out. There could be a prolonged period of international crisis preceding a nuclear war by several months. Or there could be a sudden crisis which quickly escalates into a nuclear war. In the government's proposed Hard Rock Civil Defence exercise there was a supposed 10 day period of diplomatic crisis, followed by 5 days of conventional war before a nuclear attack was launched on Britain. The government's own home defence plans suggest as little as 2 days warning. Once missiles are launched there could be as little warning as 5 or 6 minutes.

## THE EFFECTS OF A NUCLEAR EXPLOSION

### ARE THERE DIFFERENT TYPES OF EXPLOSION?

The damage caused by a nuclear bomb depends not only on its size and power but also on the type of burst and the weather—particularly wind strength and direction. There are three types of burst:—

#### Groundburst:

The bomb is detonated at or near ground level causing a huge crater surrounded by a rim of deadly radio-active soil. The debris from the crater is sucked up into the mushroom cloud. There it becomes radio-active. Later it falls back to earth according to the wind strength and direction. This gives a high level of radio-active dust or "fall-out" which can kill people over a very wide area.

#### Airburst:

The bomb is detonated in the air. The fireball doesn't touch the ground. Little debris is sucked up. Most of the energy of the bomb is released as blast and shock waves. These can destroy an area about 50% greater than a groundburst bomb of the same size. If it is detonated at a great height, an electro-magnetic pulse is given out which can knock out communications systems over a very large area.

#### Waterburst:

The bomb is detonated in the sea or a lake and vaporises the water. Later the water returns to Earth as an intensely radio-active rain. Nuclear depth charges have this effect.

### WHAT HAPPENS WHEN THE BOMB EXPLODES?

Only a minute after a one megaton groundburst hydrogen bomb hit the Town Hall **very little of Leeds would remain standing.** Immediately on detonation there would be a blinding flash of light and deadly nuclear radiation would be emitted. Within three seconds an intensely hot fireball some 9,000 ft. across would be formed. The familiar mushroom shaped cloud would then

rise into the sky. A blastwave travelling faster than the speed of sound and winds of up to 200 m.p.h. would then spread outwards across the city. Within hours radio-active fall-out would come down on most of the city. Blast and heat cause more casualties at first, but radiation can kill and injure more people in the longer term. Damage and casualties are caused by:—

#### Radiation and Light:

The initial flash of nuclear radiation could kill anyone out in the open in **Holbeck, Hyde Park and Chapeltown**—up to 1½ miles from the Town Hall. The flash of light could affect people as far away as **Yeadon, East Keswick, Garforth, Morley and Pudsey**—up to 8 miles away. Those looking directly at the explosion could be blinded.

#### Heat:

The temperature of the fireball can reach millions of degrees at its centre and many thousands of degrees at its edges. The heat flash could cause fatal burns for people out in the open or near windows in **Horsforth, Alwoodley, Whinmoor, Rothwell**



#### Blast:

Those reasonably protected from radiation, light and heat by being securely indoors at the time of the explosion would still experience the terrific force of the nuclear blast as the shock wave travelled over them. Most casualties would be caused by people being crushed as buildings collapse around them or either by being hurled into objects or being struck violently by debris, particularly by flying glass. Most of the Inner City and suburbs would be destroyed by the blast. Even as far away as **Yeadon, Bardsey and**

**and Middleton**—up to about 5¼ miles from the Town Hall. Those out in the open much closer to the Town Hall would certainly be incinerated. Very bad blistering of the skin would occur in places like **Rawdon, Scarcroft, Swillington, Ardsley and Calverley** up to about 6½ miles away. First degree burns could be received up to 8 miles away in places like **Guiseley, Harewood and Kippax**. Widespread fires would be caused by furniture and curtains being set alight in houses. Outside fires are started in woods, petrol stations or by burst gas mains. Fires can join together to cause a fire storm which can continue until there is nothing left to burn.



**Garforth** windows would be smashed and roof tiles ripped off. This could let a lot of fall-out enter homes.

#### Fall-out:

Most of the radio-active fall-out comes down within a few hours. It can kill people up to 50 to 100 miles away. In areas where a lot of fall-out has been deposited it can remain a deadly threat for 2 weeks or more. Most normal houses offer only limited protection against fall-out, particularly when damaged by the blast. Radiation destroys body cells and causes nausea, vomiting, diarrhoea, hair loss, anaemia, sterility, leukaemia and cancer. It

reduces the body's resistance to infection and disease. People usually do not know how much radiation they have received. Even low doses (below 100 rads) can cause sickness, sterility, long term cancers and genetic disease. Those exposed to a dose of 400 rads, over a day or two, become very ill and about 50% will die. At a dose of 600 rads hardly anyone will survive. The young, elderly, sick and injured are much more vulnerable to radiation sickness.



# WHAT A ONE MEGATON BOMB WOULD DO TO LEEDS

## WHY SHOULD LEEDS BE ATTACKED?

Both military and economic targets are likely to be attacked. The aim of a nuclear war is not only to destroy the enemy's fighting capability but also to prevent any immediate recovery. The government's civil defence exercises have included the prospect of a nuclear attack on Leeds. There are a number of military targets around Leeds—the Airport, the Royal Ordnance Factory and the U.S. base at Menwith Hill. A bomb could be

dropped on the city centre as it is a commercial and industrial centre.

The example of a one megaton ground-burst bomb at the Town Hall is used here to illustrate, simply, what could happen to Leeds in a nuclear war. It is assumed that the bomb is dropped without warning, on a clear day, at about 8 o'clock in the morning when most people are still at home.



Inner circle indicates area of crater  
Outer circle indicates rim of radio-active soil

## WHAT WOULD HAPPEN IN THE CITY CENTRE?

Suppose the bomb were detonated near ground level at the Town Hall. The General Infirmary, the Civic Theatre, St. Anne's Cathedral, Park Square and Westgate would disappear into a huge crater about 240 feet deep and 1,400 feet across. In the area of the crater, the network of underground services—gas, electricity, water supply, sewerage and telecommunications—would be ripped

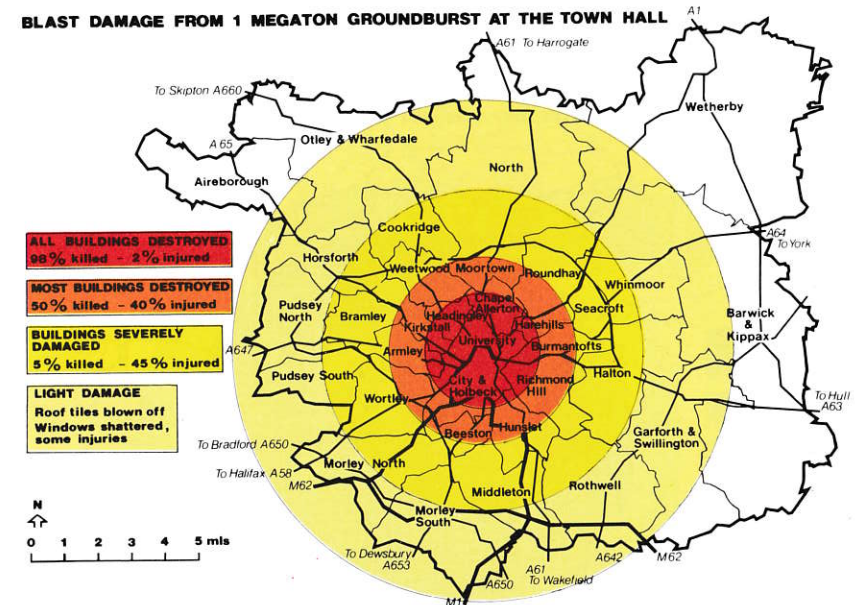
apart. A rim of deadly radio-active soil would be thrown up around the crater which would cover what was left of the city centre between the City Station and the University. **Nothing recognisable would be left between the River Aire, Woodhouse Moor and Quarry Hill.** This would all occur within seconds.

## WOULD THE INNER CITY BE DESTROYED?

The blast from the bomb would destroy everything up to about 1.75 miles from the Town Hall. Nearly the whole of **Burley, Hyde Park, Woodhouse, Chapeltown, Harehills, Sheepscar, Burmantofts, Cross Green, Holbeck and New Wortley** would be flattened. Parts of **Armley, Headingley, Chapel Allerton, Richmond Hill and**

**Hunslet** would be devastated. **St. James's Hospital, Chapel Allerton Hospital, Leeds Fire Station and two main police stations** would be crushed by the blast. Practically everyone would be killed in this circle of complete and utter devastation—almost 110,000 people would be dead or dying in seconds.

BLAST DAMAGE FROM 1 MEGATON GROUNDBURST AT THE TOWN HALL



## WOULD IT BE SAFE IN THE SUBURBS?

Up to 2.8 miles away from the Town Hall most buildings would be destroyed or irreparably damaged. Streets would be blocked with debris. Most cars, buses and lorries would be destroyed. Spontaneous fires would start and the whole area could become a fire zone. Little would be left standing in **Kirkstall, Headingley, West Park, Weetwood, Meanwood, Chapel Allerton,**

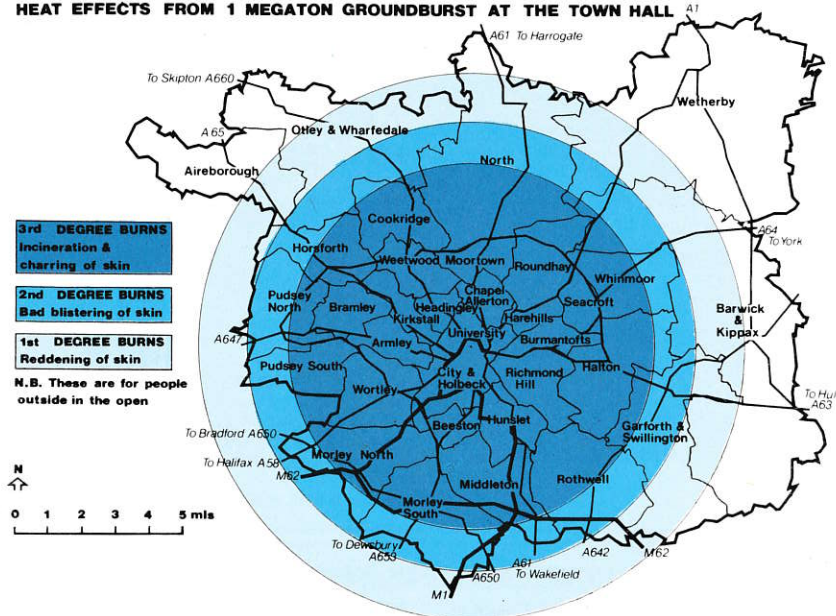
**Moortown, Gledhow, Oakwood, Gipton, Osmondthorpe, Hunslet, Beeston, Wortley and Armley.** Half the population would be killed and four out of five survivors would be injured. About 76,000 people would die and 61,000 would be injured. As many as half the survivors might die from their burns and others would die, sooner or later, from exposure to radiation.

## WHAT ABOUT THE OUTLYING TOWNS?

Severe to moderate damage would be caused up to 4.8 miles from the Town Hall. Buildings would lose their windows, frames and interior partitions. The contents of upper floors would be blown out and walls would crack. Debris would make most streets impassable. Fires would spread throughout the area which might destroy at least half the buildings. People out in the open or near windows could be incinerated. Most of **Bramley, Hawksworth, Horsforth, Cookridge, Holt Park, Adel, Alwoodley, Shadwell,**

**Roundhay, Seacroft, Whinmoor, Cross Gates, Halton, Rothwell, Middleton, Morley, Gildersome and parts of Pudsey** would suffer this damage. Even this far away from the Town Hall about half the people would be killed or injured—about 13,000 would die and 114,000 would be injured. Windows would be blown out and roof tiles ripped off as far away as **Yeadon, Harewood, Bardsey, Garforth, Drighlington and Calverley**. This could allow more radio-active fall-out to get into buildings.

## HEAT EFFECTS FROM 1 MEGATON GROUNDBURST AT THE TOWN HALL



## WOULD I BE AFFECTED BY RADIO-ACTIVE FALL-OUT?

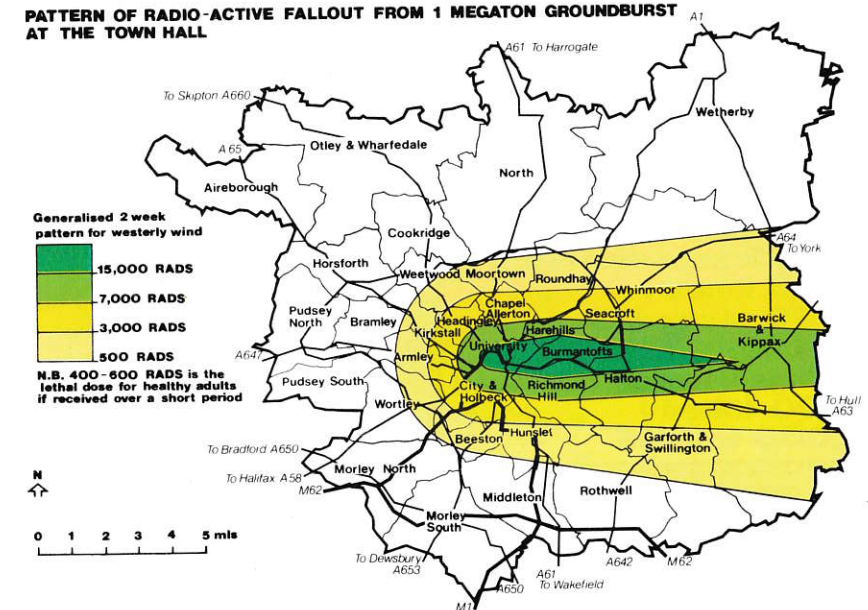
Because of variations in the weather and the lie of the land, it is very difficult to predict the exact pattern of radio-active fall-out. Usually, it takes the form of a plume downwind from the bomb burst about 6 miles wide

and over 24 miles long. Assuming that the prevailing wind in Leeds, a westerly, was blowing at 15 mph, radio-active fall-out would be deposited in lethal doses in the first two days over most of the Inner City and suburbs (up to 2.8 miles from the

Town Hall) and in a broad band stretching from about **Thorner to Oulton** as far out and beyond **Aberford and Ledsham**. Most of the outlying towns and villages in **east Leeds** would receive between 4 and 30 times the fatal dose of radiation. As

ordinary houses offer only a limited amount of protection from radiation most of the survivors of the initial blast would be at risk of receiving a lethal dose of radiation in this area—about 245,000 people—more than the number killed by the initial blast.

## PATTERN OF RADIO-ACTIVE FALLOUT FROM 1 MEGATON GROUNDBURST AT THE TOWN HALL



## HOW MANY CASUALTIES ALTOGETHER?

Over half the City's population of 713,000 could be killed or injured by the initial blast. About 196,000 could be killed (27%) and 176,000 injured (25%). Many more would receive fatal or very serious burns from the heat flash or from fires. Within 2 days radiation from fall-out could kill 110,000 of those already injured by the blast and 135,000 of those initially unharmed by the blast. A total of 245,000 (34%) could die as a result of radiation from fall-out. Thus, all-in-all, just one nuclear bomb could kill or injure just over half a million people

(73%) in Leeds. There could be about a quarter of a million survivors. If the bomb were dropped around midday, when the city centre was full of shoppers and office workers and thousands of people were at work in the nearby industrial area, casualties could be much greater. If there was snow on the ground or thick cloud cover the heat flash would be reflected and travel further and kill even more people. People would also die later from injuries, disease, thirst and hunger.

# THE EFFECTS OF A 1 MEGATON GROUNDBURST NUCLEAR BOMB AT THE TOWN HALL

## TOTAL POSSIBLE CASUALTIES

507,000 of the City's population of 713,000 could be killed or injured.

## BLAST DAMAGE

All buildings destroyed  
108,000 killed  
2,000 injured

Most buildings destroyed  
76,000 killed  
61,000 injured

Buildings severely damaged  
12,000 killed  
113,000 injured

## HEAT EFFECTS

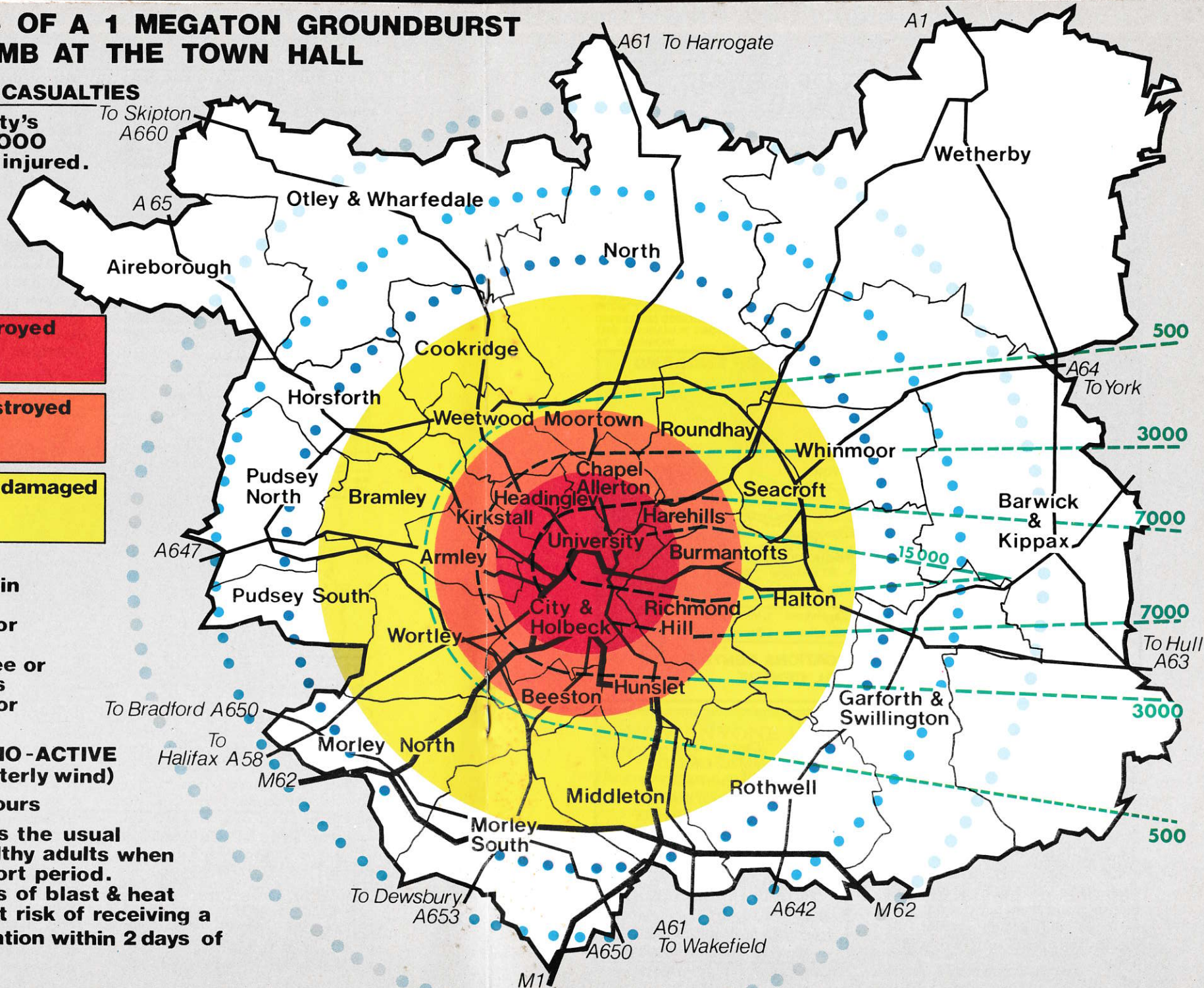
on people outside in the open

- third degree or fatal burns
- second degree or serious burns
- first degree or mild burns

## PATTERN OF RADIO-ACTIVE FALL-OUT (for Westerly wind)

--- fall-out contours

400-600 RADS is the usual lethal dose for healthy adults when received over a short period. 245,000 survivors of blast & heat effects would be at risk of receiving a lethal dose of radiation within 2 days of the explosion.



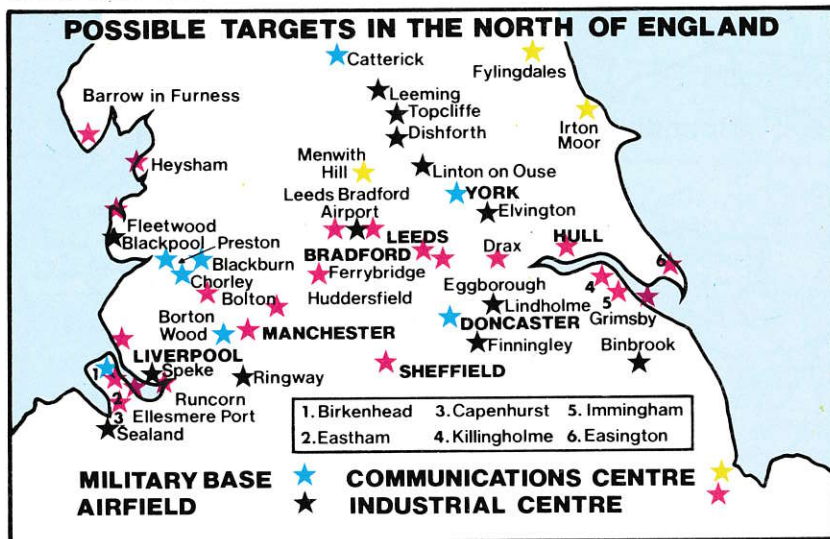


# THE PROSPECT OF A REAL NUCLEAR WAR

## WHAT COULD HAPPEN?

So far, we've just looked at what one bomb could do to Leeds on its own. The prospects of a real nuclear war are much more frightening. **Of course its unlikely that just Leeds would be attacked on its own.** The objective of nuclear war is not only destruction but also prevention of any recovery. The government's own estimates of the scale of attack on Britain have included one of 125

nuclear weapons with a total yield of about 200 megatons. The government have also stated that an attack of more than 1,000 megatons would be needed to destroy the ground-launched cruise missiles once they were dispersed. Thus, in a real nuclear war most of the country could be destroyed and Leeds could expect very little help from outside the city.



## WHAT ARE THE MOST LIKELY TARGETS?

Military targets are likely to be hit first. These would include British, American and NATO Military installations such as missile bases, airfields, army bases, communications and surveillance centres and arms manufacturers. This would probably be followed by an attack on industrial and economic centres, such as cities and power stations, to prevent any immediate recovery after a war.

*"The population density of the UK is 593 people per square mile. No other country has so many people and so many potential targets concentrated into so small a land mass".*

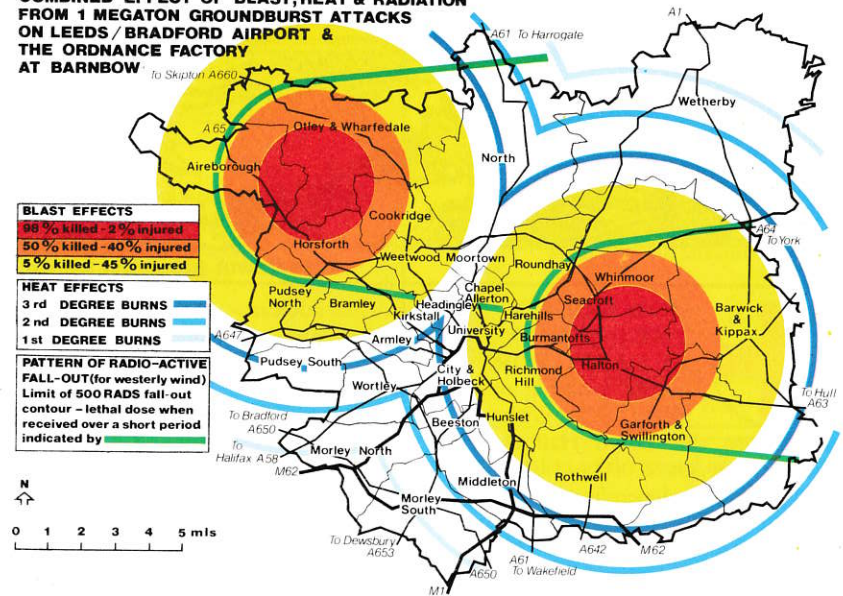
*British Medical Association Report on Nuclear War: 1983*

## HOW COULD LEEDS BE AFFECTED?

There are two possible military targets within the city's boundaries. These are **the Airport** to the north-west of the city centre and **the Royal Ordnance Factory, Barnbow**, to the east. The map below shows the effects of a nuclear attack on these two targets. In addition, it is almost certain that the United States

communications centre at **Menwith Hill**, just outside the city's boundaries, six miles north of **Otley** would be bombed. Other nearby targets could include both Bradford and Huddersfield. Just one Russian missile (SS-18), carrying many warheads (MIRV), could accurately hit all these targets.

**COMBINED EFFECT OF BLAST, HEAT & RADIATION FROM 1 MEGATON GROUND BURST ATTACKS ON LEEDS / BRADFORD AIRPORT & THE ORDNANCE FACTORY AT BARNBOW**



## COULD ANYONE IN LEEDS SURVIVE A REAL NUCLEAR WAR?

The greatest threat to life for most of the city's population would be fall-out rather than the initial blast. The Airport and Barnbow are both on the fringes of the city and the initial effect of the bomb may affect fewer people than if the Town Hall were hit by a single bomb. Similarly, fall-out from these two bombs might affect fewer people as it would be likely to be carried away from the city to rural areas. **However, the real danger**

**for survivors, would be fall-out from bombs dropped elsewhere in West Yorkshire, Lancashire and other parts of the country.** Fall-out can be carried hundreds of miles by the wind. Given the prevailing westerly winds, nuclear attacks on Lancashire and West Yorkshire could be critical for people in Leeds. The other main threat to life would be the conditions in the aftermath of the bomb. This is looked at next.

## THE AFTERMATH IN LEEDS

### WHAT HELP WOULD THERE BE FOR SURVIVORS?

If Leeds were hit by a single nuclear bomb there could be about a quarter of a million, or more survivors. Many would be injured and would require medical treatment. All would require, water, food, shelter and power for heating, cooking and lighting. Some form of government and communications would be needed to organise all these things. The

government has prepared war-time contingency plans for all public services. The government has stated that "the basic essentials of plans should be capable of implementation within 48 hours". The problems that would face both survivors and the public services, as a result of just one bomb dropped on Leeds, or in a real nuclear war, are set out below.



Hiroshima after the bomb



### HOW WOULD THE INJURED BE CARED FOR?

In the example of a direct hit without warning on the Town Hall there could be between 66,000 and 176,000 people injured, depending on how many died of radiation sickness in the first few days. The chances of any medical treatment are very slim. **The three main hospitals, the General Infirmary, St. James's and Chapel Allerton** would have been completely destroyed by the blast. **Seacroft Hospital** would also be severely damaged and only the small **Wharfedale Hospital, at Otley**, would still be fully operative. Many doctors and nurses would have been killed. Many of the injured could be trapped in the rubble but the chances of rescue and treatment are low. Roads blocked by debris and the high radiation levels for at least two weeks after the bomb had exploded would prevent any large scale rescue operation being mounted.

In a real nuclear war the government's health service plans mean that casualties would be classified into three categories: those unlikely to survive after treatment; those likely to survive without treatment and those likely to survive after treatment. Only the last group would receive any treatment. The four most important medical problems would be: burns, radiation sickness, multiple injuries and extreme psychological shock. Even in peacetime only about 100 acute burn cases can be handled at once in the whole country. The treatment of radiation sickness requires blood transfusions and the shortage of blood would make it practically impossible to offer any effective treatment. In fact, government health service plans specifically state that people suffering from radiation sickness only, should not be admitted to hospital. The lack of accommodation, staff, anaesthetics and drugs would make it impossible to provide any immediate treatment for multiple injuries and fractures.



### WHAT ABOUT SANITATION AND DISEASE?

The main sewage works in Leeds, at Knostrop, would be largely destroyed together with many pumping stations. Sewers could be fractured or blocked, particularly close to the City Centre. Hundreds of thousands of decomposing human and animal corpses would lie buried under rubble and in buildings. It would be impossible to remove these bodies quickly be-

cause of radiation, lack of equipment and shortage of manpower.

Rats, insects and bacteria are much more resistant to radiation than human beings. They would flourish among the debris and spread disease. In these circumstances there would be great risk of epidemics of infectious diseases. Government plans admit this. Typhoid, cholera, dysentery and tuberculosis would all be likely to breakout according to the British Medical Association.

*"It is clear therefore that the burden of casualties from just one bomb, dropped on a city would completely overwhelm the medical facilities of this country".*

*British Medical Association  
Report on Nuclear War; 1983*

*"Most doctors and other health professionals would be unable to render assistance even if they themselves were unharmed because many of the casualties would be in areas of lethal fall-out"*

*British Medical Association  
Report on Nuclear War; 1983*



### WHAT ABOUT THE WATER SUPPLY?

Most of the water supply for Leeds comes from reservoirs close to the United States Base at **Menwith Hill**. This would be a prime target in a nuclear attack. Although fall-out could enter the reservoirs, most of it would sink to the bottom and little would be likely to enter the water supply. The crater caused by a direct hit on the Town Hall would sever water mains. This could cause flooding in some areas and a drop in water pressure in others. The blast would also largely destroy **Headingley** treatment works. It is unlikely that there would be any energy to pump water. Consequently most parts of the city would not have a piped water supply. Government plans admit there will be a prolonged

disruption of the piped water supply.

A lot of survivors would be suffering from radiation sickness, untreated injuries or illness. As a consequence they would need much more stored water than that suggested by the Home Office (2 pints per person per day for use in the first 14 days after an attack). Thirst might drive people out of their shelters to face the hazards of radiation sickness. The Fire Service would be responsible for the distribution of any available water. In Leeds the main fire station on Kirkstall Road would have been destroyed. In any case blast damage would have blocked roads. Radiation might make it unsafe to start water distribution for up to 4 weeks after the attack. Many people could go thirsty or even die of thirst before encountering any longer term dangers.



### WOULD THERE BE ANY FOOD?

If there was no warning, few people would have sufficient food to get them through the first two weeks. That is when radiation levels outside are dangerously high. In any case, a direct hit on the Town Hall would destroy all the shops in the city centre and the Inner City and most suburban shopping centres. A lot of food warehouses and processing plants would also be destroyed.

Even if there was a warning, the Home Office has acknowledged that not everyone would be likely to be able to get 14 days supply of food.

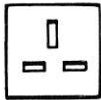
There could be food shortages, panic buying or just insufficient warning to acquire a stockpile. There may be local stockpiles of food for emergency public consumption. It is unlikely that these could be distributed because of blast damage to vehicles and roads, lack of fuel and high radiation levels. Food stocks damaged by the blast could well become contaminated by fall-out or bacteria. Most ports could have been destroyed, so little food could be imported. Fields might be contaminated. There might be no fuel or fertilisers available for farming. The government admits food would be scarce. Many people would go hungry. Starvation could well be a prospect facing survivors.

*"I do not think it at all likely that a limited nuclear exchange would remain limited".*

H. Brown, US Secretary of Defence 11/1/77.

*"The first time one of these things is fired in anger everything is lost. The warring nations would never be able to put things back together".*

Leonid Brezhnev, 1978



### WHAT WOULD HAPPEN TO ENERGY SUPPLIES?

A direct hit on the Town Hall would result in the supply of gas and electricity across the city being severed by the crater. The electromagnetic pulse given out in a nuclear explosion could play havoc with the electricity supply system. Substations would be crushed by the blast and Skelton Grange Power Station would be largely destroyed. The main gas control centre would be destroyed and fractured mains would result in a

loss of pressure and the cutting off of the gas supply. Both electricity and gas supply are organised on a national basis. In the event of a real nuclear war power stations and gas pipelines would probably be devastated. Thus there would be no energy supplies for cooking, heating and lighting. The government itself has acknowledged this. This, together with the destruction of most housing, would make conditions worse for the injured. It could even lead to death from hypothermia particularly among the young and elderly.



### WHAT ABOUT COMMUNICATIONS?

In a direct hit on the Town Hall the City Station, the main Bus Stations and most vehicles within about 3 miles of the city centre would be destroyed. The city centre bridges over the River Aire would collapse. Roads and streets would be blocked with debris up to 5 miles away. There would be no fuel. To find food or water or search for relatives and friends most people would have to walk.

The government plans to restrict the telephone service to lines vital to the handling of emergencies if a nuclear war is threatened. In any case about two-thirds of the city's telephone exchanges would be destroyed by the blast or put out of action by the electro-magnetic pulse. Trunk services would come to a standstill. Only 9 exchanges would be likely to remain operative. These could serve about 30,000 of the city's 250,000 telephone lines. It would be a restricted and almost certainly congested service.

*"Uncertainty about the targets for a nuclear attack coupled with massive destruction . . . thus any attempt to lay plans for medical services, for food supplies, for all possible nuclear emergencies becomes a myth".*

British Medical Association Report on Nuclear War; 1983

*"The Government Civil Defence plans are hopelessly unrealistic. The very idea that planning is possible for the aftermath of nuclear catastrophe is false".*

Guardian Leader Comment 4/3/83



### WHO WOULD BE IN CHARGE?

In the event of a nuclear attack on the whole country, there would be no national government but a system of regional governments. These would have responsibility with the police and armed forces for keeping public order with the use of emergency powers. Locally, the bunker at Lawnswood (if it survived) would be used as the District Control Headquarters and the main objective, according to the Home Office, would be to aim at the conservation of resources for longer term survival rather than immediate short term aid to the hardest hit. Actions which in peacetime would be unacceptable, may become commonplace. Human

rights and freedoms accepted as normal in peacetime would have vanished. There might be no help for Leeds from the rest of this country as everyone else could be as badly off as us.

*"Either side could dismantle half its arsenal without any military disadvantage—there are just not enough targets in either East or West Europe for the weapons already deployed".*

Sir Martin Ryle Ex-Astronomer Royal 6/3/83

## THE LONG TERM EFFECTS

### WOULD THERE BE A RECOVERY?

The immediate effects of the blast and fire would have almost completely destroyed Leeds as we know it. Thousands of people may die in the following weeks and months from radiation sickness, disease, starvation, thirst and injury due to the lack of medical treatment. In a real nuclear attack on Britain the economy—industry, agriculture and financial institutions would be destroyed. Money would no longer have any

value. Survivors could live in something like a medieval society based on a system of barter and subsistence farming. It would take many, many years for life to bear any resemblance to how it was before the bomb. Furthermore there would be many long term effects, both known and unknown, which could mean that a full recovery might never be possible.

### COULD IT MEAN THE END OF LIFE ON EARTH?

As a result of nuclear tests in the early 1960's scientists observed that there was a reduction in the amount of ozone in the atmosphere. Ozone absorbs ultraviolet rays from the sun which can cause skin cancers and eye damage. Some scientists believe that a nuclear war could badly disrupt this "ozone shield"—posing a serious threat for many forms of life. If this is so, those who survived the immediate effects of the bomb might have more to worry about than the dangers of long term radiation. Exposure to

daylight could become dangerous and man might become a nocturnal creature. Many animals and birds could become extinct.

Other scientists believe the earth's climate could be changed. Vast forest fires could start. Stores of oil and gas could burn. The amount of sunlight could be reduced by smoke and debris in the atmosphere. There has been speculation that there could be a new Ice Age.

### WHAT ARE THE LONG TERM HEALTH PROBLEMS?

Not all the radio-active debris in the mushroom cloud comes back to earth immediately. Some can remain for several years high up in the atmosphere, where it can be carried by strong winds for thousands of miles. As much as 10% of the radio-active material of the bomb can remain dangerous for over 25 years after detonation. Delayed fall-out can contaminate soil, crops and animals. If nuclear power stations or the reprocessing centre at Windscale were hit, even by a small bomb, the reactor would release its huge and long-lived radio-active load. Such an attack could make life in practically the whole of Britain hazardous for

years or even decades. Some people who survive the initial attack on Leeds could suffer from the effects of low doses of radiation for many years afterwards. Long term, low dose rates of radiation, whether acquired through immediate or delayed fall-out, can result in cancer particularly leukaemia, and in genetic damage which can cause babies to be born with deformities. In Japan, long-term deaths have been about 300% more than the number of initial casualties. In Britain, although more people would be likely to die from the long term effects, the percentage would be lower because of the greater number of initial casualties.

## CIVIL DEFENCE AND NUCLEAR DETERRENCE

### HOW EFFECTIVE IS CIVIL DEFENCE FOR ORDINARY PEOPLE?

What advice does the government offer to ordinary people to enable them to survive a nuclear war? Current government advice is set out in the publication "Protect and Survive". This tells people to stay at home and build their own make-shift shelters. This assumes there is sufficient warning and materials available to build a shelter. A make-shift shelter is unlikely to offer much protection against the blast of the bomb. We have already seen, that in Leeds, 196,000 people could be killed and 176,000 injured by the blast from a single bomb. However, a make-shift shelter can help to reduce the danger of radio-active fall-out. The extent to which it can help depends mainly upon where you live. If your house has been damaged by the blast and is an area receiving a lot of fall-out, the chances are that a make-shift shelter wouldn't help very much.

shelters. However, many people may not be able to reach a public shelter in time. The survivors would still have to face the dreadful aftermath. And they would be very expensive to provide. One estimate, for Britain, was between £1,000 to £1,500 per head. Civil defence expenditure (1982) was between 50p to 75p per head. The government has said that public shelters are not a realistic option for Britain.

*"Any increase  
in weapons now  
has no military purpose and  
can only increase the risk of  
war . . . it can benefit nobody—  
nobody, that is, who is not  
involved in the development  
and manufacture of weapons"*

*Sir Martin Ryle  
Ex-Astronomer Royal 6/3/83*

*"Defence of the  
people will be decided by  
wise and cool judgement,  
not by the shouting of empty  
slogans on the streets or the  
carnival cavortings of woolly  
people in woolly hats"*

*Mr. P. Baker—Armed Forces  
Minister 2/3/83*

Could public shelters be a more effective means of civil defence for ordinary people? Some neutral countries, such as Sweden and Switzerland have invested in public

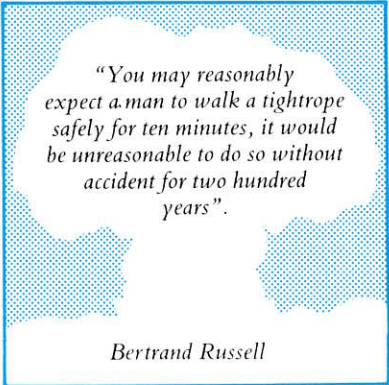
What about evacuation? Wouldn't people be safer moving out of towns and cities to the country? The problem with this is that no-one knows which parts of the country would be completely safe from fall-out. There might not be enough time to organise an evacuation. Early evacuation could be seen as a hostile action and could lead to a nuclear attack. The government has rejected evacuation as a means of civil defence. "Protect and Survive" states that no help will be given to those people who move away from home. It also warns that empty homes may be taken for others to use.

## WON'T NUCLEAR DETERRENCE PREVENT WAR?

The government says that deterrence has kept the east-west peace for 37 years. Nuclear weapons cannot be disinvited. The risk of escalation deters either side from launching an attack on the other. Everyone is agreed that their use must be prevented. But can deterrence continue to keep the peace?

Over 20 years ago both the U.S.A. and the U.S.S.R. had sufficient weapons to destroy the others' cities. Since then there has been a vast increase in the number of weapons on both sides. The number of strategic warheads trebled between 1970 and 1980. Some scientists think there are now far more weapons than are needed for deterrence. The spread of nuclear weapons to countries in the Middle East or Africa, might increase the chances of a nuclear war.

They consider that the use of these weapons against an attack by conventional military forces, might lead to escalation and a full nuclear war.

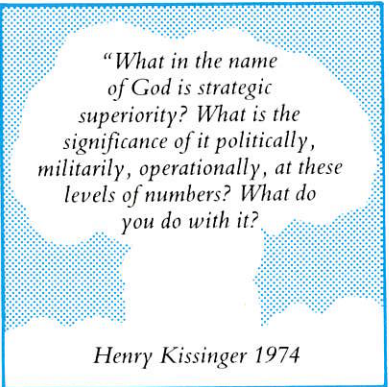


*"You may reasonably expect a man to walk a tightrope safely for ten minutes, it would be unreasonable to do so without accident for two hundred years".*

Bertrand Russell

However, the greatest concern for a lot of scientists is the development of more modern, highly accurate missiles. These could be used as "first strike" weapons. This includes the Pershing II missiles soon to be deployed in Europe. There has been speculation that these new missiles will be aimed at Russian missiles capable of hitting the U.S.A. They have helped promote the idea of limited European nuclear war. They have also resulted in the Russians threatening to adopt a "launch on warning policy". This might greatly increase the chances of an accidental nuclear war.

All these views may be correct. Deterrence may have worked up to now. On the other hand, more countries are getting the bomb. First strike weapon systems are being produced now. Can we continue to rely solely on deterrence to prevent nuclear war?



*"What in the name of God is strategic superiority? What is the significance of it politically, militarily, operationally, at these levels of numbers? What do you do with it?"*

Henry Kissinger 1974

NATO has a strategy of "flexible response". This means that, in very extreme circumstances, "tactical" nuclear weapons could be used to stop an invasion of Western Europe. Many scientists think that these smaller "battlefield" nuclear weapons have increased the chances of nuclear war.

## WHAT ORDINARY PEOPLE CAN DO ABOUT THE BOMB

### WHAT CAN WE DO?

The first thing is to make your own mind up about the bomb and its effects on you, your family, your community and Leeds. Try and reach your own conclusion. Do not fool yourself by thinking it's best left to the experts to decide what happens about the bomb in future. You can make your own voice heard without taking part in any rallies or demonstrations **for or against** the bomb. You can write to the City

Council, your local Councillor, your Member of Parliament or even the Secretary of State for Defence. Discuss it with your friends and neighbours, raise the issue of the bomb at your church, school, club or community organisation meetings. You could contact one of the many local or national organisations who are greatly concerned about the issues involved. **The decision is yours.**

### HOW CAN I FIND OUT MORE?

Make a point of reading about the nuclear debate in your newspaper and watching when it's on TV. There are a lot of books available on the bomb and its effects and many of them are available in City Council Libraries.

Compare what the Home Office says in its publications with what the United States government and British scientists have published. A brief selection of books includes:—

"PROTECT AND SURVIVE", "NUCLEAR WEAPONS", "CIVIL DEFENCE—WHY WE NEED IT"—HMSO.

"LONDON AFTER THE BOMB"—Oxford University Press, paperback, price £1.95.

"HIROSHIMA"—J. Hersey, Penguin Modern Classics (an account of the experience of 6 survivors), price £1.25.

"WHEN THE WIND BLOWS"—Raymond Briggs (a large format cartoon story book), price £3.95.

"AS LAMBS TO THE SLAUGHTER"—P. Rogers, M. Dando, P. Van den Dungen, Arrow, 1981, price £1.75.

"A POLICY FOR PEACE"—Field Marshall Lord Carver, Faber and Faber, price £2.50.

"COMMON SECURITY—A PROGRAMME FOR DISARMAMENT"—A report of Independent Commission chaired by Olaf Palme, Pan Books, price £1.95.

"DEFENDED TO DEATH"—Gwyn Prins, Pelican, price £3.50.

"WAR PLAN U.K., THE TRUTH ABOUT CIVIL DEFENCE IN BRITAIN",—D. Campbell, Burnett Books, 1982, price £6.95.

"NUCLEAR WAR, THE AFTERMATH"—J. Peterson and D. Hinrichsen, Pergamon Press, price £2.95.

"THE EFFECTS OF NUCLEAR WEAPONS"—J. Glasstone and P. J. Dolan, Castle House, 1980.

"THE EFFECTS OF NUCLEAR WAR"—Office of Technology Assessment, Croom Helm, 1980.

# THE A TO Z OF NUKESPEAK

**ATOM BOMB:** First, less powerful fission based type of nuclear weapon. It was used on Hiroshima.

**AIRBURST:** Nuclear Weapon detonated in the sky to give maximum blast damage.

**ABM:** Anti-Ballistic Missile, intended to destroy incoming enemy missiles.

**ALCM:** Air launched cruise missile—U.S. missile launched from bombers which has an accuracy of less than 100 yards after a flight of 1,500 miles.

**BALLISTIC MISSILE:** Rocket powered missile which hits its target by falling back to earth under gravity like any object thrown into the air.

**BACKFIRE:** Most up to date, long range Russian bomber.

**CEP:** Circular error probable—measure of accuracy of a missile. The smaller the CEP, the more accurate the missile.

**CHEVALINE:** New improved warhead for the British Polaris missiles launched from submarines. It was developed in total secrecy from 1968 to 1979 but is only now coming into service.

**CND:** Campaign for Nuclear Disarmament—formed 25 years ago shortly after the first British H Bomb was exploded.

**CRUISE MISSILE:** So called because it travels at low altitudes parallel to the ground at about the same speed as a plane. Can be launched from the ground (GLCM'S) or from a bomber (ALCM'S).

**DETERRENCE:** Preventing an attack by threatening to launch an even worse counter-attack.

**ECOROPA:** An independent, non-profit making, non political, European organisation concerned about survival and nuclear disarmament.

**EMP:** Electro Magnetic Pulse—short burst of intense radio waves given out on detonation of the bomb which can knock-out electronic equipment.

**EUROSTRATEGIC WEAPONS:** Medium range weapons based in and intended to be used in Europe. Also known as "Intermediate" or "Theatre" Weapons.

**FALL OUT:** Small particles of debris sucked up in the mushroom cloud which become contaminated and fall back to earth as radio-active dust.

**FLEXIBLE RESPONSE:** NATO military strategy of possibly using nuclear weapons to repulse an overwhelming conventional military attack.

**FIRE BALL:** An intensely hot, expanding ball of fire formed within seconds of detonation of the bomb.

**FIRE ZONE:** An area liable to spontaneous fires caused by the intense heat after detonation of the bomb.

**FIRST-STRIKE:** Usually used to refer to a pre-emptive attack on an opponent's missiles while they are still in their silos. The recent development of more sophisticated and accurate weapons has made a first-strike attack more feasible.

**FIRST-STRIKE CAPABILITY:** Having missiles accurate enough to destroy enemy missile silos and so prevent retaliation. Breaks down the idea of deterrence.

**FIRST-DEGREE BURNS:** Reddening of the skin.

**FISSION:** Splitting of heavy atoms such as uranium or plutonium to release the powerful force of an atomic bomb.

**FUSION:** Combination of light atoms such as tritium or deuterium to release the more powerful force of a hydrogen bomb.

**GAMMA RADIATION:** Deadly, high energy rays released on detonation of a nuclear weapon.

**GROUNDURST:** Nuclear weapon detonated at or near ground level to create maximum fall-out.

**GLCM:** Ground launched cruise missile. The U.S.A. is installing 464 in Europe including 160 in Britain (the first 96 are going to Greenham).

**HYDROGEN BOMB:** Second, very powerful fusion based, thermonuclear bomb.

**HARD ROCK:** The name given to the Government's 1982 Civil Defence Exercise for nuclear war which was cancelled after opposition by some Local Authorities.

**HALF LIFE:** Time taken for 50% of radio-active atoms to decay.

**ICBM:** Inter-continental Ballistic Missile with a range of up to 9,000 miles.

**IRBM:** Intermediate range Ballistic Missile with a range of up to 2,500 miles.

**KT:** Kiloton equivalent to 1,000 tons of the high explosive TNT.

**LAUNCH ON WARNING:** An immediate nuclear response to a perceived nuclear attack.

**LD50:** A lethal dose of radiation which would kill 50% of healthy adults. About 400 to 500 Rads over 2 days.

**MCANW:** Medical Campaign against nuclear weapons. Independent organisation of doctors and medical staff.

**MT:** Megaton equivalent to 1,000,000 tons of the high explosive TNT.

**MIRV:** Multiple independently targetable re-entry vehicles. Missiles with several warheads for different targets.

**MX:** New long range, highly accurate U.S. Missile, each armed with 10 warheads.

**MULTILATERAL DISARMAMENT:** An agreement by all nuclear powers to reduce or abandon nuclear weapons.

**NATO:** North Atlantic Treaty Organisation—formed by the Western Powers in 1949. The military head is always an American General.

**OVER-PRESSURE:** The force of the blast caused by a nuclear explosion, usually expressed in lbs./sq. inch.

**PLATFORM:** Any structure from which nuclear weapons are launched. Could be a silo, vehicle, plane or submarine.

**POLARIS:** British submarine launched missiles.

**POSEIDON:** American submarine launched missiles.

**PERSHING II:** New, very accurate, medium range (1000 miles) American ground launched ballistic missile soon to be deployed in Europe.

**PF:** Protection Factor—Theoretical measurement of the protection offered by a building from radiation.

**PROLIFERATION:** The increase and the spread of nuclear weapons amongst the nations of the world.

**RAD:** Unit of Measurement for radiation absorbed by body.

**RADIATION:** See Gamma Radiation.

**RADIO-ACTIVE:** Giving off harmful nuclear radiation—gamma rays and high energy particles.

**RESIDUAL RADIATION:** Radiation given off by Fall-Out.

**SALT:** Strategic Arms Limitation Talks—held between US and USSR.

**START:** President Reagan's new name for SALT talks—Strategic Arms Reduction Talks.

**SANA:** Scientists Against Nuclear Arms—an independent organisation of scientists.

**SECOND-DEGREE BURNS:** Blistering of the skin.

**SECOND STRIKE CAPABILITY:** Having enough well protected missiles to enable retaliation after a nuclear attack. Essential for the idea of deterrence.

**SQUARE LEG:** The name given to the Government's 1980 civil defence exercise for a nuclear attack of 200 megatons on Britain.

**SS MISSILES:** Russian surface to surface missiles. Includes long range missiles such as the SS-18 and the more modern medium range SS-20 which is aimed at Europe and China.

**STRATEGIC WEAPONS:** Long range, intercontinental nuclear weapons.

**SLBM'S:** Submarine launched Ballistic Missiles.

**THEATRE NUCLEAR WEAPONS:** Medium range weapons. Based in and intended to be used in Europe.

**THERMAL RADIATION:** The heat flash emitted on detonation of a nuclear weapon.

**THERMONUCLEAR WEAPON:** Hydrogen Bomb.

**TITAN:** The largest American missile has a warhead of 9 megatons and a range of 9300 miles. In 1980 one of these missiles exploded in its silo, throwing the warhead over 200 feet.

**TOMAHAWK:** American name for the Ground Launched Cruise Missile.

**THIRD DEGREE BURNS:** Charring of the skin.

**TRIDENT II:** New American, long range, more accurate and more destructive submarine launched missile. Britain is to replace Polaris missiles with Trident II.

**UNILATERAL DISARMAMENT:** Abandonment of nuclear weapons by one nation without others necessarily doing the same.

**UKWMO:** United Kingdom warning and monitoring organisation responsible for detecting a nuclear attack on this country.

**WARHEAD:** Nuclear bombs carried by missiles (see MIRV).

**WATERBURST:** Nuclear Weapon (usually a depth charge) detonated at sea.

**WARSAW PACT:** Organisation of 8 eastern European states for "friendship, mutual assistance and co-operation". Russian forces are deployed in all Pact countries except Rumania.

**YIELD:** The destructive power of a nuclear warhead. Measured in kilotons (KT) or megatons (MT).

**ZERO OPTION:** The American version is not to deploy Cruise or Pershing II if the Russians remove all existing SS20's from Europe. The Russian version amounts to no US or Soviet missiles facing each other in Europe.