



**FINAL REPORT**

**COLLATION OF HISTORICAL  
OCCUPATIONAL HEALTH AND ACCIDENT DATA  
IN THE  
SOUTH AFRICAN MINING INDUSTRY**

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## EXECUTIVE SUMMARY

This project was designed to assemble historical material that was not easily accessible and publish it in an electronic format.

Literature searches were undertaken on the Internet, various libraries (public and private) were visited and several private collections accessed. The material was collated, scanned and published to two CDs that also contain an installer that copies the electronic library to users' hard drives. A search engine has also been included with the CD in order to access the material using keyword searches.

During the project it was noted that there was no comprehensive, coherent process utilised by the Department of Minerals and Energy to capture lessons learned from seminal accident or disaster investigations. Brief recommendations for the department have been developed and included in the appendices.

This document describes the objective, process and outcome of the project.

## OBJECTIVE

SIMRAC funds research that requires access to, and scrutiny of, past research and other findings pertaining to occupational health and safety in miners. Some rich resources of generally inaccessible and “grey” literature exist that could be made more easily available to researchers and SIMRAC stakeholders. This project was designed to assemble this historical material and publish it in an easily retrievable electronic format.

The project was scheduled for completion within nine months on a budget of R 400,000.

## PROCESS

The project outputs were initially defined according to Figure 1 and the processes divided into 6 distinct phases, tabulated below.

| Phase No | Output   | Milestone Dates |
|----------|--|-----------------|
| 1        | Assemble commissions, reports, publications relevant to health and safety practice in the SA mining industry | May 2002        |
| 2        | Create focus group and prepare review process  | June 2002       |
| 3        | Review reports, commissions and publications   | August 2002     |
| 4        | Collate and electronically capture material  | October 2002    |
| 5        | Produce material on CD   | November 2002   |
| 6        | Undertake industry workshop  | January 2003    |

The timelines and project budget were monitored accordingly (appendix 1)

### 1. Assemble commissions, reports and publications

Possible sources of information were initially identified - individuals, organisations and libraries.

Discussions were held with personnel of the National Centre for Occupational Health (Johannesburg) and the Industrial Health Group (Cape Town) to source occupational health research that was not easily accessible in the public domain.

Various members, past and present, of the Mine Medical Officers' Association (MMOA) were approached for material published in the MMOA Journals from 1921 to date.

Several visits were made to the Department of Minerals and Energy (DME, Mineralia Building, Pretoria), firstly to examine statistical reports and, secondly, to ascertain the location of records relating to major disasters. Further visits were also made to the Johannesburg, Witbank and Klerksdorp regional offices.

Various libraries were searched to ascertain the material present – Chamber of Mines library, Orenstein library (NCOH), various libraries at Wits, RAU and Cape Town universities, State library (Pretoria), and the National Archives (Pretoria).

Various electronic searches were also undertaken – Internet engines, SABINET.

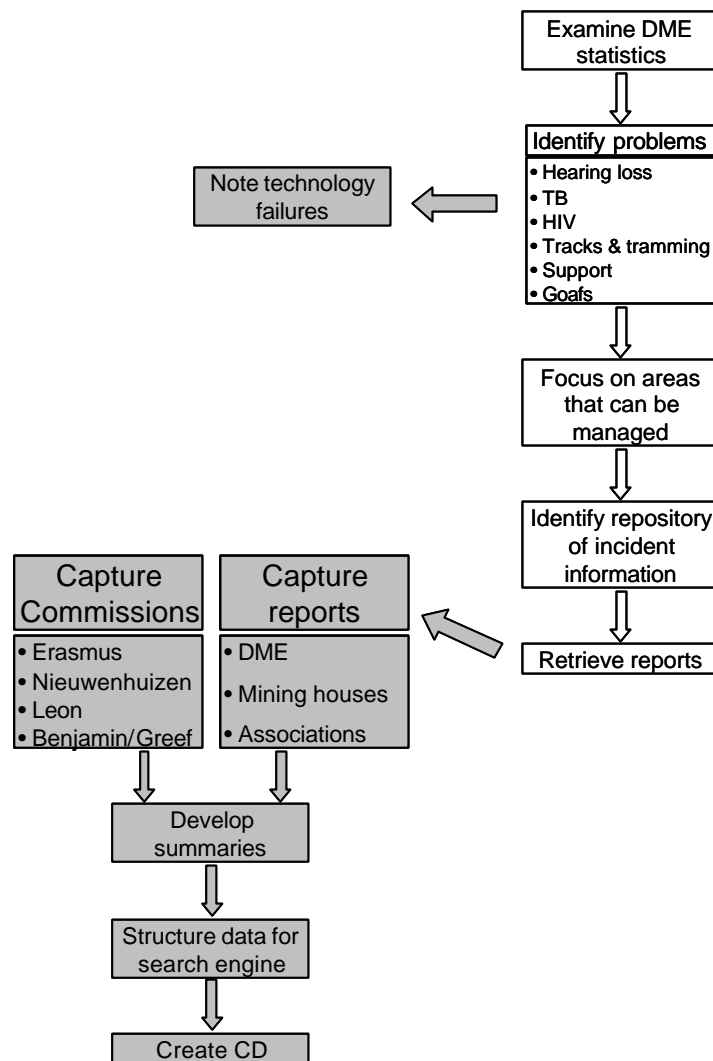


Figure 1. Original project process

Concurrently, an investigation of safety and health statistics (e.g. SAMRAS, RMA) was undertaken to determine those areas where knowledge transfer would provide the greatest impact in managing health and safety issues. Technology failures would be noted but focus would be placed on those issues that could be managed and immediately impacted upon by the transfer of knowledge.

The initial investigation and document search results elicited a wide variety of publications and material (appendix 2).

## 2. Create expert group and prepare review process

Various health and safety experts in the mining industry were identified and contacted individually or in groups. The same agenda (appendix 3) was utilised in each meeting and input was sought regarding the specific material that should be captured. At the same time, specific reports (major disasters, accident/incident analyses) and published articles (MMOA journals) were sought.

During this process, it became clear that the researchers' views and those of the expert groups differed on the objectives of the project. Industry representatives viewed the initial

scope of material (appendix 2) as too broad and recommended that the project focus only on capturing historical documents that had become difficult to source (MMOA journals, accident investigations) or where the document quality was deteriorating and in danger of being lost forever (Commissions, early MMOA journals). In-house documentation was regarded as being readily available to the mining houses and so did not require capturing.

Therefore, the SIMRAC sub-committee requested the research team to focus on three specific areas:

- ? MMOA journals
- ? Key health and safety commissions
- ? Major disasters

### **3. Review reports, commissions, publications**

The project team requested the experts to analyse the assembled material, develop themes in line with a suggested framework (appendix 3) and publish summaries of the captured material on CD. The expert group consensus was that any enhancements should form part of a future project and that the mooted search engine could adequately access current material.

### **4. Collate and electronically capture suitable material**

The assembled material was collated, scanned, proof read and edited to ensure that the captured content was accurate and legible.

### **5. Produce material on CD**

The production of the CD addressed the following technical components:

- ? Determining the framework of the CD – the “look and feel”
- ? Establishing the most efficient file format
- ? Developing the library functions and hyperlinks
- ? Creating the document search engine
- ? Creating an automated programme installer

### **6. Launch of the product**

The product launch was designed to provide occupational health and safety practitioners with an overview of the historical material that had been made available on the CD.

## **OUTCOME**

The eventual quality of the CD largely depended on original quality of the hard copy, the scanning technology utilised, the proof reading and editorial skills of the researchers, and the database and search engine technology built into the CD.

### **1. CD Contents**

The contents of the CD are delineated in appendix 5. The majority of MMOA journals were traced from the first edition in April 1921 to the last edition in November 1989. However, the journals from 1929 – 1933 have not been traced.

Disappointingly, very few accident investigations could be captured and specific recommendations have been appended (appendix 4)

Due to the large number of graphics contained in the MMOA journals, the electronic files exceeded 2 gigabytes in capacity and therefore had to be distributed across 2 CDs.

## 2. Project Costs

The total project cost was R400 000, the breakdown shown in Table 1. In retrospect, the amount of time consumed in capturing, proof reading and editing the material was approximately 200% more than originally anticipated.

| PROCESS  | TOTAL COSTS<br>(Rands ex VAT) |
|--|-------------------------------|
| Identifying, finding and assembling hard copy of documents | 100 000                       |
| Electronic capture, proof reading and editing              | 170 000                       |
| Development of search engine, installer, CD interfaces     | 100 000                       |
| CD reproduction / Product launch                           | 30 000                        |
| <b>TOTAL</b>   | <b>400 000</b>                |

**Table 1 Breakdown of CD Costs**

## 3. Project Timelines

Despite extensive effort to deliver the project within the original timetable, the project was delivered 6 months late, largely due to the following:

- ? alterations to the initial scope of the project – a two month delay at the commencement of the project
- ? difficulty in sourcing content – some MMOA journals were found in boxes in the garages of retired mine medical officers, accident investigation material not retrievable
- ? extended capture process - poor quality of original documentation created difficulties for the current optical character recognition technology (OCR) and extensive proof reading and editing of electronic errors were required

## **LEARNING POINTS / RECOMMENDATIONS**

The quality of the final product is dependent on locating the historical documents, the electronic capture process, and the tools utilised to manage the knowledge transfer. The following points may prove useful to future projects of a similar nature:

### 1. Locating historical documents

Where documents have not been assiduously managed and collated in library collections, the collation of historical material requires proficient investigative technique, as many old documents are not easily accessible. The most useful sources are often retired members of a particular community (e.g. retired medical practitioners of the MMOA) who either have copies of specific documents or know of possible repository sites.

### 2. Electronic capture process

The most useful electronic format for users is the use of searchable .pdf files as this provides content that can be searched and copied whilst the original content remains intact. However, when the quality of the original documents is poor, scanning and subsequent optical character recognition technology results in many errors in the electronic format that have to be edited out of the text prior to recreating the .pdf format.

Furthermore, there is no single scanning technique that electronically captures both text and graphics simultaneously in a manner that provides quality reproduction of both. Thus

document capture requires capturing documents twice and then splicing the text and graphics back together again; or slow speed scans are undertaken and settings altered depending on whether the original document page contains predominantly text or graphics. This creates an extremely time consuming capture process.

Both the high speed and slow speed capture processes were undertaken in the project and it was found that with large volumes of material the more cost-effective results were produced with high speed capture, even though a subsequent editing process was required to “stitch” the text and graphics together again.

However, if the original documents are less than 500 pages, a slow speed capture process is probably the more effective. Scan resolutions can be altered from page to page so that there is no requirement to “stitch” pages back together again.

The most time consuming aspect of the project was to proof read the electronic material and correct the optical character recognition (OCR) files.

### **3. Knowledge transfer tools**

In order to make a large body of knowledge available, some form of indexing or search engine is required. In this instance, it was decided that the documents would firstly be indexed and hyperlinks to the electronic files created. A search engine was created to search the indices based on specific key words input by the user and the return to screen was the index and hyperlinks to the electronic files. The user then “clicked” on the appropriate index and that specific document would open.

Should the returned document consist of many pages, a further search engine could then search the document based again on key word input.

### **4. Accident investigation database**

See appendix 4.



## PROJECT TIMELINES & BUDGETARY MANAGEMENT

| Process  | Original Timeline | Complete  | Budget (ex VAT) | Payment to date (ex VAT) |
|--|-------------------|-----------|-----------------|--------------------------|
| Start up and preparation   | 04/2002           | ▶         | 40 000          | 40 000                   |
| Identify commissions, reports, publications relevant to health and safety practice                         | 05/2002           | ▶         | 80 000          | 80 000                   |
| Identify seminal accident investigations   |                   | ▶         |                 |                          |
| Assemble commissions, reports, publications relevant to health and safety practice                         |                   | ▶         |                 |                          |
| Assemble seminal accident investigation reports  |                   | ▶         |                 |                          |
| Identify format for searchable material  |                   | ▶         |                 |                          |
| Identify H&S experts with extensive experience in SA mining industry                                       | 06/2002           | ▶         | 80 000          | 80 000                   |
| Contact identified experts, create focus group and schedule meetings                                       |                   | ▶         |                 |                          |
| Prepare facilitation process and disseminate material to focus group                                       | 07/2002           | ▶         | 80 000          | 80 000                   |
| Analyse assembled material   | 08/2002           | ▶         |                 |                          |
| Develop content for CD   |                   | ▶         |                 |                          |
| Collate proceedings and findings   | 09/2002           | ▶         | 80 000          | 80 000                   |
| Obtain copyright permissions, where relevant, for electronic storage of commissions, reports, publications | 10/2002           | ▶         |                 |                          |
| Create electronic copy of material   |                   | ▶         |                 |                          |
| Proof read electronic drafts   |                   | ▶         |                 |                          |
| Identify and contract software house for interactive CD production   | 11/2002           | ▶         | 80 000          | 80 000                   |
| Produce interactive CD   |                   | ▶         |                 |                          |
| Prepare and produce hard copy guide explaining use of CD   |                   | ▶         |                 |                          |
| Organise seminar venue   | 02/2003           | July 2003 | 60 000          |                          |
| Prepare presentation material  |                   |           |                 |                          |
| Seminar presentation - demonstrate use of CD   |                   |           |                 |                          |
| Final report   | 03/2003           | 06/2003   | 60 000          |                          |
| <b>TOTALS</b>  |                   |           | <b>400 000</b>  | <b>280 000</b>           |

## INITIAL SEARCH FINDINGS

### 1. ACCIDENT STATISTICS

#### 1.1 The Ten Worst Coal Mine Explosions in South African History

| Colliery                     | Date       | Killed | Injured |
|------------------------------|------------|--------|---------|
| Durban Navigation Collieries | 1926/10/08 | 125    | 0       |
| Natal Navigation Collieries  | 1923/05/16 | 78     | 4       |
| New Marsfield Collieries     | 1935/07/31 | 78     | 0       |
| Hlobane Colliery             | 1938/09/12 | 68     | 8       |
| Hlobane Colliery             | 1944/09/12 | 56     | 13      |
| Middelbult Colliery          | 1993/05/13 | 53     | 0       |
| Glencoe Colliery             | 1908/02/13 | 50     | 5       |
| Burnside Colliery            | 1930/05/20 | 38     | 0       |
| Ermelo Mine Services         | 1987/04/09 | 35     | 11      |
| Middelbult Colliery          | 1985/08/12 | 34     | 7       |

#### 1.2. The Ten Worst Gold Mine Disasters in South African History

| Mine                        | Date       | Killed | Injured |
|-----------------------------|------------|--------|---------|
| Kinross                     | 1986/09/15 | 177    | 0       |
| Vaal Reefs                  | 1995/05/10 | 104    | 0       |
| St Helena                   | 1987       | 62     | 5       |
| Simmer and Jack Mines       | 1937/03/19 | 36     | 51      |
| Randfontein Estates         | 1924/12/17 | 34     | 0       |
| Durban Roodepoort Deep      | 1937/03/30 | 34     | 0       |
| East Rand Proprietary Mines | 1927/02/25 | 31     | 8       |
| Crown Mines                 | 1930/03/10 | 28     | 3       |
| Randfontein Estates         | 1939/06/23 | 27     | 17      |
| Vaal Reefs                  | 1990/09/12 | 21     | 17      |

### 2. HEALTH AND SAFETY COMMISSIONS

- 1902 Commission Report on Miners Phthisis  
(Weldon, H) Report to Lord Milner 147 pp + Appendices approx 30 pp
- 1910 Final Report of the Mining Regulations Commission  
(Krause, FET) Vol. 1 Transvaal Colony, Government Printer, Pretoria 1910 337 pp  
Minutes of Evidence Vol. II 373 pp
- 1912 Report of a Committee appointed under Government Notice No. 358 of the 24th  
February, 1911, to inquire into and report upon the most practicable means to be  
adopted for the prevention of explosions of gas and dust in the collieries situated in

- the Province of Natal  
(Swinburne, UP) Government Printing and Stationery Office, Pretoria 23 pp
- 1912 Report of a Commission Appointed under the Provisions of the Miners' Phthisis Allowance Act no. 34 of 1911 to Enquire into the Prevalence of Miners' Phthisis and Pulmonary Tuberculosis on Mines within the Union of South Africa  
(Van Niekerk, SV) Government Printer, Cape Town 62 pp
- 1919 Final report of the Miners' Phthisis Prevention Committee.  
(Kotzé, R.N) Government Printing and Stationery Office, Pretoria 110 pp
- 1919 Report of the Commission of Inquiry into the Working of the Miners' Phthisis Acts  
(Sir Willem van Hulsteyn) Government Printer, Cape Town 98pp
- 1925 Report of the Mining Regulations Commission appointed in 1924  
(Mulligan, GA) Cape Town 24 pp
- 1963 Commission of Enquiry Regarding Safety in Mines First Interim Report, Supervision of Mines for Safety Organisation and Functioning of the Department of Mines and the Division of the Government Mining Engineer  
(Marais, JF) Government Printer, Pretoria RP 21/1963 36 pp
- 1976 Report of the Commission of Enquiry on Occupational Health  
(Erasmus, RPB) Government Printer, Pretoria 128 pp
- 1980 Report of the Commission of Inquiry into Labour Legislation. Parts 3 and 4, Employment and social security : protection of the safety and health of workers in South Africa  
(Wiehahn, NE) Government Printer, Pretoria 42 pp
- 1981 Report of the Commission of Inquiry into Compensation for Occupational Diseases in the Republic of South Africa  
(Nieuwenhuizen, PJ) Department of Minerals and Energy Affairs 62 pp
- 1994 Report of the Leon Commission of Inquiry into Safety and Health in the Mining Industry  
(Leon, RN) 192 pp + Appendices 61 pp
- 1997 Report of the Committee of Inquiry into a National Health and Safety Council in South Africa (Benjamin, P and Greef, J) Presented to Mr. Tito Mboweni, Minister of Labour 28 May 1997.

### 3. OCCUPATIONAL HEALTH PUBLICATIONS – NCOH/IHG

**Arkles S (1987)** The price of gold: paraplegic injuries on the mines. S A Labour Bull 2: 70-84

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**Davies JCA, Landau SP & Goldsmith C (1988)** Lung cancer cell type and mining exposure. *S Afr Med J* 74: 607-610.

**Felix MA, Leger JP & Ehrlich AI (1993)**. Three minerals, three epidemics -asbestos mining and disease in South Africa. In: *Advances in modern environmental toxicology*. Vol 22, part 1: The identification and control of environmental and occupational diseases. Edited by MA Mehlman and A Upton. Princeton Scientific Publishing Co, Inc 265-286.

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**Zwi AB & Ehrlich RE (1986)** Occupational history-taking in the RSA. *S Afr Med J* 70: 601-605.

#### **4. PROCEDURES OF MINE MEDICAL OFFICERS' ASSOCIATION SA**

Various copies of the Procedure of Mine Medical Officers' Assoc SA

## EXPERT GROUP MEMBERS

### GROUP

Dr Dave Barnes (AngloGold)  
Mr Piet Botha (DME)  
Dr Mike Gouws (CoM)  
Dr John Johnston (AngloPlats)  
Mr Henry Moorcroft (Goldfields)  
Dr Stuart Shearer (Goldfields)  
Mr David Stanton (AngloPlats)  
Mr Andre Stockhausen (BHP Billiton)  
Mr Andre vd Bergh (BHP Billiton)

### INDIVIDUALS

Dr Mike Barry  
Dr Eric Geddes  
Dr Piet Lowe  
Dr Olaf Martiny

## EXPERT GROUP MEETING AGENDA

### SIM020902

Date, Time, Venue

1. Project Aims
2. Subject themes and learning point summaries
  - Some possibilities
    - ? Regulatory HSE Governance Structure in SA
    - ? Management of H&S services in the mining industry
    - ? Common occurrences in major mining disasters
    - ? Prevention/Management of Silicosis
    - ? Prevention/Management of Tuberculosis
    - ? Prevention/Management of HIV/AIDS
    - ? Prevention/Management of Noise induced hearing loss
    - ? Disaster Management
    - ? Management of goafs
    - ? Management of tracks & tramming
    - ? Deep level mining and support
3. Confidentiality
4. Sources of material
5. Presentation Process



## RECOMMENDATIONS TO DME ACCIDENT INVESTIGATION DATABASE

During the search for accident investigation documents, it was evident that the Department of Minerals and Energy did not have a comprehensive or coherent process for capturing or storing accident investigation reports and recommendations.

- ? The library within the Mineralia building in Pretoria carries very few investigation records and even fewer final reports. The material is not indexed, nor is the librarian responsible for the collection and therefore it is not maintained or updated.
- ? The filing systems at regional level also do not appear to provide a coherent process as specifically requested files could not be retrieved or were largely incomplete. Files did contain evidence led at inquiries but once again, final summary reports were either not undertaken or not filed.
- ? Four final reports were available from different individuals who had a specific interest in a particular topic but electronic copy of major disasters and even Commissions of Enquiry were not in evidence within the department.

The State library (Pretoria) and the National Archives do not appear to store such data either.

Although the department maintains a database of incidents and accidents for the industry, this only provides a scorecard as opposed to a knowledge base with which to examine technology failures and management systems issues. It is therefore recommended that either the department directly, or SIMRAC, fund a project that will define both the process and content of a knowledge management database:

- ✍ Determine the information capture process
- ✍ Determine contents of the reports – single page summaries of accidents/disasters:
  - ? Categorise accident/disaster
  - ? Summary of actual events
  - ? Suitable diagram showing sequence of events
  - ? Analysis of basic causes – technology failures, management system failures
  - ? Recommendations for prevention
- ✍ Determine the database structure and information retrieval tools
- ✍ Determine the maintenance process of the body of knowledge

## CONTENTS OF SEARCHABLE CD

### 1. MMOA Journals & other specified documents

| JOURNALS  | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| January   |      | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| February  |      | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| March     |      | X    | X    | X    | X    | X    | X    | X    | X    | O    | X    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| April     | X    | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| May       | X    | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| June      | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| July      | X    | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| August    | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| September | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| October   | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| November  | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| December  | X    | X    | X    | X    | X    | X    | X    | X    | O    | O    | O    | O    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |

| JOURNALS  | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| January   | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| February  | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| March     | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| April     | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| May       | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| June      | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| July      | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| August    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| September | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| October   | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| November  | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| December  | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |

| JOURNALS  | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| January   | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| February  | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| March     | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| April     | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | X    | -    | X    |
| May       | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| June      | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| July      | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| August    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| September | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| October   | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |
| November  | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | X    |
| December  | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    | -    | -    | -    | -    | -    | -    |

Jubilee 1921-1927 X  
 100th Annual General Meeting X  
 Supp radiology - 1948 X

PLUS  
 Transvaal Tuberculosis Congress 1931 X

**KEY**

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|---|---|-------------------------------------|
| X | ↓ | File saved in searchable PDF format |
| O | ↓ | No document traced                  |
| - | ↓ | No document produced                |

## 2. Health and Safety Commissions

- 1976 Report of the Commission of Enquiry on Occupational Health  
(Erasmus, RPB) Government Printer, Pretoria 128 pp
- 1981 Report of the Commission of Inquiry into Compensation for Occupational Diseases in the  
Republic of South Africa  
(Nieuwenhuizen, PJ) Department of Minerals and Energy Affairs 62 pp
- 1994 Report of the Leon Commission of Inquiry into Safety and Health in the Mining Industry  
(Leon, RN) 192 pp + Appendices 61 pp
- 1997 Report of the Committee of Inquiry into a National Health and Safety Council in South Africa  
(Benjamin, P and Greef, J) Presented to Mr. Tito Mboweni, Minister of Labour 28 May 1997