Minalco Mining Problem Statement – Galen Houser

How can the Minalco Mining minimize maintenance costs to their ore-crushing equipment in order to achieve an overall cost savings of 20% ($9M) by December 31, 2020?

1 Context

Minalco Mining, one of the world's largest iron mining companies, experienced a market period of high iron demand and rising market prices. But after heavily investing in successful operating technologies, specifically ore-crushers, the iron market supply has now nearly matched demand, resulting in a drastic lowering of market prices. In order to cut costs, remain profitable, and to create a buffer to weather future downward shifts in pricing, Minalco Mining is seeking to achieve a 20% reduction in maintenance expenditures by December 31, 2020.

2 Criteria for success

Maintenance expenditures will be reduced by $9M (20%) by December 31, 2020.

3 Scope of solution space

Required maintenance events for ore-crushers.

4 Constraints within solution space

- OEM recommends scheduled maintenance of the ore-crushers at every 50,000 tons of ore, or once every three years.
- Resistance from Reliability Engineering Team over reducing maintenance events, since 80% of all maintenance requests were logged as "excess wear" to the ore-crushers.
- High market demand for iron ore has resulted in excess usage of ore-crushers, leading to more frequently scheduled maintenance events to about once a year.

5 Stakeholders to provide key insight

- Chanel Adams – Reliability Engineer
- Jonas Richards – Asset Integrity Manager
- Bruce Banner – Maintenance SME
- Jane Steere - Principal Maintenance
- Fargo Williams – Change Manager
- Tara Starr - Maintenance SME

6 Key data sources

- Data Historian - Includes information on how many tonnes of Iron Ore are processed with the ore crushers.
- Ellipse - Includes information on old work orders for our equipment, before our upgrade to SAP.
- SAP – Current information source on equipment logs and work order and maintenance requests on ore crushers and other pieces of equipment

Additional systems to consider:

- T3000 DCS – Streaming raw data sent to Data Historian on vibrations, temperature, and the humidity of the ore crushed
- Ore Crusher System - Includes high-level process map outlining how the Ore Crusher System works for individual ore crusher models.