



Stockpile Dozer Improvements Blackwater Mine

Jim North
Coal Processing Manager
Blackwater Mine



Stockpile Dozer Improvements - Incidents

- 18 Fatalities in the US Coal Operations in the last 20 years
- 1 Fatality in Australian Coal Operations in the last 10 years
- Majority of incidents involved a hidden void
- Stockpile Dozing Significant Risk

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference - Old Mining Industry Health and Safety
Conference
Date - August 2002

Stockpile Dozer Incidents



Incident in Australia in 2002

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference - Old Mining Industry Health and Safety
Conference
Date - August 2002

Stockpile Dozer Incidents



Incident in Australia in 2002

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference - Old Mining Industry Health and Safety
Conference
Date - August 2002

Stockpile Dozer Incidents



Incident in Australia in 2002

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference - Old Mining Industry Health and Safety
Conference
Date - August 2002

Stockpile Dozer Incidents



Incident in US in March 1997

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference - Old Mining Industry Health and Safety
Conference
Date - August 2002

Stockpile Dozer Incidents



Incident in US in 1997

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

7

Industry Review Recommendations

- Recommendations from West Virginia, MSHA
 - No persons on foot on stockpiles and no equipment to operate without procedures in place
 - Equipment must have enclosed cab and have windows which can withstand 40psi
 - Radio communication system
 - Two self rescuers and emergency lighting
 - Warning signs at entrance to stockpiles
 - Remote control device capable of stopping coal flows to and from stockpiles

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

8

Industry Review Recommendations

- Coal Mining Health and Safety Regulation Change
Part 10 – Stockpile and Coal Waste Dump Operations

S136 – A surface mine's safety and health management system must provide for -

(b) The machine's engine to be capable of being stopped independently of the operator, if the machine becomes buried.

- This has resulted in the need to significantly change work practices and equipment to be compliant and ensure operator safety

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

9

Recommendations resulting from Blackwater Mine Incidents

- Blackwater Mine Incident recommendations
 - Dozer Cabin emergency kits & self rescuers
 - Dozer recovery emergency kits
 - Recovery / rescue procedures
 - Training plans and competencies
 - Product stockpile modifications
 - Develop Dozer Monitoring system to enable feeder shutdown and emergency alarm to be raised

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

10

Stockpile Dozer Improvements Implemented at Blackwater Mine

- Stockpile dozer modifications
- Emergency recovery kits
- Dozer cab emergency kits
- Dozer recovery procedures
- Training procedures
- Stockpile cameras
- Dozer monitoring system

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

11

Stockpile Dozer Modifications

- D11R series III dozers purchased Sept 01
 - 63m³ Coal Blade
 - Reduced operating hours on stockpiles reduces operator exposure to stockpile hazard
 - Less compaction of coal over feeders



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

12

Stockpile Dozer Modifications

- **Ultra Strength 40 Cabin Glass**
 - Glass developed by Pittsburgh Plate Glass Company
 - 13mm thick, two layers of 6mm Herculite glass with 1mm plastic laminate between
 - Bonded to outside of cab frame to provide strength
 - Can withstand 40 psi of pressure, double expected pressure in burial situation
 - Fitment of glass requires window removal procedure in emergencies

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

13

Stockpile Dozer Modifications

- **Tow / Hitch point added to dozers**
 - Hitch points added to side of coal blades and counterweights



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

14

Dozer Emergency Recovery Kits

- **Recovery Kits (orange wheelie bins)**
 - Kits are stored at each product stockpile location at Blackwater Mine
- **Equipment includes:**
 - 100 t web slings
 - Shackles
 - Spare self rescuers for rescue team
 - Emergency action cards
- Kits are inspected monthly using formal checklist



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

15

Dozer Cabin Emergency Kits

- **Kits developed by dozer operators at North CPP**
 - Kits enclosed in canvas bag and include:
 - 2 MSA self rescuers
 - 600ml Bottled Water
 - Basic First Aid supplies
 - Cylume stick for emergency lighting



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

16

Dozer Recovery Procedures

- **Procedures developed by dozer operators and emergency response team**
 - Procedure details steps to ensure safe rescue of operator and then dozer recovery process:
 - Isolations required
 - JSA to be carried out
 - Emergency Recovery plan available in kits as a prompt

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

17

Dozer Operator Training Procedures

- **Basic dozer training**
- **Stockpile dozing SOP and work instructions**
- **Stockpile dozing attachment in Black Coal Competency:**
 - ROM stockpiles
 - Product stockpiles
- **Practical training**
 - Sand pit training



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

18

Stockpile cameras

- Cameras installed on product stockpile lighting towers
- Wireless LAN used to transfer image to Citect system



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – QM Mining Industry Health and Safety
Conference
Date – August 2002

19

Stockpile cameras

- Control room operator can monitor dozer operations



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – QM Mining Industry Health and Safety
Conference
Date – August 2002

20

Dozer Monitoring System

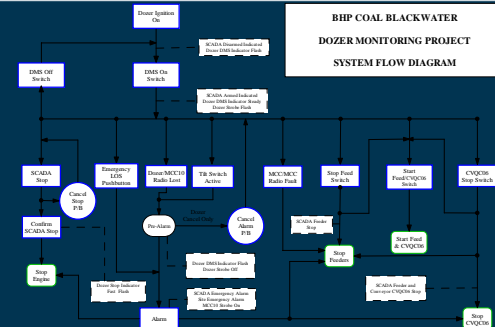
- Designed by Welcon for BMA Blackwater
- Currently being trailed at Blackwater Mine TCP
- Stand alone unit with fail safe concept
- System is controlled using radio telemetry, PLC, and plant Citect system
- System capabilities:
 - Stop and start reclaim feeders from dozer cabin
 - Stop stacker conveyor feeding stockpile
 - Raise site emergency alarm from dozer cabin
 - Remote stop of dozer engine by control room operator

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – QM Mining Industry Health and Safety
Conference
Date – August 2002

21

Dozer Monitoring System



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – QM Mining Industry Health and Safety
Conference
Date – August 2002

22

Dozer Monitoring System

- Dozer Monitoring display panel in dozer cabin
 - Selector switch
 - Emergency stop
 - Override button
 - Status light



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – QM Mining Industry Health and Safety
Conference
Date – August 2002

23

Dozer Monitoring System

- Dozer monitoring box fitted to roof of dozer cabin
 - Stainless steel box
 - Rubber mounts
 - Blue strobe/beacon



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – QM Mining Industry Health and Safety
Conference
Date – August 2002

24

Future Improvements Planned

- **Modification to product stockpile feeders at TCP**
 - Change from 9 syntron feeders to 2 coal valves
 - Extension of stacker boom (6m) to increase live capacity over feeders
 - Reduced dozer operating time on stockpiles
- **Roll out of Dozer Monitoring System to other BMA sites**
 - Successful trial at Thermal Coal Plant Blackwater Mine



Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

25

Future Improvements – Blackwater Mine

- **Remote Control Dozer**
 - Assess capabilities to use on stockpile applications
 - Select a location to trial



Remote Control Dozer Operating at Goonyella Riverside

Blackwater Mine
BMA Coal Operations Pty Ltd

File Reference – Old Mining Industry Health and Safety
Conference
Date – August 2002

26

Questions?

