



## Case study: The seven pillars – a revised safety strategy for the South African operations

In working towards the elimination of accidents at work, some notable improvements have been achieved at AngloGold Ashanti's South African operations since the company's formation in 1998. Yet, in 2006, 32 employees lost their lives in occupational accidents in this region, a worrying deterioration in the performance recorded in 2005 when 25 occupation-related deaths were recorded. This was for the first time since 2002 that there had been a reversal in the downward trend in the Fatal Injury Frequency Rate (see graph).

The issue of safety has been the subject of major input at executive level in 2007 and a strategic review was undertaken in the latter part of the year. (See case study: *Reinforced emphasis on safety AngloGold Ashanti engages on a number of fronts on page 44*).

Johan Viljoen, formerly General Manager of Mponeng Mine in the West Wits area was appointed Head: Safety and Health Discipline for the Africa Underground Region for the latter part of the 2007 financial year and was the discipline head when this area of work underwent a significant strategic review. (He has subsequently been appointed head of the southern African operations in a newly-created region and is ultimately responsible for the implementation of this revised strategy.)

“The old OESH departments (occupational environment, safety and health) have disappeared at operational level,” says Viljoen. “The working environment is separately managed, allowing the safety and health personnel to focus purely on safety and health.”

After an in-depth analysis process involving a number of regular workshops at corporate and operational level (in September 2006; October 2006; February 2007; May 2007; and September 2007), and with input from Anglo American plc as part of its group-wide safety strategy review in November 2006, the following seven strategic safety issues have been identified:

- Fatigue management
- Production flexibility
- Retention of skills
- Development of a safety culture
- The review process
- Fall of ground management
- Removing employees from risk in the workplace.

## Fatigue management

Sleep disturbance and sleep deprivation, and the resultant fatigue, are health risks associated with long working hours or shift work and clearly can have negative consequences for occupational safety. In the context of the South African mining industry, a number of aggravating factors are present (*See Case Study: Roll out of fatigue management programme - [www.aga-reports.com/07/fatigue-SA.htm](http://www.aga-reports.com/07/fatigue-SA.htm)*). Fatigue management programmes have now been implemented at all mines in South Africa and at Obuasi mine in Ghana, in addition to many of AngloGold Ashanti’s other mines around the world.

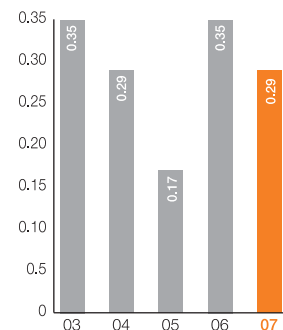
During 2007, Peter Simpson, an Australian expert on fatigue management, was retained to help bring an understanding of the issue to the African underground operations. Simpson paid several visits to underground workplaces as well as to a number of residences, and presented his findings and recommendations to senior management teams at mine level. A comprehensive suite of training material which focuses on understanding the causes and effects of fatigue and on appropriate management practices has been prepared. The material – including a book and a DVD – has been distributed to all managerial and supervisory employees at the South African operations and forms part of the induction programme for all new employees and those returning from annual leave. In this way all employees will have been exposed to the programme during the course of the year. Translated versions will be available for distribution to employees in relevant occupations.

All workplaces are being analysed, through a process that began in the third quarter of 2007, in terms of empirically-determined ‘fatigue factors’. Factors analysed include nature of work, travel distance, degree of physical strain and workplace temperature. The analysis will be an ongoing process, as working places and conditions change continuously as they are mined. Employees will also be individually assessed to determine their place of residence (hostel or local community), wellness and lifestyle factors.

## Production flexibility

The concept of production flexibility denotes the presence of enough face length to ensure that sufficient working panels are available to allow for adequate equipping and the availability of replacement panels when required, for example if unsafe conditions are encountered.

Fatal injury frequency rate (FIFR) (South Africa) (Per million man hours worked)





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All the South African operations, with the exception of Mponeng, have seen a reduction in available face length since 2005, resulting in reduced production flexibility. “There is no ‘quick fix’ here,” says Viljoen. “We need to plan for adequate development to create additional face length.” Projects are under way at Mponeng, TauTona, Moab Khotsong (Project Zaaiplaas), Kopanang East Mine Area, Great Nologwa Eastern Boundary Area, and through the opening of new areas at Tau Lekoa. Closer integration with mineral resources management forums will also be pursued.

### **Retention of skills**

During 2007, AngloGold Ashanti experienced increased labour turnover in first-line supervisory occupations, such as miners and artisans. Turnover rates varied by operation and occupation, from as low as 10% to as high as 55%.

“We have not only been losing people to other mining companies,” says Viljoen “but also to major engineering and construction projects in South Africa associated with the Gautrain and 2010 Soccer World Cup. The net result has been the appointment of inexperienced, insufficiently trained people in posts at first-line supervisor levels.”

A comprehensive programme, designed to address the skills challenge in the short-, medium- and long-term is being developed. Actions taken include attitude surveys to probe reasons for exit, improved screening and induction processes, a comprehensive review of training materials and programmes, and a review of job grading and conditions of employment issues.

### **Development of a safety culture**

“The company has actively pursued the development of a safety culture for many years, notably since the introduction of the DuPont behaviour-based safety programme in 2002,” says Viljoen. “The desired outcome may be simply stated: safety is our priority, and it needs to be shared and evident in behaviour.”

To take the the first phase of a process further, a complete safety culture survey was undertaken late in 2007 by the North West University. The survey included a comprehensive assessment (by peers, managers and subordinates) of safety leadership across the company.

As an industry initiative, a safety leadership tour was conducted, led by representatives of the Chamber of Mines, to five selected mines in the industry to identify industry best practice. The tour included operational visits, interviews and presentations to the Chamber delegation. Mponeng was unanimously nominated as an example of safety leadership in the industry.

Other initiatives in the pipeline include a thorough overhaul of all training modules and programmes within the company, to ensure the full integration of safety and health aspects. The project is being carried out by AngloGold Ashanti Training and Development Services, under the direction of Viljoen and new head of safety at the African operations, Ian Heyns. Investigations are also being conducted into ways of elevating the role of the health and safety representatives at mine level.

### **The review process**

An important outcome of the external review referred to earlier was the need for a common platform for safety reviews across the company. This formed part of the rationale for the adoption of OHSAS18001 as the health and safety standard throughout AngloGold Ashanti's operations. (See *the Report to Society 2006: From NOSA to OHSAS - a change for the group: [www.aga-reports.com/06/OHSAS.htm](http://www.aga-reports.com/06/OHSAS.htm)*).

OHSAS18001 gap analyses were conducted in July and August 2007, and detailed action plans compiled as necessary, while OHSAS18001 certification audits are planned for the third quarter of 2008.

Another new development is the establishment of a specialised internal safety and health audit team, which will carry out a comprehensive audit of all mine workplaces, to enable risks to be identified before incidents occur.



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“The existing incident review processes remain in place, but the desired outcome is the identification (and timely correction) of safety process deficiencies before these result in an incident, rather than determination of cause and attribution of responsibility once such incidents have taken place,” says Viljoen. Audits began during the second half of 2007, and are scheduled to cover the principal risks in an 18-month cycle.

A further step in this process is the overview of the Integrated Risk Management System (IRMS), which was developed for AngloGold Ashanti by Graphic Mining Solutions International (GMSI – now part of the GijimaAst group) and has been implemented in phases since 2000.

“The system in itself has excellent capabilities,” says Viljoen, “but we do not always apply it correctly. We are developing a new system internally – importantly it will include occupational health as well as safety indicators – and will start running in parallel in the second quarter of 2008.”

Communication at mine level remains an integral part of the process. ‘White flag’ days are now reported centrally from all operations: these indicate that no accidents have taken place in the preceding 24 hours, and are intended to reinforce the belief that accident-free mining is possible. Green, orange and red flags denote dressing cases, reportable injuries and serious injuries respectively. Briefs, posters, safety newsletters and numerous other employee communication channels remain in place.



## Fall of ground management

The five elements of this programme (design of mine layouts; support systems; the human factor; seismic monitoring; and research and development) remain in place (See case study: *Strategy to manage falls of ground – a review* at [www.aga-reports.com/07/FOGM.htm](http://www.aga-reports.com/07/FOGM.htm).)

Seismic and gravity-related falls of ground have been separated to ensure appropriate focus.

## Removing employees from risk in the workplace

The desired outcome under this heading is the removal, as far as possible, of employees from high-risk areas and activities. A number of new technologies are being explored, focusing initially on the rock-breaking, transport and processing sectors.

A steering committee has been appointed, chaired by Nigel Trevarthen (Head: Strategic Projects) to drive the project. Ideas and suggestions are being canvassed from employees, and the committee is surveying industry best practice. (See case study: *Separating people and risk* – [www.aga-reports.com/07/emp-at-risk.htm](http://www.aga-reports.com/07/emp-at-risk.htm).)

