

14th Meeting of European Heads of State Mining Authorities
Escape and Rescue arrangements at underground mines
and
Emergency arrangements at surface mines
Bled, Slovenia
23rd to 26th June 2008



Mine Rescue arrangements in Ireland

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BOLIDEN
Tara Mines

Irish Mine Rescue Committee



**GALMOY
MINES**
boliden mining



THE LISHEEN MINE



Tara-Lisheen-Galmoy joint training at Galmoy Mine in November 2004

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1. Introduction

This paper gives a brief description of mining in Ireland, and provides a reference to a comprehensive government document on the subject. The legislation that controls mine rescue arrangements is summarised, and details are included as an appendix. The development of mine rescue is briefly described, including the recent formation of the Irish Mine Rescue Committee.

2. Mining in Ireland – a brief note

Mining has been carried out in Ireland for thousands of years. Some of the earliest recorded workings are of primitive copper mines which were active in SW Ireland in Final Neolithic/Early Bronze Age times (c.2400 – 1500 B.C.), and alluvial gold may have been used for some of the abundant gold ornaments of this period. The 16th and 17th centuries were a time of extensive iron production, while the 19th century saw continuous copper, lead and silver output for over 70 years, as well as a “gold rush” around the start of that century. The period since the 1960s has seen Ireland in the world rankings as a producer of zinc, lead and barite. (Reference given in Section 7).

The current phase of modern mining can be said to have started in the 1960s, with the opening of the Tynagh base metal mine in County Galway. Gortdrum, Silvermines, Avoca and Tara were all in production in the same phase. Mine rescue teams were formed at each mine. By the early 1980s however, exhausted reserves and difficult economic conditions saw all the mines close except Tara.

Through the 1980s and into the 1990s Tara was the only underground mine in operation, and it maintained the only mine rescue teams in the country. A new phase of mining started when Galmoy Mine opened in 1995, and Lisheen Mine in 2000, and with them new mine rescue teams were formed. There are now four operating underground mines in Ireland: Tara, Galmoy, Lisheen and Drummond. The first three produce zinc and lead, while Drummond produces gypsum. Tara maintain three rescue teams, Galmoy two and Lisheen two, while Drummond are in the process of forming and training their team. Figure 1 shows the location of the mines mentioned in the text.

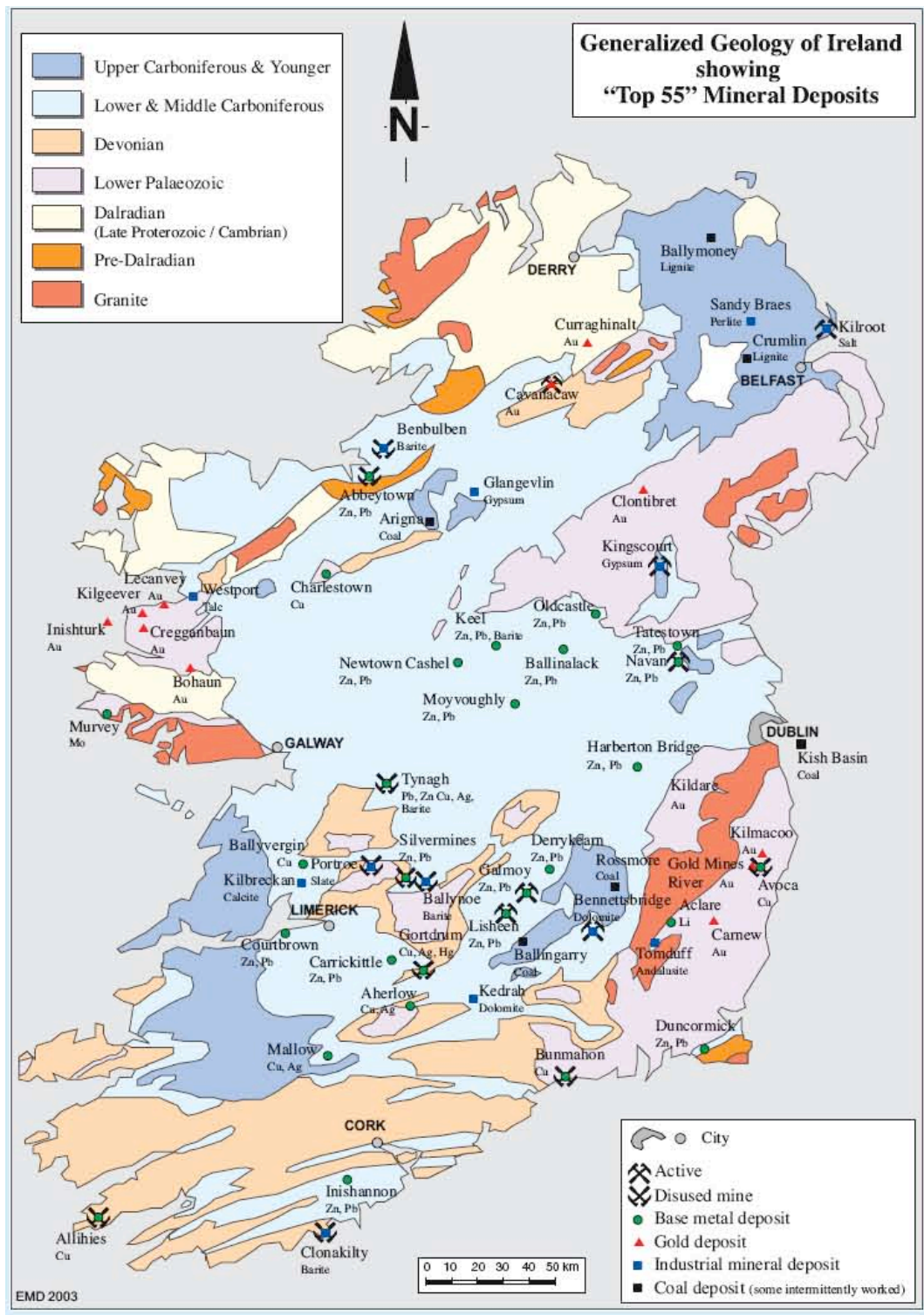


Figure 1. Generalised Geology of Ireland showing "Top 55" Mineral Deposits. (From Reference 1).

3. Legislation - summary

Current requirements for the organisation and management of mine rescue arrangements for underground mines are set out in the Mines (Fire and Rescue) Regulations 1972 and to a lesser extent in the Safety, Health and Welfare at Work (Extractive Industries) Regulations, 1997. These statutes combined deal with rescue arrangements from mines and also transpose the minimum safety and health requirements in relation to rescue arrangements from underground mines found in the Extractive Industries Directive, Council Directive 92/104/EEC. Requirements for rescue arrangements at surface operations “quarries” are now found in the Safety, Health and Welfare at Work (Quarries) Regulations, 2008, are far less detailed than those set out for underground mines and also transpose Directive 92/104/EEC in relation to surface operations.

The Mines (Fire and Rescue) Regulations, 1972 were signed into effect on the 1st day of December, 1972 and may be viewed and downloaded at the Irish Statute Book website (Statutory Instruments, S.I. No. 226/1972). They were made under the Mines and Quarries Act, 1965 (No. 7 of 1965) and the Labour (Transfer of Departmental Administration and Ministerial Functions) Order, 1966 (S.I. No. 164 of 1966).

The Fire and Rescue Regulations are divided into six parts:

- Part I Preliminary and General
- Part II Duties of Persons Employed
- Part III Buildings and Machinery
- Part IV Fire-Fighting Equipment and Safety Precautions
- Part V Precautions in Case of Outbreaks of Fire
- Part VI Rescue Teams

The following are some of the critical points within the regulations. More details are given in the appendix.

Within **Part I, Preliminary and General** many definitions and means of application of the regulations are set out. It also allows for the exemption of certain classes of mines from the requirements of the regulations and states:

The Minister or an inspector may, by notice served on the owner, exempt any mine from the application of any provision of these regulations if he is satisfied that the safety of persons employed at the mine will not be prejudiced in consequence of the granting of the exemption.

However, no such exemption has ever been granted.

The **Duties of Persons Employed** are set out in **Part II** of the regulations which states:

The manager shall take all reasonable steps to ensure that there is drawn up a plan of general procedure to be followed both on surface and below ground to fight and otherwise deal with fire at a mine, either underground or in any surface building, which may endanger the mine entrance and the manager shall ensure that all persons concerned are informed and kept informed of their duties and that copies of the procedure or suitable excerpts are posted and kept posted in each shaft-house or other prominent places at the mine.

The manager shall take all reasonable steps to ensure that procedures for fighting fire in surface plant buildings at a mine (including arrangements for fire drills) are drawn up and suitable signs pertaining to and excerpts from the procedures are posted and kept posted in prominent places at the mine.

In practice these duties are now complied with in mines by the inclusion of emergency preparedness in each mine's Safety and Health Documents, referred to as a "**Safety Statement**" in Irish law.

Part 111 of the regulations deals with **Buildings and Machinery**, in relation to the materials used in the construction of buildings and their distance from access and egress from the mine. Many of these issues are now also dealt with within the Irish Statute Book, Statutory Instruments, S.I. No. 467/1997 — Safety, Health and Welfare at Work (Extractive Industries) Regulations, 1997.

The provision and management of **Fire-Fighting Equipment and Safety Precautions** are dealt with within **Part IV**.

Precautions in Case of Outbreak or Suspected Outbreak of Fire are dealt with within **Part V**.

Regulation 19 informs mine operators of some of the basic requirements in relation to the management of an outbreak of fire below ground.

The objective of Regulation 20 is to have a system in place which provides a signal to all by sensory means to evacuate the mine because of danger. In practice in today's modern mines several other means such as radio systems are now available which are used in conjunction with stench gas, and these are often more effective in achieving an evacuation.

Also, radio systems and messaging systems can now direct workers to refuge stations placed strategically throughout the mine rather than having in place a blanket instruction to evacuate the mine which in some scenarios may put workers in greater risk depending on their location relative to any emergency within the mine.

Under regulation 21 all Irish underground mines now use such refuge stations placed strategically throughout the mine within their emergency arrangements and these have on several occasions proved to be invaluable in life support during an emergency. Modern refuge stations are self-contained and

modular, allowing them to be rapidly re-positioned within the mine as it develops.

The compulsory carrying of oxygen supplying self-rescuers has also enabled persons down a mine during a fire outbreak or other irrespirable atmosphere situation to move with confidence to a refuge station or escape way.

Part VI sets out the requirements for and management and training of underground emergency **Rescue Teams**.

Regulation 22

(1) Subject to paragraph (2) of this regulation, it shall be the duty of the manager of every mine to take every reasonable step to organise and maintain rescue teams as follows:

(a) where the number of persons employed below ground in the mine does not exceed one hundred, at least one team, and

(b) where the number of persons so employed in the mine exceeds one hundred but does not exceed three hundred and fifty, at least two teams,

(c) where the total number of persons so employed in the mine exceeds three hundred and fifty, at least three teams.

(2) This regulation shall not apply with respect to a mine at which less than one hundred persons are employed below ground and arrangements are in force whereby a team from another mine will be made available promptly in case of need.

(3) Mines of which the surface entrances to all the shafts and outlets for the time being in use lie within a circle having a radius of five miles may for the purposes of this regulation, be treated together as a single mine provided that the managers of the mines have made arrangements to this effect and notice of those arrangements has been served on an inspector and the inspector is satisfied with the arrangements.

(4) The manager of a mine to which this regulation applies shall appoint, subject to regulation 26 of these Regulations, not less than five men fully trained in rescue work and employed at that mine to each rescue team and shall appoint one of such men captain.

(5) The manager of a mine to which this regulation applies shall endeavour to ensure that at no time—

(a) in the case of a mine at which one rescue team is maintained—all the members of the team, or

(b) in the case of a mine at which more than one rescue team is maintained—members of all the teams, are employed below ground simultaneously, otherwise than in rescue work or practice.

Regulation 23

The manager of a mine to which regulation 22 of these regulations applies shall take all reasonable steps to ensure that effective arrangements are made for summoning every person appointed there under in case of need.

Regulation 30

In rescue work and training therefor an effective system of communication shall be established between the fresh air base and a rescue team and also between the members of the team itself. In case a two-way telephone communication system is not in use between the fresh air base and the rescue team, or in case audible signaling is used between members of a rescue team the signals specified in that regard in the first column of the Fourth Schedule to these Regulations and no other shall be used to convey the message specified opposite in the second column of that Schedule. If no answer is received to a signal so specified, distress is to be understood in the cases indicated in that Schedule.

Regulation 32

The manager shall keep, or cause to be kept, at the mine, or at such other place as may be approved by an inspector, a plan or set of plans, in a form suitable for use by rescue workers, of the workings of the mine, for each part of the mine showing clearly and accurately, by means of satisfactory recognizable signs the extent of the workings, the airways and the direction of the air current therein and all principal doors, stoppings, air crossings and regulators and telephone stations.

These regulations in effect ensure that each active mine has a dedicated mine rescue team specific to the mine and familiar and knowledgeable in relation to the operation of the mine, its ventilation system and its machinery. This knowledge is invaluable in an emergency situation and aids the speedy and efficient reaction of the mine rescue team(s).

Regulation 39

It shall be the duty of the captain of any rescue team engaged in rescue work in any mine to devote himself to the direction of the team and to secure, to the best of his ability, its safety.

Although the above regulations give a sound base for the operation of mine rescue in Ireland, they are now in need of major revision due to the technological advances in the mining industry during the last four decades. This review is now underway by the Health and Safety Authority, with a view to issuing complete new mining regulations by 2010.

4. The development of Mine Rescue in Ireland

When the modern phase of mining began in the 1960s in Ireland a number of Canadian companies were involved. It was natural then that mine rescue systems already well established in Canada would influence the development of early mine rescue in Ireland. For example, the original mine rescue team at Silvermines was trained by mine supervisors with rescue training who had come to work in Ireland.

Similarly, the Canadian influences at Tara Mines were strong, and this led to the use of the Ontario Mine Rescue Handbook as one of the main tools for organising and training rescue teams.

When Galmoy Mine started in 1995 much assistance was provided from Tara Mines in setting up mine rescue, and so the Canadian influence was maintained.

Lisheen Mine is owned by Anglo American Corporation and the dominant system in mine rescue has therefore been the South African code.

Also, in recent years Irish teams have been to the UK to dedicated training centres, which has resulted in exposure to UK regulations and procedures.

This rather ad hoc situation can be attributed to a number of factors:

- Although Ireland is a significant producer of zinc the mining industry is still small, and the development of regulations lags behind countries with bigger and longer established mining industries.
- The existing Irish Mine Regulations are somewhat out-dated and do not set out a comprehensive code for the operation of mine rescue.
- There is no central training facility or dedicated training staff.
- Mines on opening have tended to follow a mixture of codes and systems in mine rescue, based on influences from neighbouring mines, the mine's ownership, and the experience of the person(s) responsible at the mine site.

Some steps have been taken in recent years to improve the situation.

In 2003 it was suggested that Tara, Lisheen and Galmoy Mines formalised a system of mutual assistance between their respective rescue teams. Joint training began the same year, and since then each mine has hosted a joint training session once a year. The purpose of the training sessions is to allow the visiting teams to become familiar with the layouts of the other mines, and for the teams to practice working together in simulated emergency conditions. Equipment such as foam generators, thermal imaging cameras, and 'jaws-of-life' hydraulic cutters are all used in the joint training.

Arising from the mutual assistance programme, the three mines formed the **Irish Mine Rescue Committee** in 2005, to co-ordinate mine rescue matters in Ireland, and to further develop links with mine rescue organisations in the

UK and other countries. Kilroot Mine from Carrickfergus in Northern Ireland joined the committee in 2007, and it is planned that Drummond Mine from County Cavan will join in 2008.

One of the functions of the Committee is to control the running and format of the annual competition. The purpose of the competition is to allow teams to come together over a weekend and test their skills against each other in a series of pre-set tests. Preparation for the competition means that teams are practising skills that would be needed in a real emergency. The event is staged over two days, with the Friday being used for the delivery of equipment to the host mine, followed by a briefing on the competition format with some details of the tests. The Saturday is the day of competition, with the centre-piece being an underground search and rescue test. Other tests are on first-aid, fitness, technical knowledge, and bench testing of apparatus.

There are currently six mines involved in the competition, with others in Ireland and the UK keen to take part. (Figure 2). The venue rotates around all the competing mines but the logistics of hosting the competition have become quite onerous for a single mine, and the associated budget increases every year. Methods of reducing the burden on the host mine are under discussion.

The Irish Mine Rescue Committee meets twice a year and discusses any rescue/safety events of note at the mine sites, new equipment on the market, joint training, and the standardisation of procedures. There are also excellent links with the civil Ambulance Service, which has assisted rescue members to become more proficient in first-aid. Discussions are also underway with the Irish Department of Defence, with a view to the Air Corps providing helicopter air support to transport a mine rescue team in certain emergency situations.

5. Conclusions

Mine Rescue is very active in Ireland and is well supported by the mine owners and the Health and Safety Authority. However, its development has been rather uncoordinated due to a combination of factors. The recently formed Irish Mine Rescue Committee is now working with the HSA to update the relevant mine legislation, to standardise equipment and procedures, and to develop links with mine rescue organisations in the UK and other countries.



Figure 2. Map of Ireland and Britain showing the location of mines currently involved in the annual mine rescue competition.

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7. Reference

The "Top 55" Deposits. Exploration and Mining Division, Department of Communications, Energy and Natural Resources. Irish Government publication 2005.

8. Links

www.irishstatutebook.ie

Mines (Fire and Rescue) Regulations, 1972 (SI No. 226/1972)

Mines and Quarries Act, 1965

Safety, Health and Welfare at Work (Extractive Industries) Regulations, 1997 (SI No. 467/1997)

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MINES (FIRE AND RESCUE) REGULATIONS, 1972, S.I. No. 226 of 1972

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However, no such exemption has ever been granted.

The **Duties of Persons Employed** are set out in **Part II** of the regulations which states:

The manager shall take all reasonable steps to ensure that there is drawn up a plan of general procedure to be followed both on surface and below ground to fight and otherwise deal with fire at a mine, either underground or in any surface building, which may endanger the mine entrance and the manager shall ensure that all persons concerned are informed and kept informed of their duties and that copies of the procedure or suitable excerpts are posted and kept posted in each shaft-house or other prominent places at the mine.

The manager shall take all reasonable steps to ensure that procedures for fighting fire in surface plant buildings at a mine (including arrangements for fire drills) are drawn up and suitable signs pertaining to and excerpts from the procedures are posted and kept posted in prominent places at the mine.

In practice these duties are now complied with in mines by the inclusion of emergency preparedness in each mine's Safety and Health Documents, referred to as a "**Safety Statement**" in Irish law.

PART 111 of the regulations deals with **Buildings and Machinery**, in relation to the materials used in the construction of buildings and their distance from access and egress from the mine and states:

No building or structure at the top of any shaft or outlet at a mine shall be made of material likely to cause danger from fire to any person employed in the mine.

No engine-room or motor-room constructed below ground in any mine shall be made of or comprise any flammable material likely to cause danger from fire to any person employed in the mine.

Unless there is first provided a second means of egress from the mine workings at a mine, a building which is not of non-flammable construction shall not be erected within 15.2 metres (50 feet) of any closed-in portion of a head-frame or mine entrance; provided that a building housing a winding engine (hoist) or motive power equipment may be erected within such distance if, but only if, such building is not less than 10.6 metres (35 feet) from such portion or entrance.

All workshops, lunch rooms, structures or enclosures necessary for the housing of machinery, equipment and stores below ground in a mine together with their furnishings and fittings shall be located, constructed and maintained so as to reduce the fire hazard to a minimum.

Many of these issues are now also dealt with within the [Irish Statute Book, Statutory Instruments, S.I. No. 467/1997 — Safety, Health and Welfare at Work \(Extractive Industries\) Regulations, 1997](#)

The provision and management of **Fire-Fighting Equipment and Safety Precautions** are dealt with within **Part IV** which among other requirements critically states that:

The manager shall take all reasonable steps to ensure the efficient carrying out of arrangements –

- (a) whereby all equipment provided in pursuance of this Part of these Regulations is inspected by competent persons appointed by him at intervals not exceeding thirty days; and
- (b) for the discharge and refilling of each fire extinguisher to ensure that it is maintained in good working order.

Precautions in Case of Outbreak or Suspected Outbreak of Fire are dealt with in **Part V** which states that:

Regulation 19

(1) If in any mine it appears that a fire has or may have broken out at a place below ground, the person in charge of any part of the mine likely to be affected by such a fire, by-products of combustion thereof or by any explosion resulting therefrom, shall cause all persons employed at any place likely to be so affected to leave it; provided that in any case in which it appears to the person in charge of the place in the mine from which the sign of fire emanates that there exists no immediate danger, persons may remain at that place for the purpose of preventing danger from arising.

(2) Where persons are caused to leave any place in pursuance of paragraph (1) of this regulation, the manager shall take all reasonable steps to ensure that no person is thereafter permitted to enter the place until it is examined and reported safe for him to do so. This paragraph shall not be construed as prohibiting a person from entering any place for the purpose of saving life, ascertaining the condition of that place, ascertaining or taking any necessary measures for the purpose of rendering it safe or ascertaining the effectiveness of such measures.

This regulation informs mine operators of some of the basic requirements in relation to the management of an outbreak of fire below ground.

Regulation 20

- (1) Every mine worked from shafts or adits producing over one hundred tons of mineral per day and any other mines as may be designated a mine to which the provisions of this regulation apply by an inspector shall be equipped with an apparatus approved by the inspector for the introduction into the mine workings of ethyl mercaptan or other warning gas or material approved by the inspector. Such apparatus shall at all times be made available and kept ready for immediate use for the purpose of warning workmen below ground of any emergency necessitating a speedy evacuation of the workings.
- (2) A test of the effectiveness of the warning and a report as to the functioning of the apparatus shall be made at least once in each year and a report of such test and functioning made available to the inspector.

Clearly the objective of this regulation is to have a system in place which provides a signal to all by sensory means to evacuate the mine because of danger. In practice in today's modern mines several other means such as radio systems are now available which are used in conjunction with stench gas, and these are often more effective in achieving an evacuation.

Also, radio systems and messaging systems can now direct workers to refuge stations placed strategically throughout the mine rather than having in place a blanket instruction to evacuate the mine which in some scenarios may put workers in greater risk depending on their location relative to any emergency within the mine.

Regulation 21

Where an inspector considers it necessary or advisable for the protection of workmen employed below ground, he may by notice served on the manager require refuge stations to be provided and maintained at such places within the mine as he may direct, and every such refuge station shall have water, air and telephone connections to the surface and be separated from the adjoining workings by closeable openings arranged and equipped so that gases can be prevented from entering the refuge station.

All Irish underground mines now use such refuge stations placed strategically throughout the mine within their emergency arrangements and these have on several occasions proved to be invaluable in life support during an emergency. Modern refuge stations are self-contained and modular, allowing them to be rapidly re-positioned within the mine as it develops.

The compulsory carrying of oxygen supplying self-rescuers has also enabled persons down a mine during a fire outbreak or other irrespirable atmosphere situation to move with confidence to a refuge station or escape way.

Part VI sets out the requirements for and management and training of underground emergency **Rescue Teams**.

Regulation 22

(1) Subject to paragraph (2) of this regulation, it shall be the duty of the manager of every mine to take every reasonable step to organise and maintain rescue teams as follows:

(a) where the number of persons employed below ground in the mine does not exceed one hundred, at least one team, and

(b) where the number of persons so employed in the mine exceeds one hundred but does not exceed three hundred and fifty, at least two teams,

(c) where the total number of persons so employed in the mine exceeds three hundred and fifty, at least three teams.

(2) This regulation shall not apply with respect to a mine at which less than one hundred persons are employed below ground and arrangements are in force whereby a team from another mine will be made available promptly in case of need.

(3) Mines of which the surface entrances to all the shafts and outlets for the time being in use lie within a circle having a radius of five miles may for the purposes of this regulation, be treated together as a single mine provided that the managers of the mines have made arrangements to this effect and notice of those arrangements has been served on an inspector and the inspector is satisfied with the arrangements.

(4) The manager of a mine to which this regulation applies shall appoint, subject to regulation 26 of these Regulations, not less than five men fully trained in rescue work and employed at that mine to each rescue team and shall appoint one of such men captain.

(5) The manager of a mine to which this regulation applies shall endeavour to ensure that at no time—

(a) in the case of a mine at which one rescue team is maintained—all the members of the team, or

(b) in the case of a mine at which more than one rescue team is maintained—members of all the teams, are employed below ground simultaneously, otherwise than in rescue work or practice.

Regulation 23

The manager of a mine to which regulation 22 of these regulations applies shall take all reasonable steps to ensure that effective arrangements are made for summoning every person appointed there under in case of need.

Regulation 30

In rescue work and training therefor an effective system of communication shall be established between the fresh air base and a rescue team and also between the members of the team itself. In case a two-way telephone communication system is not in use between the fresh air base and the rescue team, or in case audible signaling is used between members of a rescue team the signals specified in that regard in the first column of the Fourth Schedule to these Regulations and no other shall be used to convey the message specified opposite in the second column of that Schedule. If no answer is received to a signal so specified, distress is to be understood in the cases indicated in that Schedule.

Regulation 32

The manager shall keep, or cause to be kept, at the mine, or at such other place as may be approved by an inspector, a plan or set of plans, in a form suitable for use by rescue workers, of the workings of the mine, for each part of the mine showing clearly and accurately, by means of satisfactory recognizable signs the extent of the workings, the airways and the direction of the air current therein and all principal doors, stoppings, air crossings and regulators and telephone stations.

These regulations in effect ensure that each active mine has a dedicated mine rescue team specific to the mine and familiar and knowledgeable in relation to the operation of the mine, its ventilation system and its machinery. This knowledge is invaluable in an emergency situation and aids the speedy and efficient reaction of the mine rescue team(s).

Regulation 39

It shall be the duty of the captain of any rescue team engaged in rescue work in any mine to devote himself to the direction of the team and to secure, to the best of his ability, its safety.

FIRST SCHEDULE (to the Fire and Rescue Regulations)

SCHEMES FOR INSTRUCTION AND PRACTICES IN RESCUE WORK

Instruction

1. The course of initial instruction shall include instruction as to:

(a) the general methods of dealing with underground fires and the recovery of mines after fires and explosions,

(b) the construction, use, repair, maintenance and testing of the type or types of breathing apparatus provided and of smoke helmets or other apparatus serving the same purpose,

(c) the use of methods and apparatus for reviving men,

(d) the properties and detection of the noxious and flammable gases which may be found in mines,

(e) the taking of gas samples in irrespirable atmospheres,

(f) the reading of mine plans, and

(g) the conduct of rescue work detailed in these Regulations and the code of signals contained in the Second Schedule to these Regulations.

Practices

2. Not less than 12 practices shall be provided for each man using breathing apparatus together with not less than two practices using smoke helmets or other apparatus serving the same purpose. Every practice shall take place under conditions so devised as to simulate those likely to be encountered in underground operations requiring the use of such apparatus.

3. The practices shall be carried out as far as possible by each rescue team as such, i.e. by all members of the team, at one and the same time.

4. The practices with breathing apparatus shall take place initially in ordinary air and shall thereafter progress gradually until practices can be carried out in an irrespirable atmosphere.

5. (1) Subject to subparagraph (2) of this paragraph the practices with breathing apparatus shall comprise the following operations, namely:

(a) the repeated raising and lowering of a weight of 25.4 kilogrammes (56 lbs. to and from a height of 1.83 meters (6 feet) by means of a rope and pulley;

(b) walking continuously at a fair pace for half-an-hour,

(c) building and removing temporary stoppings of stone, brick, sandbags, brattice cloth or other materials, and carrying the materials required for such operations over a distance of at least 9.14 meters (30 feet),

(d) removing debris in confined spaces as representing the clearing of a fall of roof,

(e) setting timber or other roof supports,

(f) carrying, pushing or pulling on a stretcher a live person or dummy body weighing at least 68.2 kilogrammes (150 lbs), along the length of a gallery, and through an opening 0.6 meters (2 feet) high by 0.91 meters ((3 feet) wide and 3.64 meters (12 feet) long and

(g) the rapid establishment of communication.

(2) An operation which an inspector considers appropriate may be used in practices with breathing apparatus in lieu of an operation mentioned in subparagraph (1) of this paragraph.

Instruction after initial training

6. Revision of all subjects included in the course of instruction and practice specified in the foregoing paragraphs of this Schedule.

Practices after initial training

7. The practices shall be with breathing apparatus and shall take place at least once in each quarter and at least six times annually, and at least two of the practices shall take place in mines, and the remainder in an irrespirable atmosphere.

8. Where possible mine practices shall include work in low and constricted roadways.

9. All practices required by this part of this Schedule shall last at least two hours except on occasion when, in the opinion of the instructor, it is desirable in the interests of safety to curtail the practice. At some of the practices the breathing apparatus shall be worn continuously for two hours.