Seeking highly reliable implementation of the Global Industry Standard for Tailings Management (GISTM)

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# ABSTRACT

The Global Industry Standard for Tailings Management (GISTM) is being progressively implemented by mining companies, representing a potential turning point towards safer tailings storage. Traditionally, there has been a tendency to focus solely on technical aspects, such as appropriate engineering designs. In contrast, GISTM requires companies to place greater emphasis on organisational factors. These include consideration of organisational structures, performance incentives, training programs, greater collaboration between teams and knowledge sharing.

Some studies have examined how organisational factors can influence the trajectory of events that leads to tailings failures (Marais et al., 2024) (Saes and Muradian, 2021). Although there has been over 30 years of research identifying the key organisational practices of High Reliability Organisations (HROs), this knowledge has not been considered in relation to tailings management. HROs routinely deliver on their goals and remain free from catastrophic failure. The organisational traits that distinguish HROs from other organisations include a collective mindset centred on a shared purpose and five hallmark characteristics: preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience and deference to expertise (Weick and Sutcliffe, 2015).

This study explored how HRO thinking can be applied to put GISTM requirements into practice with high reliability. It found that many GISTM requirements were assessed to align with the types of organisational practices that HRO theory tells us support greater performance reliability. The GISTM requirements mostly aligned with preoccupation with failure, deference to expertise and reluctance to simplify. However, fewer GISTM requirements aligned with collective mindset, sensitivity to operations, and commitment to resilience.

The study concluded that applying HRO thinking provides insights about the additional approaches companies could use to enhance the reliability of their GISTM implementation, such as establishing clearer statements about their shared purpose for tailings management and their desired outcome(s) from implementing the GISTM, as well as strategies to ensure the shared purpose is being worked towards by everyone at the mine site.