Proximity Detection System: Inbound Equipment

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Sasol Mining (Pty) Ltd

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Points of Discussion

- Sasol Mining Strategy
  - Background
  - Equipment
  - Zone Layout
- Technological Challenges
- Photo’s
- Trial
  - Processes Followed
  - Installation Findings
  - Positive
  - Negative
  - Report and Tests
- Additional Features
- Sasol Mining Way Forward
Sasol Mining Strategy: Background

- Risk Identified – Working in Proximity of Mining Equipment
- ZERO harm strategy – team assembled to investigate
- DME Newsletter indicating PDS to be used if possible

- Sasol Criteria developed
  - Technical Requirements
  - Operational Requirements

- Identified VLF as only solution
- Visit to 3 possible suppliers in the world to determine best solution
Sasol Mining Strategy: Equipment

Completed
- CM
- Feeder Breaker
- SC’s

To be evaluated
- RB
- LHD
Technology: Zone Layout: SC
Technology: Zone Layout: CM
Technology: Zone Layout: FB
Technological Challenges:
Coal Penetration and Zone Stability
Technological Challenges: Multi Vehicle / People Interaction

Machine 1: DZ
Machine 2: None

Machine 1: DZ
Machine 2: WZ

Machine 1: WZ
Machine 2: WZ

Machine 1: None
Machine 2: WZ

Machine 1: DZ
Machine 2: DZ

Machine 1: None
Machine 2: WZ

Machine 1: WZ
Machine 2: DZ

Machine 1: DZ
Machine 2: None

Machine 1: DZ
Machine 2: WZ

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Photo’s
Photo’s
Photo’s
**Trial Processes Followed**

- Full Risk Assessment
  - Current Situation
  - Action Taken
- MOC Process
  - Multiple Communication Session
  - Training: Classroom and u/g
  - Phased Approach for implementation
  - Regular feedback sessions
- Technical Support
  - Support Team on all production shifts
  - Spare equipment held in section
Trial Findings: Installation

- Installation on all machines to be carefully planned.
- Position of controller boxes important on CM
- Cable Rooting very important
- Junction Boxes to have seals
Trial Findings: Positive

- System very reliable
- Equipment damage negligent
- System consistency very good
- No false indications
- Operator feedback very good
- Data collected very useful to address operational concerns
- Interlocks worked very well
- Machine coverage very good
- Improved overall safety awareness dramatically
**Trial Findings: Negative**

- Data collection still manual process – need to change to remote downloadable system
Trial Findings: Reports

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<th>Date</th>
<th>Time</th>
<th>Shift</th>
<th>Machine No</th>
<th>Lamp No</th>
<th>Zone</th>
<th>Menu Button</th>
<th>Switch 1 Status</th>
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Test Underground
Test Underground
Additional Features

- These features are not included in the trial

- Vehicle – Vehicle collisions
- Shaft Clearance
- Surface Systems
- Outbound systems
- Mobile Units
- Last line of support detection
- Trapped miner location (up to 110m) TTE technology
- Miner Tracking
- Vehicle intersection detection
- Operator licensing
- Lamp room management system
- Radio Communication around machines
Sasol Mining Way Forward

- Complete Trial at Twistdraai East Colliery for outstanding equipment
- Completed Roll-out Strategy
- Start Roll-out
- Start trial with some additional features
- Implement Additional Features
QUESTIONS ??