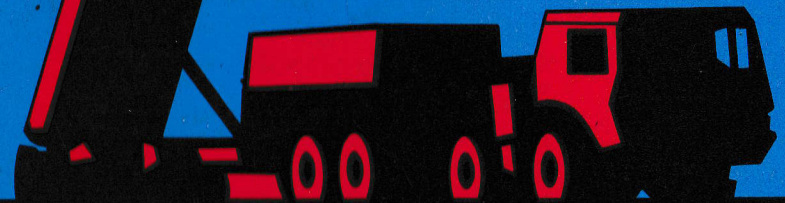


# South Yorkshire and NUCLEAR WAR

INFORMATION FOR  
THE PUBLIC IN THE  
COUNTY OF  
SOUTH YORKSHIRE

40p



## South Yorkshire and Nuclear War

Published by South Yorkshire County Council, in conjunction with the  
Metropolitan Borough Councils of Barnsley, Doncaster and  
Rotherham and Sheffield City Council.



# **SOUTH YORKSHIRE AND NUCLEAR WAR**

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# **SOUTH YORKSHIRE AND NUCLEAR WAR**

## **Foreword**

In December 1983, the Government's new Civil Defence regulations became law. These new regulations extend the range of civil defence measures that the County Council and the four District Councils in South Yorkshire have to carry out. At the same time as Councils are being forced by this Government's policies to make cuts in spending, the new regulations will mean the Councils will have to spend more money on civil defence, to train more staff and to make more detailed civil defence plans.

The Government believe that civil defence planning can help us to survive and recover from a nuclear war. But, in the event of a nuclear war, South Yorkshire would face devastation, death and injury on a scale that is almost impossible to imagine. The scale of the emergency would be such that any plans made by the Councils would be utterly futile. This booklet explains why. It shows why the threat of nuclear war hangs over all of us. It explains about nuclear weapons and the arms race, and it shows what a nuclear attack would do to South Yorkshire.

All calculations regarding deaths and injuries have been made using official United States government data. The type of attack, and the size and number of bombs used is taken from a recent British government nuclear war exercise, "Square Leg".

## **Text and Research**

Policy Research Unit, South Yorkshire County Council.

## **Graphics**

Engineering Graphics, South Yorkshire County Council.

## **Acknowledgements**

South Yorkshire County Council gratefully acknowledges: assistance from members and officers of the district councils in the county; comments and information from Dr. Norman Myers, Dr. Azzam Qasrawi and Owen Greene; technical assistance from Dr. C. Clarke, Department of Mathematics, University of York; and kind permission from Duncan Campbell of the *New Statesman* to use the photograph on page 17.

Printed by G. W. Belton Ltd., Gainsborough.

## **First Edition**

September 1984.

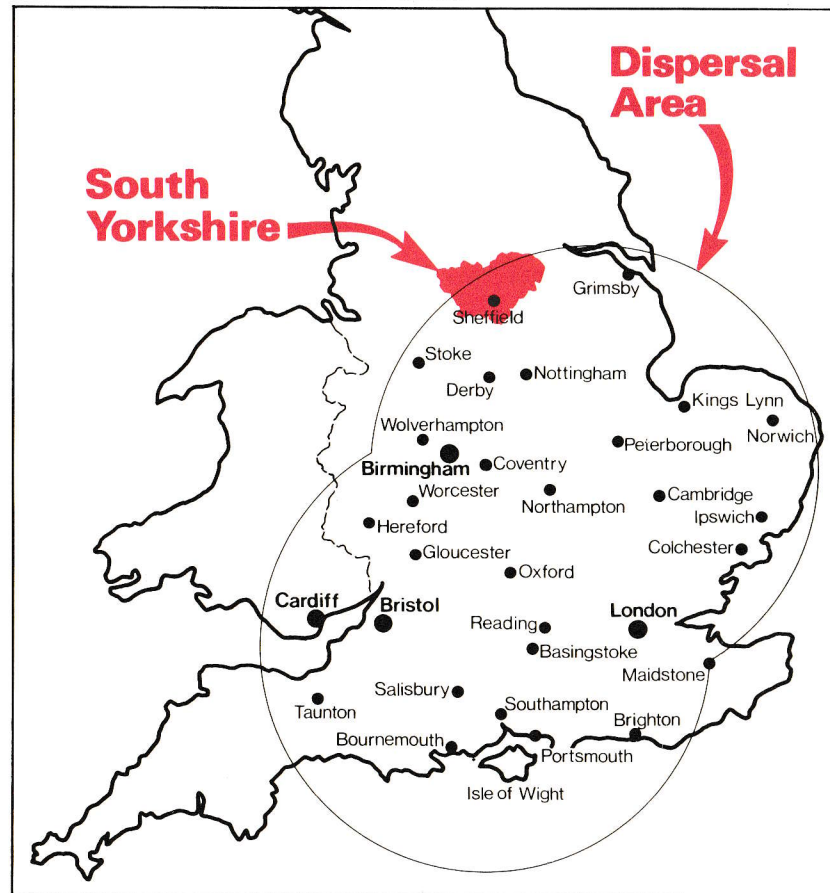
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## 1. SOUTH YORKSHIRE – A TARGET IN A NUCLEAR WAR

In a nuclear war, South Yorkshire would be a prime target:

- ★ The county is part of the dispersal area for cruise missiles (see Map 1).
- ★ In a war, RAF Finningley, near Doncaster, would be a base for American Phantom fighter jets. The United States Defence Department is planning to build new shelters and communication and fuels dumps at RAF Finningley at a cost of 12 million dollars<sup>(1)</sup>.
- ★ The county is criss-crossed with motorways and railway lines and is densely populated. Coal and steel are local industries which are vital to the national economy.
- ★ The Sheffield Forgemasters company is engaged in manufacturing parts for the Trident submarine nuclear missile system.

Map 1:  
The Dispersal Area for Cruise Missiles



## 2. THE GOVERNMENT'S VIEW OF A NUCLEAR ATTACK ON SOUTH YORKSHIRE

In 1980 the Government held a nuclear war exercise called "Square Leg". According to the official information, 150 nuclear weapons fell on Britain with a total explosive power of 280.5 megatons<sup>(2)</sup>. Independent estimates show that an attack of 200 megatons would kill about 29 million people and seriously injure another 7 million people leaving 19 million short-term survivors<sup>(3)</sup>. Yet the Government has said that a nuclear strike of 1,000 megatons is to be expected if the enemy wishes to destroy cruise missiles dispersed throughout the British countryside<sup>(4)</sup>.

"The British people are prepared if necessary to be blown to atomic dust."  
Alec Douglas-Home, speaking in 1961 as British Foreign Secretary.

In the "Square Leg" exercise, the government assumed that two nuclear weapons explode in South Yorkshire. A 3 megaton bomb, 250 times more powerful than the Hiroshima bomb, exploded on the ground near the centre of Sheffield. A 1 megaton bomb, 80 times more powerful than the Hiroshima bomb, exploded on the ground near RAF Finningley.

## 3. CRUISE MISSILES IN SOUTH YORKSHIRE

One hundred and sixty cruise missiles under American control are being installed at Greenham Common in Berkshire and Molesworth in Cambridgeshire. In the build up to a nuclear war, cruise missiles would be dispersed throughout the country on mobile launchers. South Yorkshire is within the zone of dispersal (see Map 1). In a nuclear war, this zone could be one huge target and could suffer saturation bombing in order to destroy the cruise missiles.

Cruise missiles can be launched from land, sea or air. They are designed to fly close to the ground where they cannot be detected by the enemy's radar. Cruise missiles can be extremely accurate and can carry warheads up to 10 times as powerful as the bomb which devastated Hiroshima.

"The presence of Cruise missiles on British soil... indicates that we shall be target number one."

*Daily Telegraph*, Editorial, 4 February 1980

## THE CRISIS OVER CRUISE

Cruise missiles are a new and dangerous twist in the nuclear arms race.

\*American military planners believe that cruise missiles will help them achieve the capacity to fight and win a nuclear war<sup>(5)</sup>.

\*American nuclear strategists have spoken of fighting a so-called 'limited' nuclear war in Europe<sup>(6)</sup>. Cruise missiles in Europe under American control may foster this illusion.

\*Cruise missiles make the checking, or verification, of arms limitation treaties more difficult because they are mobile and can take either conventional or nuclear warheads.

“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 Gene La Rocque, ex-United States Strategic Planner.

#### 4. HIROSHIMA: THE EFFECTS OF NUCLEAR WEAPONS

The explosive power of nuclear weapons is described by the words ‘kiloton’ and ‘megaton’. A kiloton equals 1,000 tons of the high explosive TNT and a megaton equals one million tons of TNT. The bomb that devastated Hiroshima had an explosive power of about 12 kilotons. By today’s standards, this is a tiny bomb.



Hiroshima after the bomb

BBC Hulton/Bettman Archive

On 6th August 1945, the United States dropped the first atomic bomb in war. The bomb was dropped on the Japanese city of Hiroshima, even though Japan was on the point of surrender. Three days later, the city of Nagasaki suffered the same fate. Much of our knowledge of the effects of nuclear weapons was acquired from these bombings.

With the force of about 12 kilotons, the Hiroshima bomb exploded about 1,750 feet above the city. In one second, a fireball 850 feet across and as hot as the surface of the sun engulfed the centre of the city, starting a firestorm that was to rage for six hours. At three-quarters of a mile from the centre of the explosion, people in the open were burned to death. At 2½ miles, skin and wood were badly burned.

Within a few seconds of the bomb being dropped, 40% of Hiroshima’s total area was turned to ashes and 92% of the city was damaged beyond recognition.



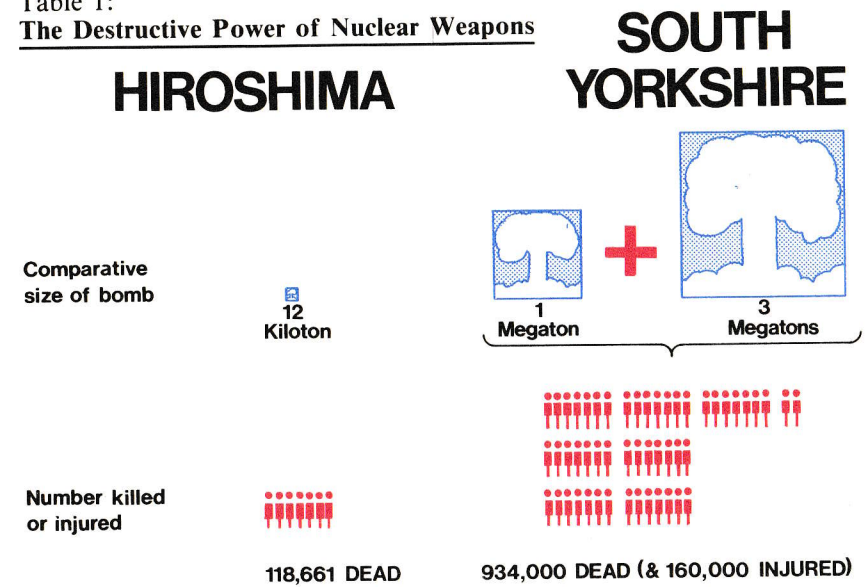
The devastation of Hiroshima

Popperfoto

The shock wave from the explosion covered 2½ miles in 10 seconds, flattening most buildings in its path. The shock wave was followed by hurricane-force winds. A huge cloud of rising ash obscured the sun. Moisture condensed on the dust particles and it fell back to earth as highly radioactive ‘Black Rain’. The blast and heat gave the injured and shocked survivors raging thirsts and they ran to the rivers to drink radioactive water. Their injuries were hideous: skin hanging in huge swathes from limbs, guts spilling out from ruptured bellies, exploding eyeballs. Many of the survivors from Hiroshima say, “We saw Hell!”

118,661 people were killed. Today, 39 years later, people are still dying from the after-effects of the radiation.

Table 1:  
The Destructive Power of Nuclear Weapons



This table compares the casualties from the Hiroshima bomb with the likely casualties in South Yorkshire from the two “Square Leg” bombs.

Survivors suffer from keloids (skin growths) and eye disorders. Children in the womb at the time tend to have small heads (microcephaly) and possible genetic effects. There is an increased incidence of leukaemia and cancer of the thyroid, breast and lung. The more immediate effects of radiation are covered on pages 15 and 16.

### 5. WHAT WOULD HAPPEN IN SOUTH YORKSHIRE WHEN THE BOMBS DROPPED?

Let us suppose that the bombs in the “Square Leg” exercise had been real. What would have happened in South Yorkshire?

The Sheffield bomb explodes near the city centre, close to the bottom of Ecclesall Road. Another bomb explodes close to RAF Finningley. Both explosions occur at ground-level.

When the bombs explode, they cause blinding flashes of light and release deadly nuclear radiation. Within one second, the bombs form huge fireballs as hot as the sun which incinerate everything beneath them. Blast waves rush outwards, covering several miles in a few seconds and destroying buildings in their path. The blast waves are followed by hurricane-force winds, which cause further devastation. The explosions suck up tons of dust and debris into a mushroom cloud. This radioactive “fallout” is carried on the wind and deposited on the northern half of the county.

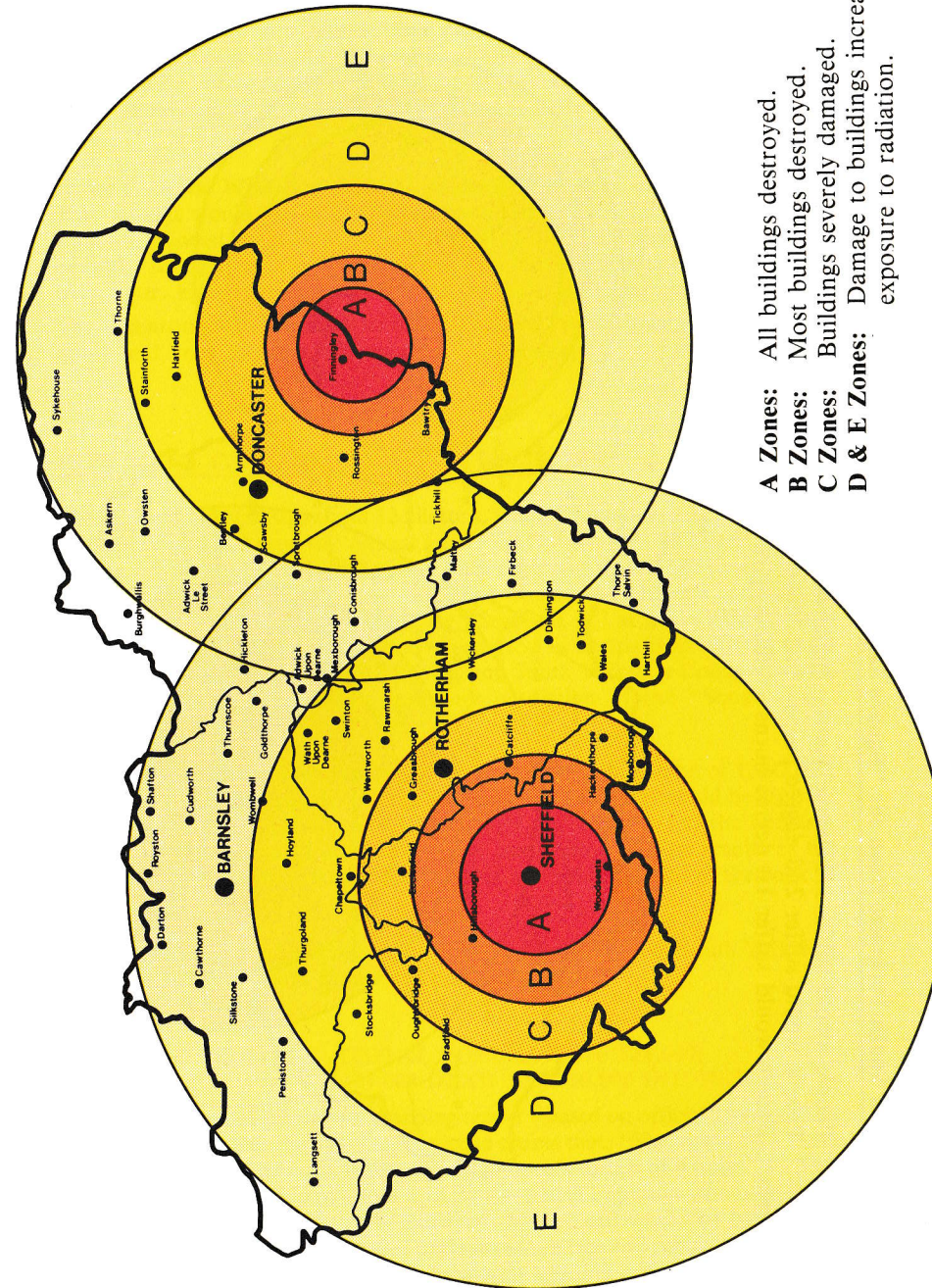
The Sheffield bomb leaves a crater in the ground a third of a mile across and 300 feet deep. The bomb near RAF Finningley leaves a crater 1,000 feet across and 225 feet deep. The skies would be dark with smoke and dust.

**In the A Zones:** Cars would melt. Rivers would boil dry. Possibly, there would be a firestorm, fanned by 300 mph winds. Nearly all buildings would be destroyed, and roads and railways would be obliterated. People in the open would either be killed by the blast or incinerated by the heat. Anyone in a shelter would be roasted alive. Any survivors would have hideous injuries and burns.

**In the B Zones:** Buses and lorries would be overturned and smashed to pieces by the blast. Most buildings would be torn down. Trees, telegraph poles and other inflammable objects would burst into flame. Most people in the open would be burnt or crushed to death. Flames would be spread by winds of 160 mph, possibly causing a firestorm. Those who managed to survive would have appalling injuries, including ruptured eardrums and third degree burns. Anyone in a shelter would be roasted alive or suffocated.

**In the C Zones:** Most buildings would be severely damaged. Walls would be cracked, roofs would be blown off and windows blown in. This damage would dramatically reduce protection against radioactive fallout. Newspapers and curtains would burst into flame. Some people in the open would suffer third degree burns, though most would suffer second degree burns. Many people would be injured by falling trees, pylons and telegraph poles.

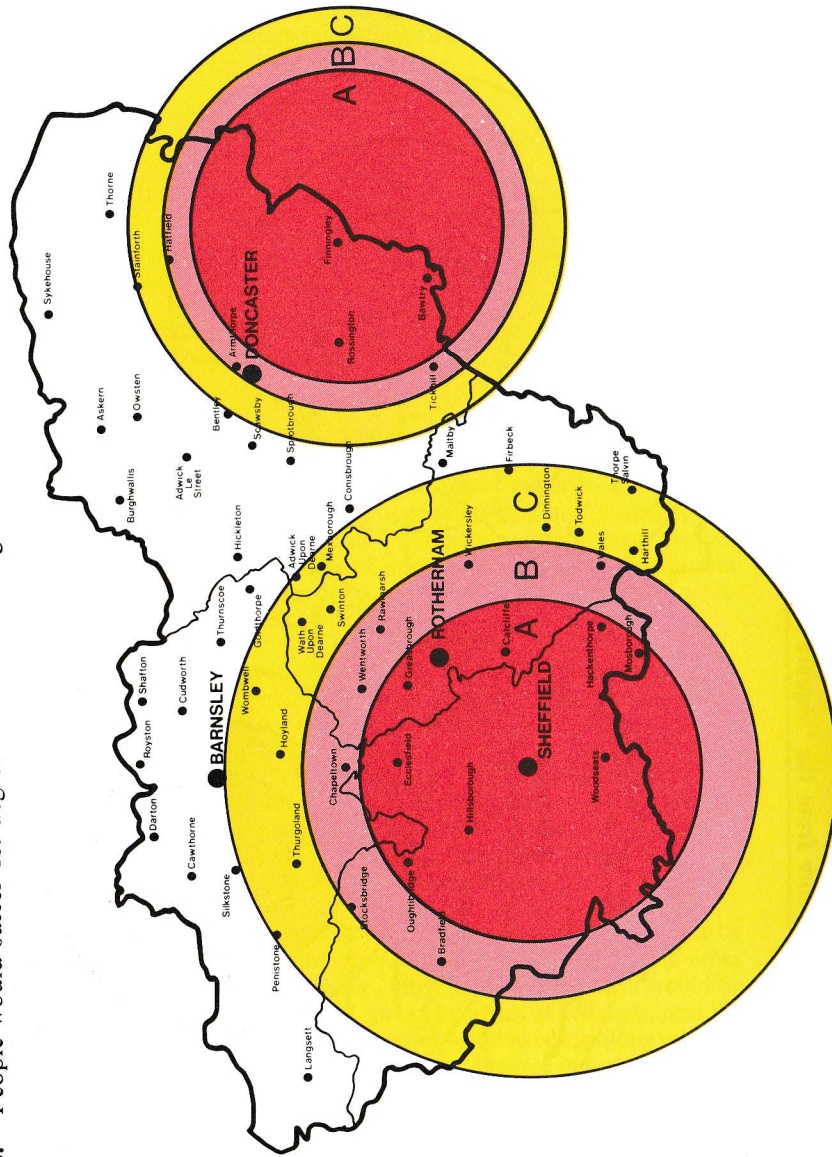
Map 2: Blast Damage in South Yorkshire from the “Square Leg” Bombs



- A Zones:** All buildings destroyed.
- B Zones:** Most buildings destroyed.
- C Zones:** Buildings severely damaged.
- D & E Zones:** Damage to buildings increases exposure to radiation.

Map 3:  
Heat Effects in South Yorkshire from the "Square Leg" Bombs

- A Zones: People would suffer 3rd degree burns – incineration and charring of the skin.
- B Zones: People would suffer 2nd degree burns – bad blistering of the skin.
- C Zones: People would suffer 1st degree burns – reddening of the skin.



**In the D Zones:** Winds of 50 mph would dislodge slates, blow down trees and chimneys and blow in windows. This damage would increase fatalities from radioactive fallout. People in the open would suffer second degree burns or be injured by falling masonry or trees etc. If they were looking in the direction of the explosion, they would be blinded temporarily by the brightness of the flash.

**In the E Zones:** Windows would be blown in and slates would be dislodged. This damage would increase fatalities from radioactive fallout. Some people would be blinded temporarily by the flashes from the explosions. Others would be cut by flying glass. The heatwave would be like standing in front of an open oven door. Eyebrows would be singed and skin reddened by the heat.

The area around Conisbrough would be buffeted twice – once by the Sheffield bomb and once by the bomb near RAF Finningley.

## 6. HOW MANY CASUALTIES WOULD THERE BE?

The Hiroshima bomb was about 12 kilotons, which, by comparison with modern nuclear weapons, is tiny. In "Square Leg", the Government supposed that two bombs fell on South Yorkshire with a total explosive power 330 times greater than the Hiroshima bomb. On this basis, the Home Office's estimate of casualties in South Yorkshire from the "Square Leg" attack – 190,000 dead (after two weeks) and 17,000 injured – seems low in comparison with the death toll of 118,661 at Hiroshima. For this reason, South Yorkshire County Council commissioned an independent computer prediction of the "Square Leg" casualties.

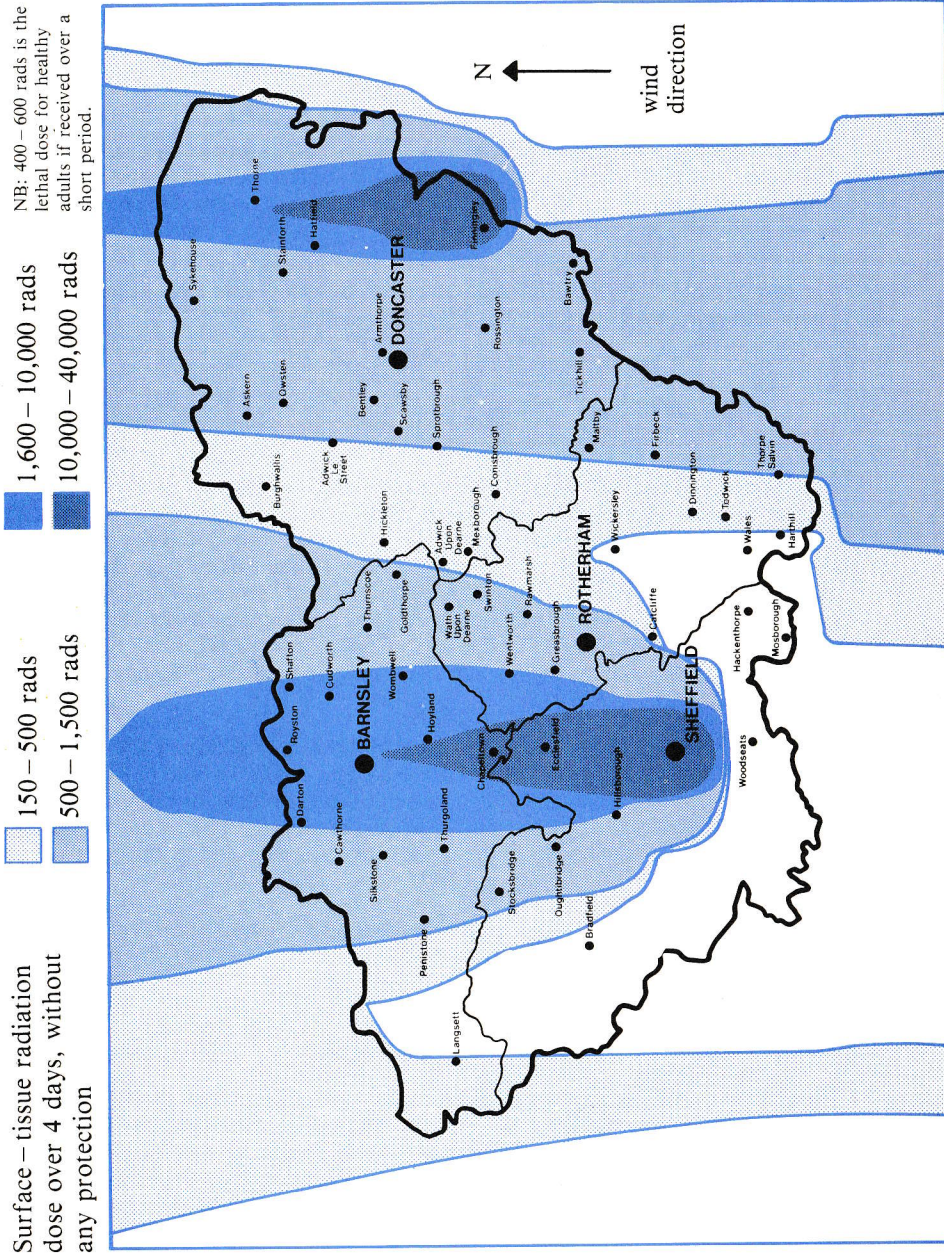
This computer study shows that, of South Yorkshire's population of 1,292,000, just under 934,000 would die (within six weeks) and 160,000 would be injured. These figures do not include deaths resulting from the effects of the "nuclear winter" or the effects of ultra-violet light (see section 8). The results of the computer study for each ward in the county are printed in full at the back of this booklet.

Let us now consider what would happen in the four districts of South Yorkshire – Sheffield, Rotherham, Doncaster and Barnsley.

### **SHEFFIELD DISTRICT: (TOTAL POPULATION: 531,000) 449,000 DEAD AND 60,000 INJURED**

The County Council emergency planning report – based on official Home Office information – on the "Square Leg" exercise claims that: "Sheffield City Centre was destroyed with suburbs badly damaged up to a radius of 4 miles."<sup>(7)</sup> This is an understatement. Up to a radius of 7 miles, most buildings would be either completely destroyed or severely damaged. Most roads would be blocked by fallen trees, pylons, telegraph poles, overturned vehicles and rubble. Fires would start spontaneously inside this area, probably causing a firestorm. In short, most of Sheffield would be destroyed.

Map 4:  
Pattern of Radioactive Fallout in South Yorkshire from the "Square Leg" Bombs



In "Square Leg", the Government assumed a southerly wind. In fact, the prevailing wind is from the south-west in the UK.

Sheffield City Council has commissioned a study of the effects of a one megaton bomb exploding 7,200 feet above the Tinsley Viaduct. In this scenario, the bomb has only one third of the explosive power of the one the Government assumed hit Sheffield in "Square Leg" and the target is assumed to be the industrial side of Sheffield. Even so, the computer programme predicts 317,000 deaths and 103,000 injuries<sup>(8)</sup>.

**ROTHERHAM DISTRICT: (TOTAL POPULATION: 250,000)  
62,000 DEAD AND 72,000 INJURED**

Most buildings in the Rotherham district would be severely damaged. Walls would crack. Chimneys would collapse. Windows would be broken. The damage to buildings would dramatically reduce the capacity of buildings to protect people from the effects of radiation. The northern part of the Rotherham district is affected by the fallout from the Sheffield bomb.

**DONCASTER DISTRICT: (TOTAL POPULATION: 287,000)  
239,000 DEAD AND 25,000 INJURED**

The County Council emergency planning report on "Square Leg" – based on official Home Office information – claims that "Finningley airfield and complex was destroyed with surrounding villages badly damaged up to 3½ miles"<sup>(9)</sup>. Again, this is an understatement. In fact, the radius of the area of severe damage would be about 5 miles. The western part of the Doncaster district would be buffeted by heatwaves and winds from both bombs. The northern part of the Doncaster district is covered by fallout from the Finningley bomb.

**BARNSLEY DISTRICT: (TOTAL POPULATION: 224,000)  
184,000 DEAD AND 10,000 INJURED**

Most of Barnsley would be severely irradiated and most people would die of radiation sickness. In most of the district, windows would be broken and slates would be dislodged. This relatively light blast damage would dramatically reduce the protection afforded by buildings against radioactive fallout.

## 7. HOW LIKELY IS NUCLEAR WAR?

The Government argues that nuclear weapons have kept the peace (in Europe) for 39 years and that nuclear weapons are necessary to contain the Russian threat. The Government also argues that nuclear disarmament can only be negotiated from a position of strength.

Unfortunately, it is not possible for both sides to negotiate disarmament from a position of strength. Each side will not negotiate nuclear disarmament measures (or even nuclear arms reductions) unless it thinks it is superior, and so the nuclear arms race goes on. Any desire for disarmament is frustrated by each side continuing to increase its nuclear forces, and so one side will always question whether the other side is interested in genuine negotiations.

This is what is happening now. The Soviet Union is seeking to deploy SS-20s to cover a gap it sees in its nuclear defences. The USA claims that the SS-20s justify its cruise and Pershing II missiles. Similarly, the USA first made (and used) the atom bomb. Four years later, the Soviet Union caught up. As table

2 shows, the same applies to the H-bomb, intercontinental bombers and submarine-launched missiles.

Preparations for war become war itself. This is why every arms race in history has ended in war. It is doubtful that the nuclear arms race will be an exception.

For a small and densely populated island like Britain, the use of nuclear weapons would be national suicide. Paradoxically, the Government believes it must threaten the destruction of our way of life in order to preserve it! But this is absurd. It is like a householder threatening to kill not only the burglar, but also commit suicide and blow up the house as well. This means that if there is a Russian threat, nuclear weaponry is not the way to deal with it.

“... the American view of the world... divides the world into... the goodies and baddies, the East and the West, even the free and the enslaved. It is a nightmarish distortion of reality... It is a view of the world which this country cannot possibly share, or can share only at its own greatest peril.”  
 Enoch Powell MP.

Many people believe that the danger of nuclear war is increasing:-

\*“The balance of terror” has never been more unstable. Recently, nuclear weapons have been devised that are so accurate that they could destroy the other side’s nuclear missiles before they could be launched in retaliation. Military planners on both sides are now thinking of trying to win a nuclear war – not simply of deterring an attack<sup>(10)</sup>.

“We have gone on piling weapon upon weapon, missile upon missile... like the victims of some sort of hypnotism, like men in a dream, like lemmings heading for the sea.”  
 Professor George Kennan, former US Ambassador to the Soviet Union.

\*NATO has resisted a ‘no first use’ agreement with the Warsaw pact, and it is NATO policy to use nuclear weapons if it finds itself losing a conventional war.

\*The borderline between the use of ordinary weapons and the use of nuclear weapons is becoming blurred. Neutron bombs kill people with intense radiation, but do little damage to property. There are even nuclear artillery shells. With such weapons around, it is hard to see how a major conflict in Europe could avoid ‘going nuclear’ because the decision would have to be taken to use them or risk losing them to the enemy.

\*Helped by the cover that ‘civil’ nuclear power stations can provide, more and more countries will get nuclear weapons, and the spread of nuclear weapons can only increase the risk of nuclear war.

\*There is the constant danger that a computer malfunction or some other system failure could lead to an accidental nuclear war (see box on page 14).

**TABLE 2**

**MAIN EVENTS IN THE NUCLEAR ARMS RACE<sup>(11)</sup>**

Weapons System	1945	1950	1955	1960	1961	1962	1964	1965	1967	1970	1975	1977	1980	1984
A-Bomb	USA	USSR	UK	France				China			India			
H-Bomb			USA USSR	UK						France China				
Intermediate Range Ballistic Missiles (IRBM)				USA USSR										
Submarine Launched Ballistic Missiles (SLBM)					USSR		USA							
Inter-Continental Ballistic Missiles (ICBM)						USA			USSR					
Multiple Independently Targetable Re-entry Vehicles (MIRV)										USA	USSR			
Short Range Attack Missiles (SRAM)											USA	USSR		
Cruise Missiles														USA

NOTE: Pakistan, Israel and South Africa already have, or could now make, nuclear weapons. Argentina, Brazil, Nigeria, Libya, Egypt, Iraq, Iran, South Korea, Taiwan and Japan could all make nuclear weapons within the next few years.



### ACCIDENTS DO HAPPEN...

On 27th July 1956, a United States Air Force nuclear bomber on a training exercise crashed at the Lakenheath airbase in Suffolk. The bomber burst into flames and the fire engulfed a nuclear weapons store. While the fire raged, there was a grave danger that the TNT designed to explode the nuclear cores could have detonated, scattering radioactive material over a wide area.

On 17th January 1966, a B52 bomber carrying 4 H-bombs collided with a tanker aircraft during re-fuelling over Spain and both aircraft crashed near Palomares. One bomb was recovered from land and one from the sea after a two-and-a-half month search. The other two bombs broke open in the crash and 1,400 tons of soil and vegetation were contaminated by radiation and had to be removed.

On 21st January 1968, another B52 bomber crashed in Greenland. This time, 4,000 tons of ice and snow were contaminated with radiation and had to be removed.

In November 1979, a computer error in an American military headquarters set off a war game tape that simulated a massive Soviet nuclear attack. The error was discovered just in time to stop American and British missiles being fired.

On 19th September 1980, a Titan II missile exploded at a base near Little Rock in Arkansas, killing 2 people and throwing the 9 megaton warhead over 300 feet from the silo. Fortunately, the warhead did not explode.

All these examples concern US forces, but this is because of easier access to Government information in the USA. It is likely that there have been similar accidents in more secretive countries like the UK, France, China and the USSR.

## 8. THE AFTERMATH

South Yorkshire would be devastated by a nuclear war, and the destruction would be far greater than in the last war. In the "Square Leg" exercise, the nuclear weapons that were assumed to have hit South Yorkshire had an explosive power 57 times greater than the total explosive power of all the bombs dropped on Britain throughout World War II. The immediate survivors would face unique problems – eg. the 'nuclear winter' and exposure to radiation – that would make survival in the longer term extremely difficult.

### THE NUCLEAR WINTER

After a nuclear war, the skies would be dark with smoke and soot from fires and with dust from the nuclear explosions. Chemical smog from burning industrial plants would contaminate the atmosphere. A recent conference in Washington DC, which brought together scientists from the USA, Europe and the Soviet Union, concluded that, in this twilight world, temperatures would plummet because very little sunshine would reach the ground. Computer models show that half of the globe could suffer a 'nuclear winter' with arctic temperatures as low as – 23 degrees centigrade. In this freezing cold, plants and crops would die; and animals would starve or freeze to death. Some scientists believe

that eventually everybody throughout the world could die, and only insects and grasses would remain.

The studies suggest that even a relatively small 100 megaton nuclear war – under half the size of the "Square Leg" attack – would result in months of cold and dark almost as severe as a full-scale 5000 megaton nuclear war<sup>(12)</sup>.



Popperfoto

### RADIATION

After a nuclear war, the levels of radiation would be very high. Rain would be a deadly radioactive poison – not only undrinkable but also untouchable. Water from lakes and rivers would also be highly radioactive, as would any fresh food that was available.

The computer study of "Square Leg" predicts 448,000 deaths from radiation in South Yorkshire. If a nuclear power station or Sellafield (Windscale) were bombed, the number of radioactive casualties would be even larger.

The first symptoms of radiation sickness are headache, nausea, dizziness and frequent vomiting, then acute diarrhoea and fatigue. If a person lives through this, he or she will appear to recover. But, within 21 days, the symptoms return, together with internal bleeding. Breathing becomes difficult. Hair falls out. Sores break out on the skin. Then there is fever, total exhaustion and finally death. Those who recover from radiation sickness would have their natural resistance to infectious diseases reduced.

Any survivors would be prone to develop blood diseases, like anaemia and leukaemia. Cancers of the bone, lungs, skin and sexual organs would be common. In the longer term, many children would be born weak and would die soon after birth, or would be malformed.

“Mr. Robin Mead, vice-chairman of Civil Aid, said at a press conference yesterday (13 February 1980) that after a nuclear attack people would have to take what they could get. ‘If you saw a frog running about you would have to wash it down to get rid of the radioactive dust, cook it and eat it.’”  
*The Times* 14 February 1980.

#### ULTRA-VIOLET RADIATION

A nuclear war would destroy protective layers in the atmosphere which reduce exposure to invisible ultra-violet light. The increased levels of ultra-violet light would kill fish and crops, and would blind people and animals. Also, ultra-violet light would penetrate the darkness of a nuclear winter and give lethal doses of sunburn. To avoid blindness and lethal sunburn, the immediate survivors would have to stay under cover during the day and could only come out at night.

#### EPIDEMICS

Sanitation and sewerage systems would be destroyed. Corpses would remain unburied. Hunger, cold and exposure to radiation would reduce the resistance of the immediate survivors to diseases. So, infectious diseases – like typhoid, cholera, dysentery, even plague – would probably be common. Certainly, no major hospitals would be operating in the county<sup>(13)</sup>.

At Hiroshima, one relatively small nuclear bomb destroyed 42 out of 45 of Hiroshima’s hospitals. Only 8 doctors survived out of 278; and only 135 nurses survived from 1,780. What South Yorkshire would experience in a nuclear war would be far worse, yet the Government expects our medical services to cope.

“Western military forces are rehearsing mass burials as a part of this autumn’s war games. A spokesman for the US Fifth Army Corps... said it was the first time that troops had practised digging mass graves during Nato’s annual autumn exercises.”

*The Guardian*, 24 September 1983.

#### PSYCHOLOGICAL EFFECTS OF NUCLEAR WAR

Studies of the survivors of Hiroshima suggest that many of the immediate survivors of a nuclear war would be suffering from severe confusion, anxiety, shock and stress. In a cold, dark, ruined, disease-ridden and radioactive world, many people would retreat into apathy and despair. The state of mind of people surrounded by such unprecedented death and destruction is hard to imagine. Would they have any motivation to survive?

In the aftermath of a nuclear war, the immediate survivors would face extreme cold, constant darkness, water shortages, lack of food and fuel, heavy burdens of radiation and pollutants, diseases and severe psychological stress. When all

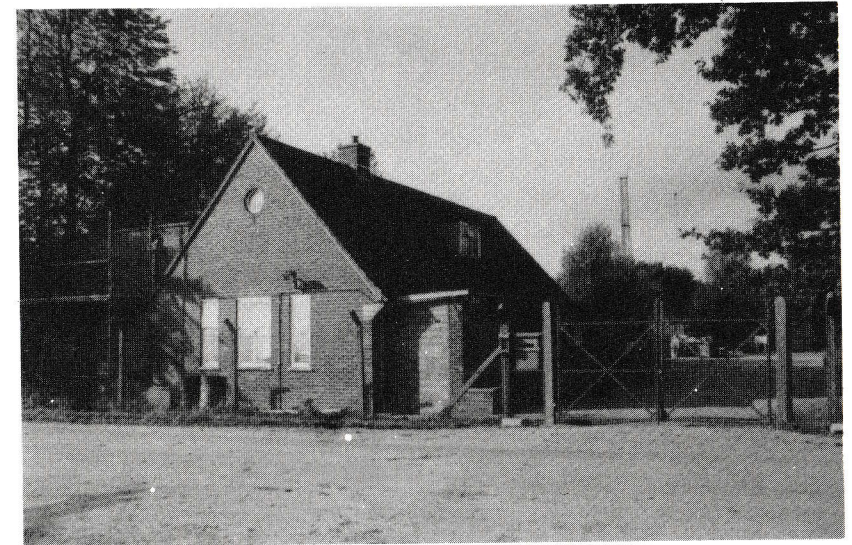
these effects of nuclear war are combined with the direct casualties from the nuclear explosions, it is clear that the use of nuclear weapons could be suicidal. Eventually, there might be no human survivors in the Northern Hemisphere. Human beings, other animals and plants in the Southern Hemisphere would also suffer profound consequences.

#### 9. CIVIL DEFENCE

The computer study of the effects of the “Square Leg” attack on South Yorkshire shows that 934,000 people out of a total population of 1,292,000 would be killed immediately, or die within six weeks. A further 160,000 people would be injured. Moreover, in the months following a nuclear attack, few people would survive the combined effects of disease, radiation, shock, homelessness, ultra-violet radiation, shortage of food and water, and the freezing cold and constant darkness of a nuclear winter.

Yet the Government wants you to believe that civil defence planning by local authorities and some simple precautions by the public will save millions of lives. Already, local authorities must prepare for a nuclear war by participating in unrealistic plans to provide meals, water, medical care, sanitation, graves to bury the dead and accommodation for the homeless.

In the build-up to a nuclear war, ordinary people will be told to stay at home and build makeshift shelters from doors and tables or to hide under the stairs – even if they live in urban areas or near other obvious targets. Since these shelters would provide little protection against the effects of blast and heat from the explosion of nuclear weapons, this policy would mean certain death for millions of people.



Sub-Regional HQ 21, Shipton-by-Beningbrough, near York. The Government’s plan is that after a nuclear war South, West and North Yorkshire would be ruled from this bunker.  
*Duncan Campbell*

“The NHS could not deal with the casualties that might be expected following the detonation of a single one megaton weapon over the UK.”

British Medical Association Report: “The Medical Effects of Nuclear War”

The Government appears to recognise that people in urban areas are prime targets because it has made plans for moving emergency service and medical personnel out of cities and towns<sup>(14)</sup>. Of course, such measures would be useless, given the high radiation levels after a nuclear war and the cold and dark of a nuclear winter. But the existence of such plans highlights a basic inconsistency in the Government’s approach to civil defence.

Moreover, the control of the population before and after a nuclear war seems to be the Government’s main priority. This is why, in the build-up to a nuclear war, the Government intends to suspend democracy and devolve government to a network of what could be seen as regional dictatorships. With little or no involvement from elected representatives, senior administrators and police and army officers could imprison people without trial and requisition buildings, food and fuel. The Government’s plan is that South Yorkshire would be ruled from the two County Emergency Headquarters at Cusworth Hall, near Doncaster, and under County Hall in Barnsley. The region as a whole would be ruled from a bunker at Shipton-by-Beningbrough, near York.

The evidence surveyed in this booklet shows that civil defence preparations are futile because of the scale of the death and destruction, and the longer term climatic effects, that even a relatively small nuclear war would involve. In view of this, civil defence preparations mislead the public about the real effects of nuclear war and encourage the belief that nuclear war is survivable and even winnable.



Members of the public visiting the bunker underneath Cusworth Hall, near Doncaster. This is one of two County Emergency HQs – the other is under County Hall in Barnsley. *Martin Jenkinson*

For the reasons given in this booklet, over 150 local authorities in Britain have declared themselves “nuclear free zones” and are working together to expose the dangers of nuclear weapons and the fallacy that there can be civil defence in a nuclear war.

## 10. WHAT YOU CAN DO

*This booklet has clearly shown that in a nuclear war, the immediate damage and casualties would be so great that there would be little chance of survival. Moreover, the long term effects of the ‘nuclear winter’ put a question mark over the prospects for continued life on this planet. If this gives you a feeling of despair or anger, remember you are not alone. Many other concerned people have decided to do something to achieve nuclear disarmament. Local Authorities are doing what they can, but they can only do so much. Your individual action can be equally important.*

**A starting point could be to write to your Member of Parliament, at the House of Commons, LONDON SW1A 0AA and to the Secretary for Defence, at the Ministry of Defence, Whitehall, LONDON SW1A 2HB. Or you may want to contact the following groups in your area that are campaigning for nuclear disarmament.**

**Barnsley CND, c/o 50 Longley Street, Barugh Green, Barnsley.  
(Telephone Barnsley 385095)**

**Doncaster CND, c/o 98 Wentworth Road, Wheatley, Doncaster.  
(Telephone Doncaster 62140)**

**Rotherham CND, c/o 21 Grattan Street, Rotherham.  
(Telephone Rotherham 554087).**

**Sheffield groups can be contacted through the Sheffield Peace Shop,  
51 Leopold Street, Sheffield S1 (Telephone Sheffield 700873).**

## 11. RECOMMENDED READING

Readers wanting to read more about nuclear weapons and nuclear war will find the following books useful. Most of these books have extensive lists of references and recommendations for further reading.

*The Medical Effects of Nuclear War*, British Medical Association’s Board of Science and Education, Wiley, 1983.

*Doomsday: Britain after a Nuclear Attack*, by S. Openshaw, P. Steadman and O. Greene, Blackwell, 1983.

*As Lambs to the Slaughter*, by P. Rogers, M. Dando, and P. Van Den Dungen, Ecoropa/Arrow Paperbacks, 1981.

*Defended to Death*, ed. Gwyn Prins, Penguin Books, 1983.

*Overkill*, by John Cox, Pelican (third edition), 1981.

These books are available from public libraries (see below) and most good bookshops, including Sheffield Peace Shop (51 Leopold Street, Sheffield S1, telephone Sheffield 700873). Sheffield Peace Shop also has many other books, leaflets and information sheets, as well as having details of local activities.

## Libraries

Barnsley Central Library  
Shambles Street  
Barnsley

Rotherham Central Library  
Frederick Street  
Rotherham

Doncaster Central Library  
Waterdale  
Doncaster

Sheffield Central Library  
Surrey Street  
Sheffield

## REFERENCES

This booklet is based upon official British and United States Government information on the effects of nuclear weapons. Interested readers are referred to: *Nuclear weapons*, Home Office and Scottish Home and Health Department, 3rd edition, HMSO, 1980; *The Effects of Nuclear War*, US Office of Technology Assessment, Congress of the United States, Croom Helm Ltd., 1980; *The Effects of Nuclear Weapons*, ed. Glasstone and Dolan, US Department of Defence and Department of Energy, 1977.

- (1) "Bases Build-up", *New Statesman*, pp12-13, 21st October, 1983; cf "US War Alert Shock at S. Yorks. Air Base". *Sheffield Morning Telegraph*, p5, 30th November, 1983.
- (2) Emergency Planning Report on Exercise Square Leg, South Yorkshire County Council, 1980.
- (3) S. Openshaw and P. Steadman, "Models for Predicting the Effects of Nuclear Attack on Britain", quoted in Table 2, p45, of "War Plan UK" by Duncan Campbell, Paladin (revised edition) 1983. NB: Openshaw and Steadman's analysis is based on an incomplete bomb plot, the Home Office and Ministry of Defence having refused to supply a complete list.
- (4) G. Pattie (Secretary of State for Defence - (Air Force)) in Hansard, 6th March 1981.
- (5) See, for example, *The Counterforce Syndrome: A guide to US nuclear weapons and strategic doctrine*, by Robert C. Aldridge, Transnational Institute, Washington DC, 1978. And *Nuclear War Fighting Strategies* chapter 3, of *Europe's Folly: the Facts and Arguments about Cruise*, by Owen Greene, CND, 1983.
- (6) See, for example, *Defended to Death*, ed. Gwyn Prins, Pelican 1983, pp31-35.
- (7) As note 2.
- (8) Sheffield City Council SANA Report (unpublished).
- (9) As note 2.
- (10) See, for example, *As Lambs to the Slaughter*, pp87-90 and also see note 5.
- (11) This table is derived from Appendices A1 and A2 of *Defended to Death*, edited by Gwyn Prins - especially tables 13 and 14.
- (12) "Martian study predicts 'nuclear winter'", *New Scientist*, p323, 3rd November 1983; cf "What's left when the dust settles?". *The Times*, 9th December 1983.
- (13) As note 2.
- (14) Medical Supplies in War (HDC(78)1), Department of Health and Social Security Circular 1978. cf War Plan UK by D. Campbell, p305.

## APPENDIX 1

### SQUARE LEG SCENARIO: ASSUMPTIONS AND TECHNICAL DETAILS

The Government held Exercise "Square Leg" on 19-24 September 1980. The scenario assumed a nuclear strike on Britain of 150 ground, air and underwater burst nuclear weapons. The scenario included a 3 megaton groundburst in the centre of Sheffield (SK 3486) and a 1 megaton groundburst near RAF Finningley (SK 6798).

In our computer assessment of the casualties, the following assumptions were made:

Windspeed	=	32 mph at relevant heights
Wind direction	=	180.0 degrees (due south)
Maximum proportion unprotected	=	0.500
Proportion exposed to burns	=	0.050
Minimum protection factor	=	4.00
Maximum protection factor	=	7.00
Radius of maximum Q	=	1.63
Radius of minimum P.F.	=	2.74

## Appendix 2. Results of an independent computer assessment of "Square Leg" casualties in South Yorkshire.

Ward	Killed		Burn-Deaths	Injured	Alive	Total Population
	Blast	Radiation				
<b>BARNESLEY DISTRICT</b>						
Ardley	17	10,279	0	0	0	10,296
Athersley	15	9,896	0	0	0	9,911
Brierley	13	7,476	0	186	2,622	10,111
Central	14	10,809	0	0	0	10,823
Cudworth	11	10,362	0	0	0	10,373
Darfield	20	5,973	0	743	4,644	10,637
Darton	9	11,800	0	0	0	11,809
Dearne South	57	1,396	0	3,681	10,645	12,098
Dearne Thurnscoe	51	1,394	0	3,344	10,004	11,449
Dodworth	12	10,559	0	0	0	10,571
Hoyland East	57	10,418	0	0	0	10,475
Hoyland West	44	8,685	0	0	0	8,729
Monk Bretton	17	12,193	0	0	0	12,210
North West	12	9,900	0	0	0	9,912
Park	15	7,763	0	0	0	7,778
Penistone East	28	7,308	0	143	1,273	8,609
Penistone West	12	671	0	1,947	9,505	10,188
Royston	7	10,504	0	0	0	10,511
South West	11	9,270	0	0	0	9,281
Wombwell North	14	6,829	0	0	100	6,943
Wombwell South	27	9,836	0	0	505	10,368
Worsbrough	21	10,800	0	0	0	10,821
	484	184,121	0	10,044	39,298	223,903
<b>DONCASTER DISTRICT</b>						
Adwick	1,246	13,661	808	0	391	16,106
Armthorpe	3,906	11,116	799	0	188	16,009
Askern	99	10,580	114	0	0	10,793
Balby	12,005	1,194	718	359	419	14,336
Bentley Central	8,312	3,441	621	0	7	12,381
Bentley North Road	11,255	410	614	0	0	12,279
Bessacarr	8,784	3,796	705	652	781	14,066
Central	11,757	0	620	0	0	12,377
Conisbrough	371	2,063	735	5,936	11,854	15,023
Edlington & Warmsworth	3,080	5,176	660	2,920	4,302	13,218
Hatfield	200	13,211	289	0	0	13,700
Intake	10,922	117	584	0	0	11,623
Mexbrough	152	742	138	6,147	14,577	15,609
Richmond	9,301	972	643	1,211	2,787	13,703
Rossington	1,889	5,952	630	3,152	4,093	12,564
South East	6,931	5,415	755	1,412	1,993	15,094
Southern Parks	2,928	3,387	413	3,124	6,262	12,990
Stainforth	739	13,483	331	0	5	14,558
Thorne	26	16,461	0	82	483	16,970
Town Field	10,784	0	569	0	0	11,353
Wheatley	11,194	369	609	0	0	12,172
	115,881	111,546	11,355	24,995	48,142	286,924

Ward	Killed		Burn-Deaths	Injured	Alive	Total Population
	Blast	Radiation				
<b>ROTHERHAM DISTRICT</b>						
Anston & Woodsetts	24	567	0	3,037	11,622	12,213
Aston, Orgreave & Ulley	343	140	45	6,605	14,400	14,928
Boston	338	2,333	74	3,392	7,077	9,822
Bramley, Ravenfield	82	69	0	5,817	14,663	14,814
Brampton, Melton & Wentworth	50	5,767	0	551	3,311	9,128
Brinsworth, Catcliffe & Treeton	1,225	5,098	659	3,569	6,210	13,192
Broom	185	473	0	4,467	9,952	10,610
Central	358	4,344	218	1,527	3,643	8,563
Dalton, Hooton Roberts & Thrybergh	99	156	0	5,762	14,081	14,336
Greasbrough	213	6,834	9	495	2,431	9,487
Herringthorpe	126	529	0	4,063	9,636	10,291
Kimberworth	874	9,792	527	25	567	11,760
Kiveton Park	45	85	0	3,000	9,482	9,612
Maltby	80	1,557	0	5,629	15,069	16,706
Park	171	1,104	0	3,809	8,700	9,975
Rawmarsh East	70	835	0	3,787	9,949	10,854
Rawmarsh West	84	2,414	0	2,852	7,953	10,451
St. John's	20	496	0	2,729	9,548	10,064
Swinton	55	570	0	3,973	10,641	11,266
Thorpe Hesley	414	9,433	199	0	272	10,318
Thurcroft & Whiston	128	252	0	4,201	10,275	10,655
Wath	43	2,133	0	2,976	9,138	11,314
	5,027	54,981	1,731	72,226	188,620	250,329
<b>SHEFFIELD DISTRICT</b>						
Beauchief	15,191	0	939	2,245	2,630	18,760
Birley	7,422	271	1,053	9,231	12,293	21,039
Brightside	6,815	9,771	874	0	0	17,460
Broomhill	11,823	20	623	0	0	12,466
Burngreave	15,981	340	863	0	0	17,184
Castle	18,172	73	960	0	0	19,205
Chapel Green	805	21,434	377	0	0	22,616
Darnall	8,364	6,246	951	2,456	3,439	19,000
Dore	5,517	0	1,009	9,933	13,662	20,188
Ecclesall	18,114	57	986	481	544	19,701
Firth Park	14,005	3,538	926	0	0	18,469
Hallam	14,963	1,287	884	437	573	17,707
Handsworth	4,061	901	951	8,917	13,137	19,050
Heeley	18,148	76	963	50	57	19,244
Hillsborough	16,516	1,856	967	0	0	19,339
Intake	14,355	2,281	1,011	2,109	2,525	20,172
Manor	15,663	1,505	914	63	97	18,179
Mosborough	1,091	435	546	10,688	20,361	22,433
Nether Edge	15,525	0	815	0	0	16,340
Nether Shire	5,212	10,827	847	0	0	16,886
Netherthorpe	15,187	0	802	0	0	15,989
Norton	10,221	12	862	4,929	6,106	17,201
Owlerton	11,095	5,757	889	0	0	17,741
Park	16,627	46	879	4	4	17,556
Sharrow	14,773	0	778	0	0	15,551
Southey Green	7,442	8,624	847	0	0	16,913
South Wortley	7,035	14,022	1,095	281	654	22,806
Stocksbridge	102	7,987	0	1,150	5,920	14,009
Walkley	16,672	70	885	9	12	17,639
	326,897	97,436	24,496	59,974	82,014	530,843
Totals for the County	448,289	448,084	37,582	160,288	358,074	1,292,029