

### Long-term strategic approach to safety in transport

Horizontal and vertical transport of people and materials is a key risk area in mining, and an integrated, long-term strategy is in place to manage this in AngloGold Ashanti's South African operations.

"In terms of our risk and consequence analysis matrix, vertical transport incidents have a relatively low probability, but potentially very serious consequences because of the likelihood of major loss of life," says Head of Engineering Africa Underground Region Iain Menzies. "Horizontal transport accidents, while involving fewer people, are statistically more probable. An integrated strategy is therefore required to deal with both."

Approaches to managing horizontal transport incidents in the past, continues Menzies, tended to be reactive rather than proactive. "A number of incidents would occur, to which we would respond with relatively short-term interventions that addressed the issue at hand. These would achieve an improvement, but not always address underlying causes. Our aim now is to achieve a balance between a long-term strategy and short-term interventions, in order to achieve sustained improvements going forward."

Because of their potentially catastrophic consequences, all shaft-related incidents are followed by a thorough investigation of risks and potential consequences. "We now treat horizontal transport incidents in exactly the same way. In the past, if a locomotive derailed in the haulage and no injury resulted, the loco team would re-rail and carry on working, without a management investigation. That no longer happens," says Menzies.

This change in approach was part of a broader horizontal transport strategy under development since 2003. The process began with a high-level strategic review in 2003: detailed strategic plans for horizontal and vertical transport were developed in 2004, and integrated into a single transport safety strategic plan in 2005.

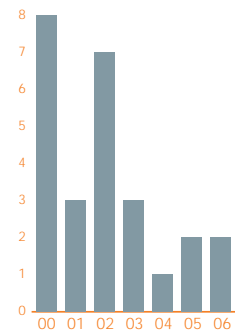
Key initiatives, implementation of which has continued into 2006, may be grouped under the headings of employee selection, operator training and equipment monitoring and upgrade. Other interventions include regular audits, the introduction of user group meetings, the development of codes of practice, the introduction of transport safety competitions and the appointment of dedicated transport safety personnel at mine level.

One of a number of training-related initiatives is the development of a new locomotive simulator, to be used as part of the induction process and for periodic re-training. The software, being developed in association with the Safety in Mines Research Advisory Committee (SIMRAC), will allow new drivers to experience an exact simulation of the working environment during the training process. Timing for the introduction of the simulator – to be mounted on mobile equipment and deployed from mine to mine as required – is expected to be finalised in January 2007. Other computer-based simulation packages include a virtual mine haulage, comprising a chute, rail line and work platforms. Blocked chutes can result in the accumulation of hundreds of tons of rock, slime and water, which can rush out as the blockage is removed, often with fatal results. The virtual mine haulage demonstrates good and bad practice, and the consequences of each.

Revised selection criteria, comprising a battery of internationally-recognised psychometric tests, have been introduced for the operators of mobile equipment such as locomotives, in addition to the existing



Horizontal transport-related fatalities 2000-2006



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tests to determine hearing, sight and fine motor controls. Existing employees undergoing the tests are graded as fully-suited to the occupation concerned or as requiring some re-training. New employees are selected according to the new criteria. Improved surveillance has also been achieved by the introduction of video cameras in congested areas in haulages in most operations. "We're also looking at easing congestion through increasing capacity of individual locos, thus reducing the size of the fleet (currently 426 locomotives in the South African operations)," says Menzies. "The new locomotive dubbed 'Big Mama' at Kopanang, for example, carries 200 tons compared with the average of 30 tons."

With specific regard to vertical transport, the Structural Inspection and Maintenance Management (SIMM) process, developed by Anglo American plc with input from AngloGold Ashanti, has been introduced at older, deeper shafts such as TauTona and Savuka. The system, through state-of-the-art computer-based simulation, allows the condition of the shaft steelwork to be assessed and remedial action taken. Over the last five years some R60 million has been spent on the upgrading of winding plant and shaft infrastructure with this programme continuing for the next few years. A further focus area is on the training of all critical shaft related personnel where much work has been done: a grading system for key artisans has also been introduced to improve the retention of these critical employees

The results of the strategy are evident in improving audit results of the horizontal transport ratings – in terms of system compliance and physical condition of equipment – which have improved over Phases 1 to 3, carried out between 2003 and 2006, at all operations. "Similar results", says Menzies, "are evident in the vertical transport audits."

