



MINES RESCUE SERVICES SOUTH AFRICA

AN OVERVIEW

BY

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MINES RESCUE SERVICES*

Mines Rescue Services (Pty) Ltd South-Africa



Mines Rescue Services (Pty) LTD



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INTRODUCTION

Mines Rescue Services is a private sector organization, which trains volunteers for rescue work and administers a rescue service scheme, to provide rescue and recovery services, resources and expertise for an effective emergency service primarily for the South African mining industry.



MISSION STATEMENT

Our mission is through the training of voluntary brigadesmen to provide an efficient fire-fighting, rescue and recovery service, on a cost efficient basis, with the objective of minimising the loss of life and assets.



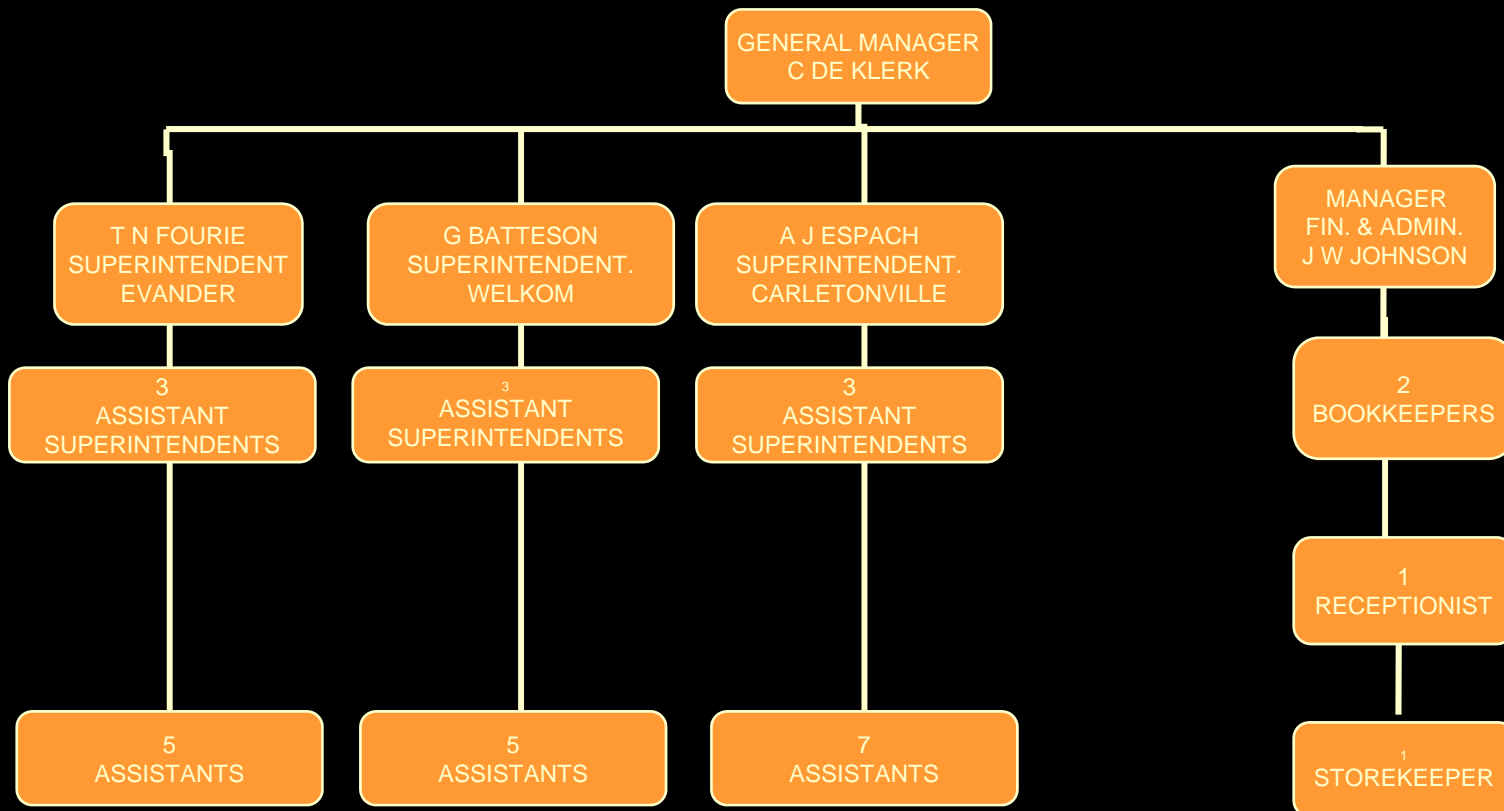
SERVICE PROVIDED

- Training Rescue Personnel (Brigadesmen) to a competency of the required skills;
- Providing expert advice and consultancy service;
- Remaining proactive to changes in technology and the environment;
- Providing and maintaining specialised equipment.



ORGANISATION STRUCTURE

STAFF COMPLIMENT 35



LOCATION OF STATIONS



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REGULATIONS - RESCUE BRIGADE

- Regulation 24.14.1.
- More than 100 underground employees
= 1 brigade
- More than 700 underground employees
= 2 brigades



PROPOSED NEW REGULATIONS

- Every employer at every underground mine must maintain teams in the following ratio:
 - 100 and 1200 underground employees - 1 team
 - 1201 and 4000 underground employees - 2 teams
 - 4001 and 9000 underground employees - 3 teams
 - More than 9000 underground employees - 3 teams and at least 1 additional team for every additional 7000 employees



M.R.S. MEMBERSHIP SCHEME

- “A” Class member

Maintains own team

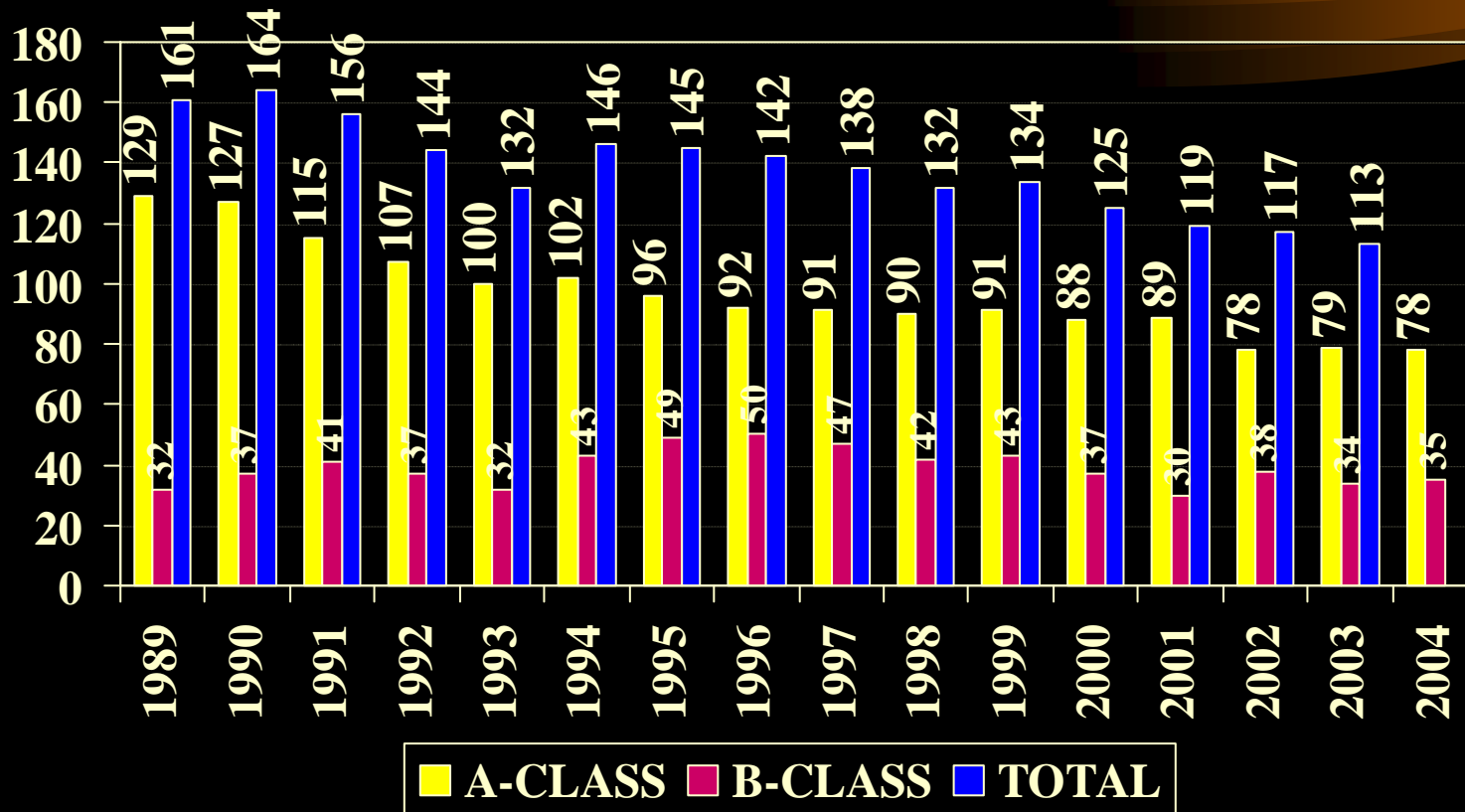
- “B” Class member

Does not maintain own team

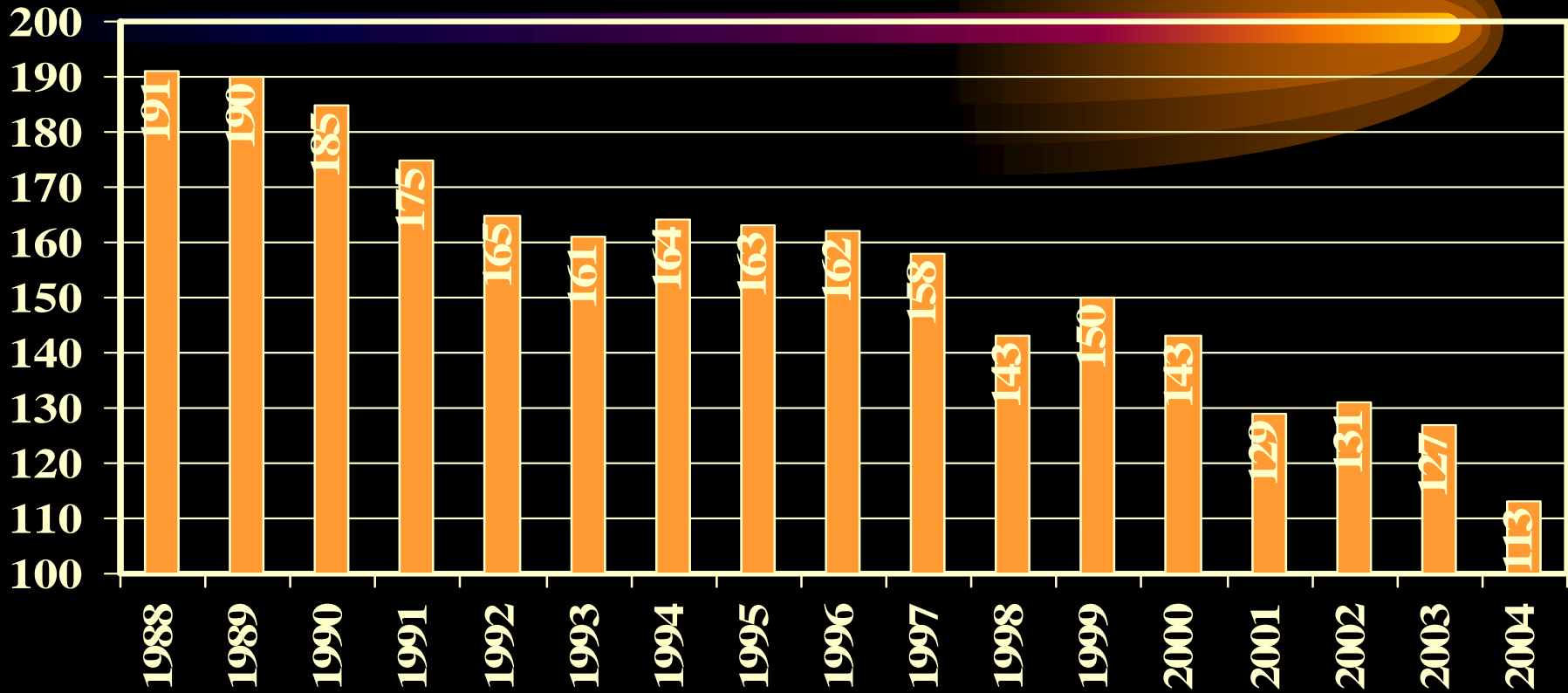
→ Can call for assistance from neighbouring mines through Mines Rescue Services.



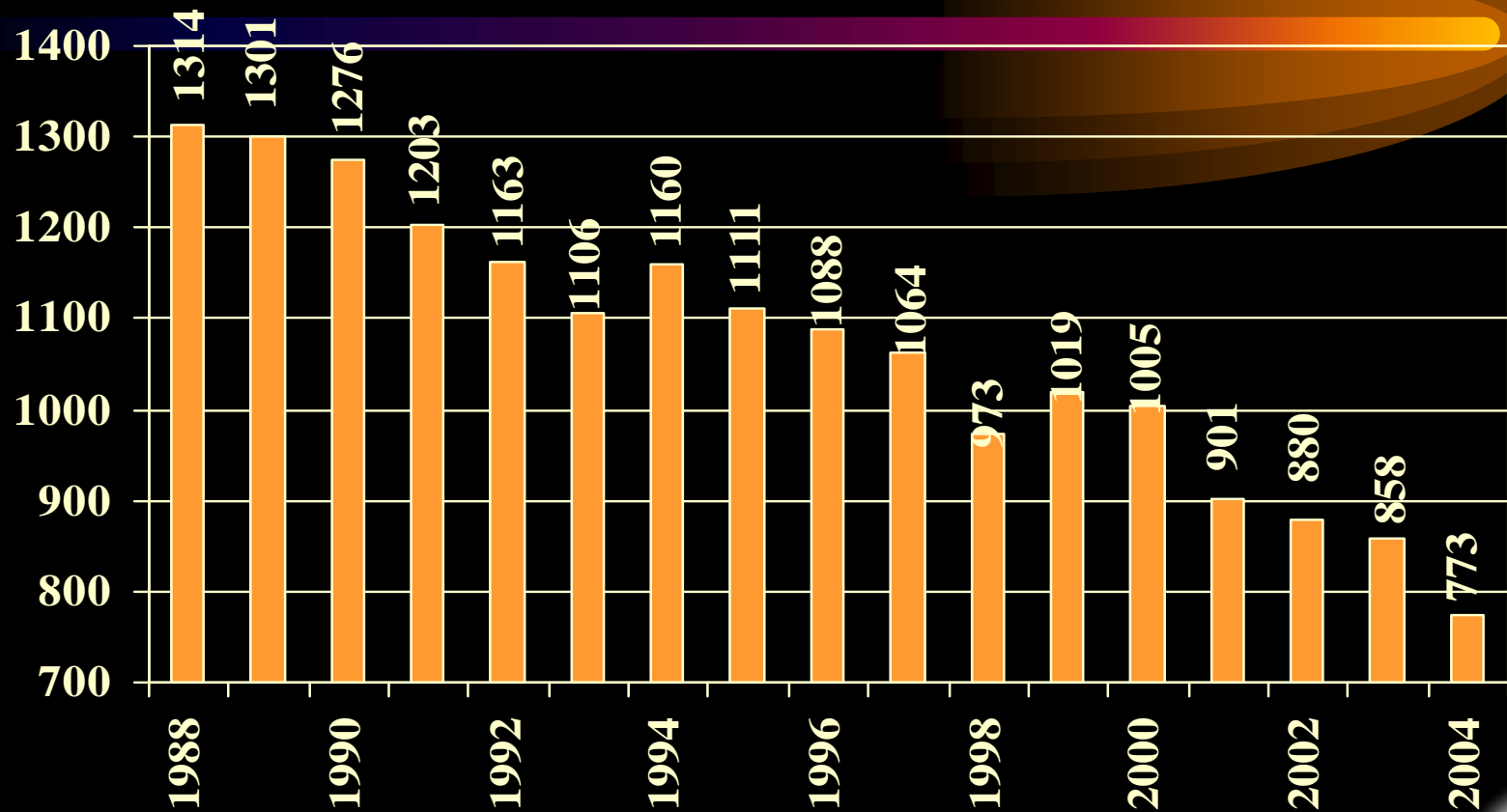
M.R.S. MEMBER MINES



MRS - RESCUE TEAMS



MRS BRIGADE STRENGTH

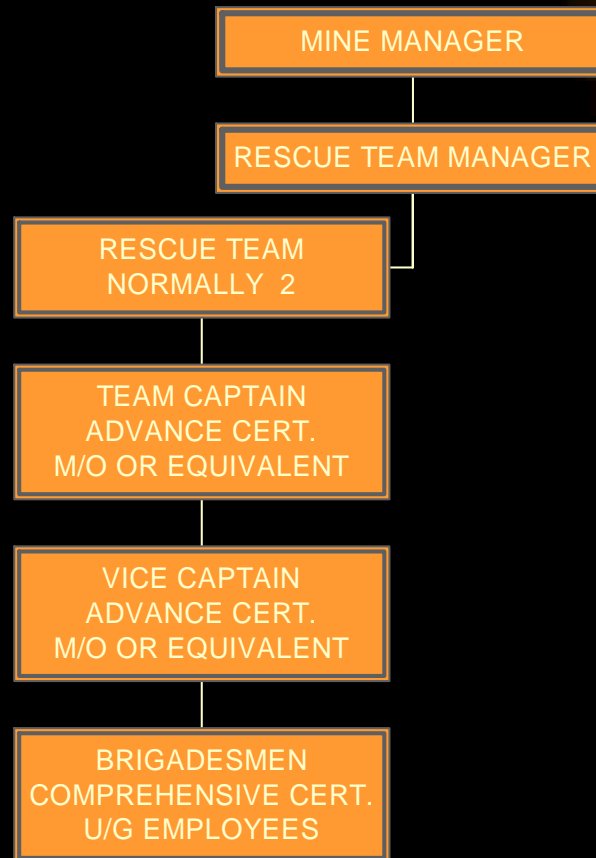


OTHER AGREEMENTS

- Agreement with Department of Mineral and Energy to render assistance when life is in danger at abandoned mines
- Agreement to be entered into in the event of assistance required from non-member mine



RESCUE TEAM STRUCTURE



REQUIREMENTS FOR BRIGADESMEN

- Volunteer mine employees selected by mine management
- Cool of temperament, responsible, used to discipline and experienced in underground work
- Aged between 21 and not exceeding 46



REQUIREMENTS FOR BRIGADESMEN

- Medically examined prior to undergoing the Heat Tolerance Test
- Volunteers must attend a five day initial training course



PHYSICAL CRITERIA OF BRIGADESMEN

- Medical Examinations
 - Initial
 - Periodical
 - Pre-operational
- Heat Tolerance Test
- Work Load Test



INITIAL COURSE



- 5 day practical and theoretical course on the use of breathing apparatus and fire fighting techniques
- Candidates to complete Work Load Test at end of course





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ADVANCE COURSE



- Three day course
- Provide effective leadership
- A pre-requisite for all captains and vice captains
- Focus on risk assessment and management principles



QUARTERLY TRAINING



- 1st and 4th quarter
Practical in simulated mine
- Each alternate year in 2nd quarter - Heat Tolerance Test
- 3rd quarter
Work Load Test



HEAT TOLERANCE TEST



- 24 Steps per minute
- 31,7 °C W/B
- 33,2 °C D/B
- One hour
- Rectal temperature
- $\leq 39.0^{\circ}\text{C}$ heat tolerant.
- $\geq 39.1^{\circ}\text{C}$ not heat tolerant





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WORK LOAD TEST

- Scientifically developed test to measure the work load capacity of brigadesmen in a pre-determined time.



WORK LOAD TRAINING



WORK LOAD TRAINING





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MINES ROPE RESCUE



- Three-day training on the application of various rope techniques
- Basic skills in:
 - Griptech
 - Skyjack
 - Rescue Winders



MINE EMERGENCY CARE

Four week duration BAA
course



- Specially selected brigadesmen
- Advanced life support
- Mine related accidents



BOREHOLE TRAINING



- Selected brigadesmen from collieries are trained to be lowered through a 60 cm. hole drilled by collieries rescue drill unit



CONTROL ROOM MANAGERS COURSE

- One day course specially designed for managers, graduates, diplomats and learner officials
- Objective is to inform candidates of:
 - The structure of Mines Rescue Services
 - Modus Operandi of brigadesmen
 - Control Room Procedures



RESCUE EQUIPMENT



DRÄGER BG 4



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BODY COOLING GARMENTS



NOMEX PROTECTIVE CLOTHING



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SELF RESCUERS



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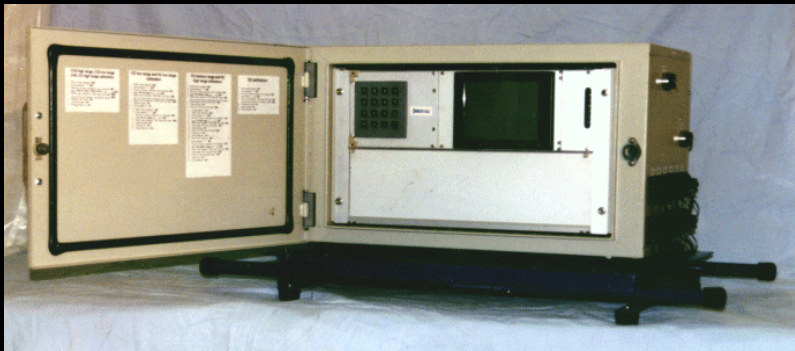
RESCUE VEHICLES



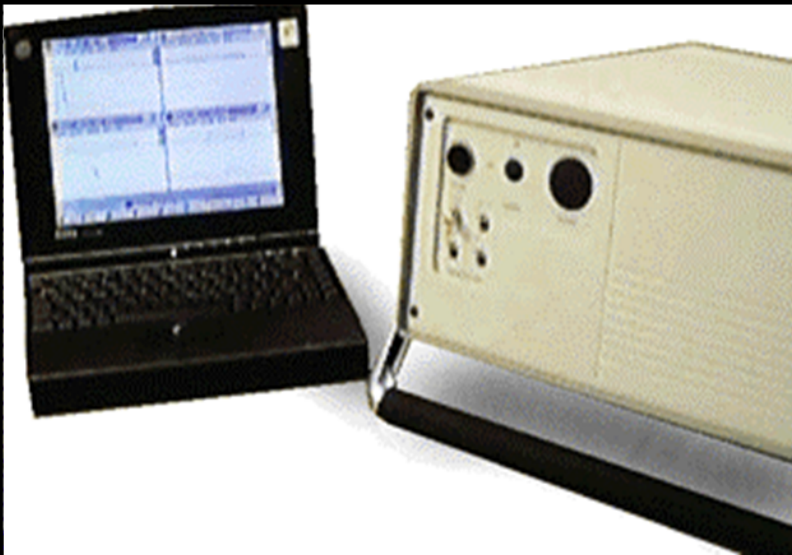
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TRUGAS



HP GAS CHROMATOGRAPH



- Fastest GC in the world (130 seconds)
- Portable
- Accurate up to 1ppm
- To detect spontaneous combustion and analyze gases from colliery fires



TRAPPED PERSON LOCATION DEVICE



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THERMAL IMAGING



SUB STRATA RADIOS



LIFELINE



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LIFTING EQUIPMENT



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ROPE RESCUE



RESCUE WINDER



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FULL BODY HARNESS



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SEALING PRODUCTS



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SEALS



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SEALS



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SEALS



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INERTISATION SYSTEM



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FIRE STATISTICS



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CAUSES OF GOLD MINE FIRES

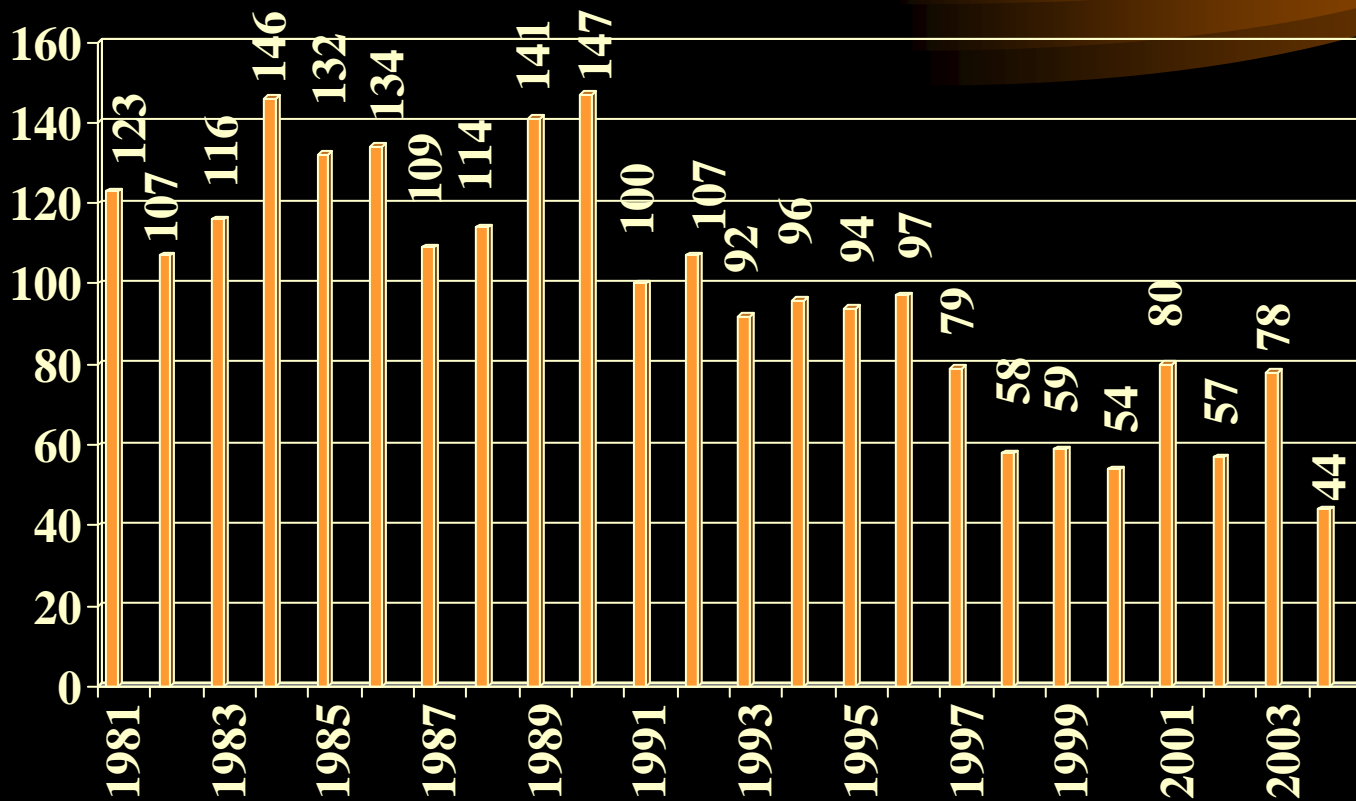
1981 TO 2004



UNKNOWN	836
OTHER	25
HOT WORK	205
ELECTRIC	607
FRICTION	66
SPON. COM.	6
SMOKING	76
EXPLOSIVES	267
SUSPECTED ARSON	193
VEHICLES/DIESEL	42
FLAMMABLE GAS	42

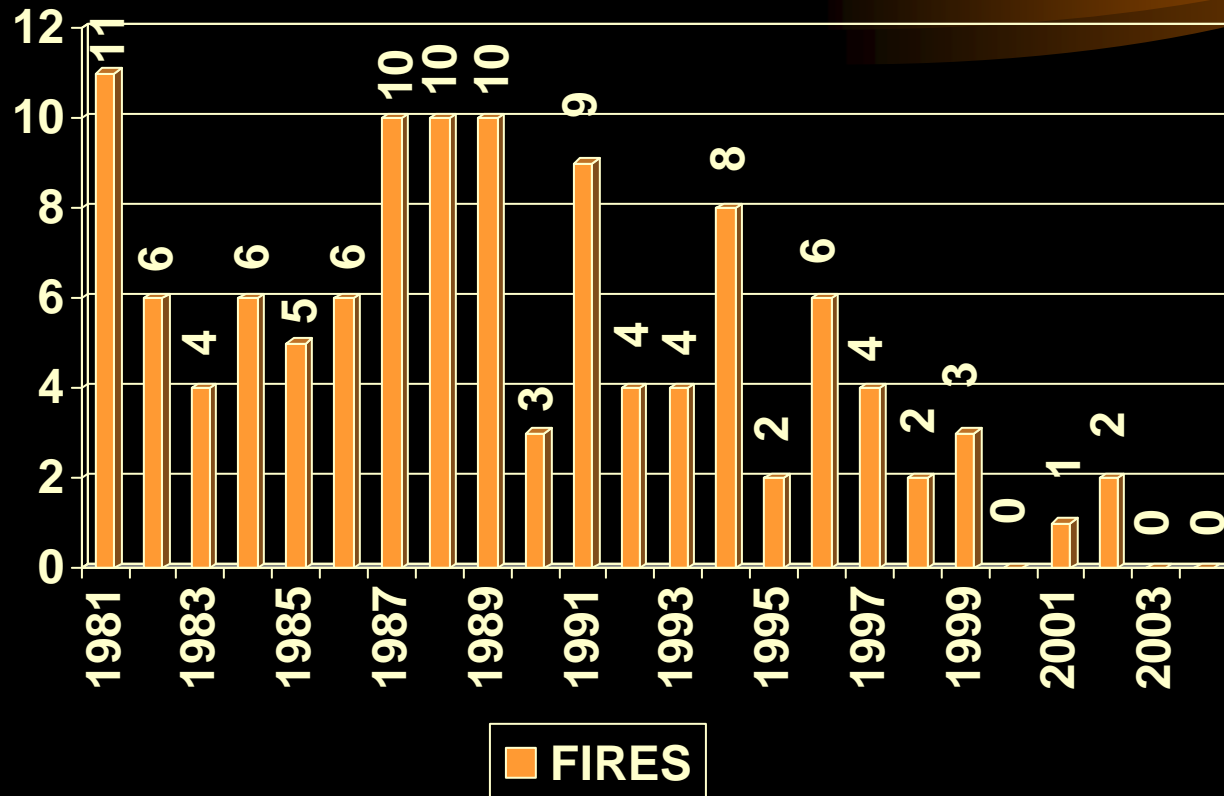
METALLIFEROUS FIRES

1981 - 2004



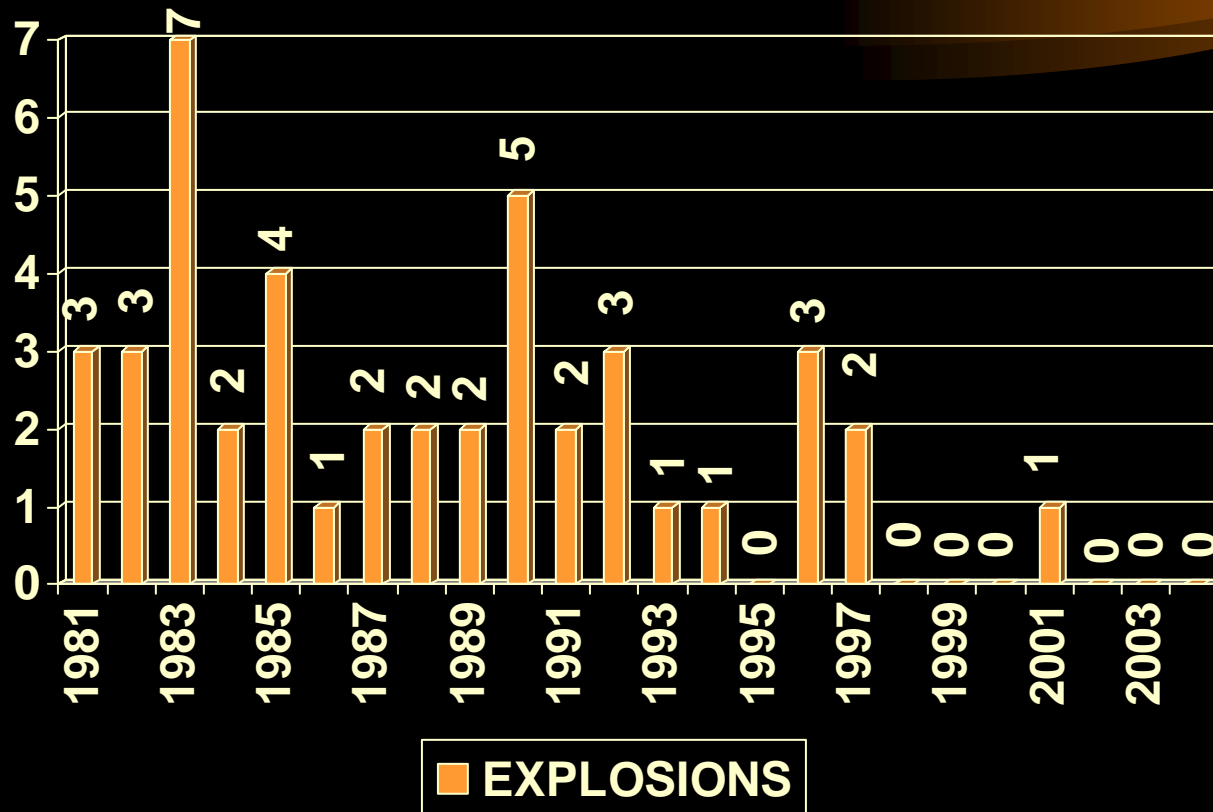
COLLIERY FIRES

1981-2004



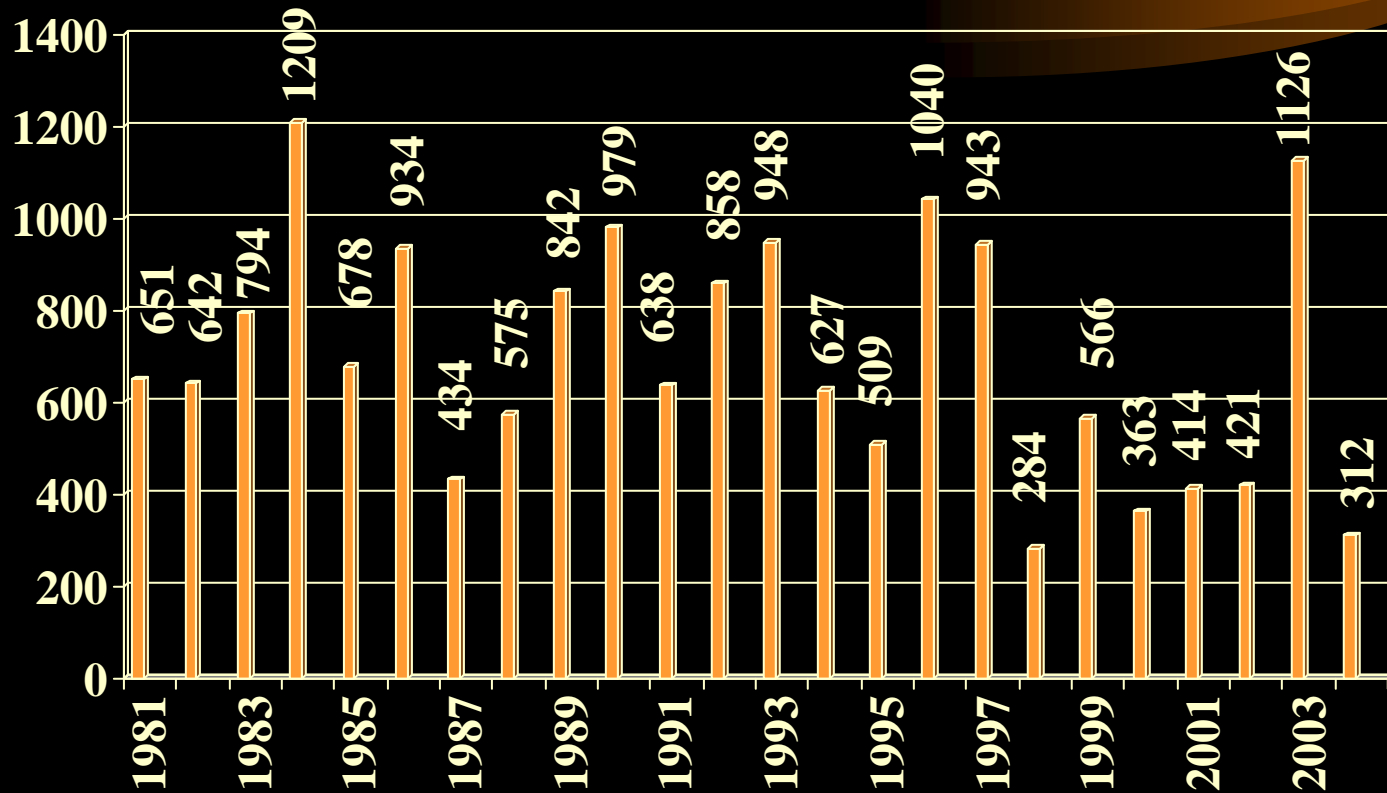
COLLIERY EXPLOSIONS

1981 - 2004



RESCUE TEAM USAGE

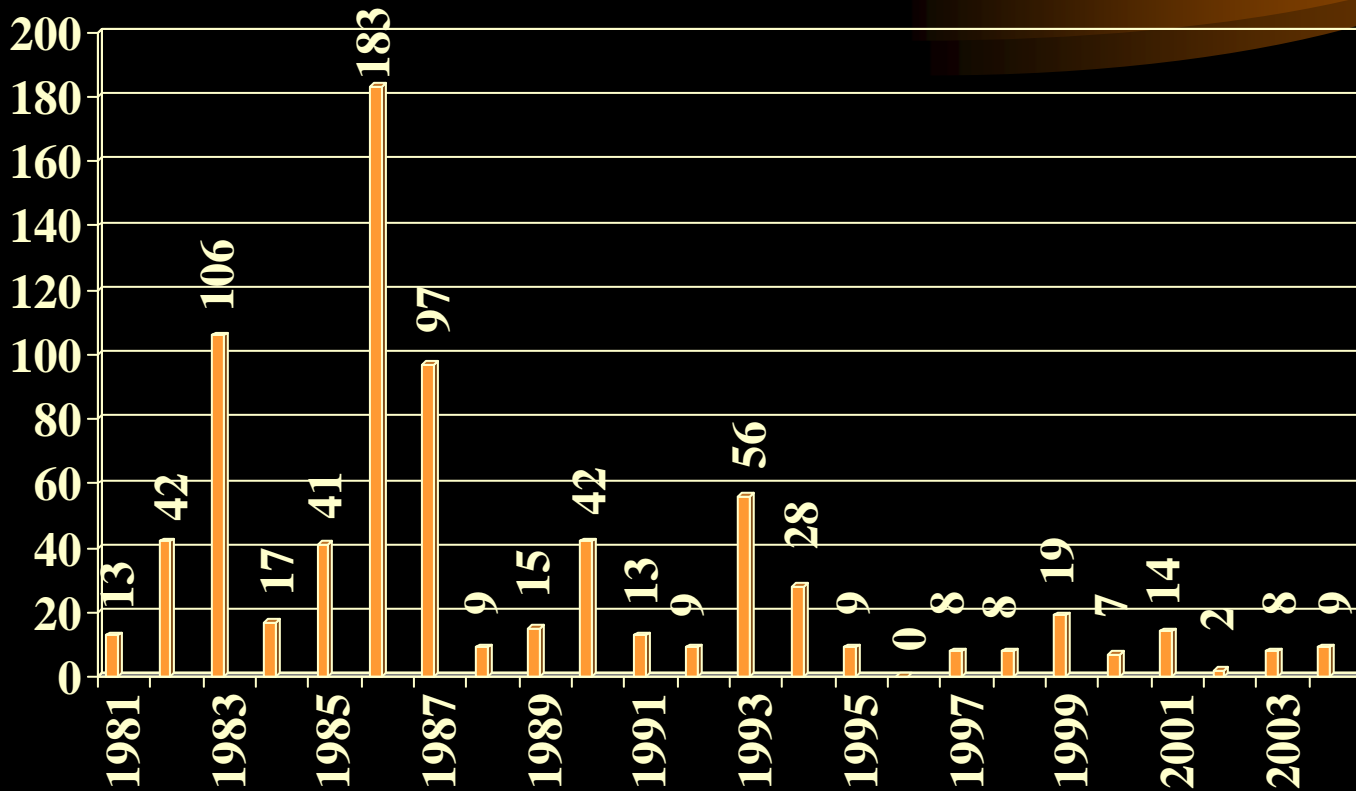
1981 - 2004



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FATALITIES DUE TO FIRES AND EXPLOSIONS 1981 – 2004



COLLIERY FATALITIES DUE TO FIRES AND EXPLOSIONS 1981-2003



F.I.R.E. GOLDEN RULES

- Follow all operating procedures
- Instill team discipline, never split
- Remember your set and communication system
- Ensure there is a back up team



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