

Mine Name	Mine ID	Operator	Activity Type	Region	Activity Date
Grosvenor Coal Mine	M102976	Anglo Coal (Grosvenor Management) Pty Ltd	Inspection	Central	11/02/2016

Vision: Our Industries Free of Safety and Health Incidents

Mine Record Entry

This report forms part of the Mine Record under s68 of the Coal Mining Safety and Health Act 1999. It must be placed in the Mine Record and displayed on Safety Notice Boards.

Note that inspection or audit activities conducted by the Mines Inspectorate are based upon sample techniques. It remains the primary responsibility of Mine Personnel to identify hazards, and risks associated with Operations and ensure those risks are at an acceptable level.

1.0 Introduction

This MRE deals solely with the outcome of a Structured Inspection on ventilation standards at Grosvenor Mine.

An explanation of the SIG system (Structured Inspection Guide) was given by me to Mr Bobeldyk and Mr Webber. The SIG comprises two stages, the first is desktop auditing of the SHMS, specific to the Ventilation SIG, and the second is area inspections for verification of Implementation, Application and Monitoring in line with the SIG.

THE SIG SYSTEM is the tool used in the audit by the DNRME. Its use and the associated MRE also dated the 11th February touch on areas such as Contractor Management and Respirable Dust

I conducted the desk top study with Mr Mark Bobeldyk and Mr Michael Webber on Thursday 11 February 2016. This followed an underground inspection by Inspector Shaun Dobson and me on the previous day. This MRE also draws on practical evidence gathered by Inspector Dobson on his second underground inspection on 11 February 2016. Details associated with those inspections other than ventilation aspects are covered in separate MREs.

2.0 Ventilation SIG - Conducted by Inspector Gouldstone with Mr Mark Bobeldyk (Ventilation Superintendent/Officer) and Mr Michael Webber.

NB -The details of the SIG are shown in italics, followed by the evidence provided by the Mine. Items viewed during the underground inspection are marked by an asterisk *.

2.1.0 Regulation 340 - VO Appointment

- May hold another position provided performance of VO role is unaffected

A copy of the VO appointment letter, from SSE for Mr Bobeldyk was provided dated 30/06/15. This was supported by the authorisation to give technical directions and Supervisor appointment

A copy of the Certificate of Statutory Ventilation Officer Course, dated 28 March 2008 for Mark Bobeldyk from University of NSW was provided.

Did Mr. Bobeldyk hold another position?

If so what? Not stated yes or no.

Mark Bobeldyk (Linked in profile)

- Develop and Implement Ventilation, Outburst, Spontaneous Combustion and Gas Drainage SHMS documentation from Project to Operating Mine.

Transitioned ownership of Seamgas budget and resources to site through SLT support.

- Held Superintendent and Statutory V.O Position for period of tenure.
- Implement and optimize Ventilation, Bulk Air Cooling and Gas Drainage underground networks in collaboration with Anglo Technical Principals.

2.2.0 Regulation 341 - VO Functions

- Adequate ventilation

We examined the mine plan and Mr Bobeldyk and Mr Webber explained the Mine Ventilation system.

The main features are -

Two surface intake drifts for Men & Materials, and Coal Conveying.

Six Mains headings(A to F), with a number of supplementary connections at the drift bottoms

A heading is the principal return with a first balancing overcast at 1 ICT

The Mains are driven to 20CT giving access to 101, 102 & 103 panels

Developments currently in progress are MG & TG 101(2xCM each) plus MG 102 (1xCM)

LW 101 Faceline is soon to be driven from 24CT

Clearly the Mine is well ventilated having only developments, no longwall and 25km of new roadways.

It was explained that after LW 101 and 102 the longer run faces will be ventilated utilising refrigeration and shafts in the gateroads.

Adequate Ventilation. This is first indication of how ventilation restricted the Mine is

A Heading single return for 11 cut-throughs (approx. 1km at an estimate) with first balancing overcast at 11 cut through.

Poor design. Have high resistance built into the mine from the start. The mine ventilation system is automatically running at a higher resistance than desirable, it causes the mine to run at less ventilation capacity per second (expressed in cubic metres per second).

The second last sentence about how panels will be ventilated using refrigeration and shafts in the gate roads shows how the mine is ventilation restricted on the return side. They are trying to fix the problem by increasing the number and capacity of the intake.

An analogy would be the Brisbane airport tunnel is not carrying enough traffic. Instead of fixing the end bottleneck you just put more feeder roads in and make it toll free and then wonder why the no matter how many more feeder roads you put in, only so much traffic can come out.

Mark Bobeldyk designed this.

Commented [SV1]:

*There were no problems with the standards of ventilation inspected at 101 MG, TG and 102 MG.

- Quality measured and recorded

I was provided with and related the content of the December 2015 monthly report, (signed by Mark Bobeldyk on 8/1/2016 and UMM Wayne Bull on 14/1/2016) to the items listed above.

- o In charge of changes and construction and maintenance of VCDs

I was provided with a copy of the VCD permit, and ventilation change permit. Official's reports were examined for VCD comment and work orders established to deal with them.

The Monthly Report contains a list of VCD work completed in each month.

The Ventilation Plan as presented in the report is not legible in regard to the detail provided in the key nor is it signed off - I accept that when printed to size for display of the controlled document the legibility issue would be addressed.

If the key is not legible except when printed to full size control document (not stated) then what good is it?

Does not seem to be any documented process that has a documented inspection reporting process that the VCD is being constructed as specified including keying into the rib and installation of anchors if necessary

*All VCDs seen underground were of a good standard eg Tripper Drive installation 101 MG at 15 CT was secure , soundly constructed well signed.

2.3.0 Regulation 342 Reports by VO

- Monthly Ventilation repoH

See 2.2 above for comment

- Report on all changes as they happen

I viewed a copy of the minutes of the weekly mine atmosphere meeting. Longer term strategy is discussed every second week. I was provided with the model ventilation options presentation for LW 101 and the presentation for the weekly atmosphere meeting 16/02/11.

- Signed by VO and UMM, or his substitute in his absence and put in the Mine Record

A copy was seen of the December 2015 report and signed by VO and UMM 8/1/16 and 14/1/16 respectively.

There is a Six (6) day gap between VO and Mine Manager signing off.

2.4.0 Regulation 343, 359 & 360 Ventilation System provision for GB concentrations and contaminants

- VO — design, implement, monitor GB concentrations as low as reasonably achievable but in line with C02- GB 125000ppm = or 1.25% or 30000ppm or 3.0% if continual personal monitoring to give two giving no more than 1.25%
- For contaminants below C02 in GB- C3 for no more than 15 min or if not stated intervals of +1 hour no more than 4x in 8 hours o SOP required for working in contaminants

Column 1	Column 2	Column 3
Contaminant	Long term exposure limit concentration	Maximum exposure limit concentration
acetaldehyde	100ppm	150ppm
carbon monoxide	30ppm	
formaldehyde	1ppm	2ppm

hydrogen sulphide	1 Oppm	15ppm
mineral oil mist	5mg/m3	
nitric oxide	25ppm	
nitrogen dioxide	3ppm	5ppm
nitrous oxide	25ppm	
sulphur dioxide	2ppm	5ppm
vegetable oil mist	10mg/m3	
welding fumes	5mg/m3	

- O2 not less than 19%
- CH4 not more than 25%
- For H2S-brief surge over limit is ok provided wearing scba and under SOP(discount emergency situation)

Record of results of personal exposure monitoring to be retained

The documents viewed as evidence included -

SOP — Working in Contaminated Air V2 not C02 (incl H2S)

GRO-14-Principal Hazard Management Plan Gas Management (Monitoring)

GRO-750-TARP for General Body Contaminants

Examples of Anglo critical controls internal auditing relating to ventilation

GRO-1440-PHMP — Irrespirable Atmosphere

Gas Alarm Register for January 2016

*The evidence of monitoring provided included gas bag sampling regime, ERZ Controller reports, monthly ventilation reports, and NERZ/ERZ interface monitors.

2.5.O Regulation 344 & 345 VO responsible

- Minimise layering, accumulations of noxious and flammable gas where controlled ventilation (ie Not goaf, waste sealed area, fenced as not to be travelled or worked in, in self contained BA other than routine work)
- normal work ● standing place on intake side ● each working place in ERZI ● each intake and return to the mine

- Monitor and record the concentration of contaminants
- NB does not apply to temporary increase eg +2.5% CH₄ in caving incident
- Velocity must be +0.3 m³/Sec

The documents viewed as evidence included -

Plan showing real time gas monitoring positions

Safegas real time and tube bundle gas monitoring screen references. The tube bundle system will be a 40 point system once completed.

GRO-56-SOP-Ventilating Underground Workplaces

Gas alarm trigger levels December 2015(signed off by W.Bull & M.Bobeldyk)

GRO-69-SOP - Action Taken if Methane is Detected

Post ventilation change summary - EG Opened Mains AB 1 ICT Regulator 14 August 2015

How does this relate to action for excess methane?

Is it the only document that could be found?

2.6-0 R 346 SHIWS SOP for Ventilation

- Prevent intake air from passing across permanent seal e Minimise pollution of intake from inrush from goaf or abandoned workings
- Unless leakage through seal minimised and damage prevented, type C construction
- And monitoring return side for O₂, CO₂ (if behind seal at >3%) e And any other contaminant if present and can create risk and alarms to those who may be affected at predetermined trigger level
- For longwall position monitor at MG face end

Documents viewed included those above at 2.5.0

*Physical evidence was -

Ventilation Plan — locations of VCD & monitoring was on display

ERZ/NERZ boundary plan showing monitoring stations

Also viewed were Ventilation plan, Monthly ventilation report, and discussions with the CRO which showed -

There was information which showed real time meteorological information and full main fan health monitoring data.

*Evidence was provided of effective -

- Alarm logging, CO levels noted mainly vehicle created
- Emergency folder updating - monthly audit e TARP Folder - monthly audited including all ventilation TARPS

2.7.0 R 347 Ventilating Workplaces

- SOP required
- Maxima for ducting and brattice to be stated

Evidence provided included that listed at 2.5.0

Further physical evidence included inspecting of an Auxiliary fans(Inspectors Gouldstone and Dobson in 101 and 102 Developments), stub ventilation* and ERZ Controller reports.

2.8-0 R 348 Evacuating Mine

- SOP required for evacuation to safe place if alarm triggered from leaking seal/intake pollution

Documents provided included those listed at 2.5.0

2.9.0 R 349 Ventilation System Failure —

- SOP required, ventilation for mine down for +30 min
- To include ERZ controller to inspect if safe to continue or restore power ● Or for part of mine affected stop/start both work and power

Documents provided as evidence included -

GRO-58-SOP - Action Taken if Ventilation System Fails

*Practical evidence included Gas alarm log in control room, Citect alarm for main fan failure, communication systems.

2.10.0 R 350 VCDs

- VO to ensure installed to design criteria

VCD: Design criteria —

- brattice line or temporary stopping-antistatic and fire resistant ● mine entry airlock- capable of withstanding an overpressure of 70kPa/10 PSI while it is open ● separation stopping for -antistatic, fire resistant and of substantial construction, minimal ● a primary escapeway -leakage ● stopping, overcast or-capable of withstanding an overpressure of 35kPa/5 PSI regulator installed as part of the main ventilation system stopping, overcast or-capable of withstanding an overpressure of 14kPa/2 PSI for life of panel regulator installed as part of the ventilation system for a panel ● type B seal - capable of withstanding an overpressure of 35kPa/5 PSI ● type C seal capable of withstanding an overpressure of 140kPa/20 PSI ● type D seal - capable of withstanding an overpressure of 345kPa/50 PSI ● type E seal - capable of withstanding an overpressure of 70kPa /10 PSI ● ventilation ducting - antistatic and fire resistant
- Only 2 temporary stoppings allowed intake to return from last c/t.
- If separate panel then it may be relaxed provided there is a plan to replace them with permanent

Documents provided included -

Design & Construction of a Type C 140kPa (20psi) Sprayed Seal (an example)

SWI — Spraying Aquacrete and Wet Repel Products

GRO-57-SOP - Mine Ventilation Control Devices

GRO-6127-SWI Grosvenor Construct Rated and non-rated stopping

VCD construction permits eg 1 1/1 1/15 Mains D-E 16ct stopping construction

GRO-2956-FRM - Ventilation Control Device Defect Report

*Practical evidence was seen during the inspection of good quality stoppings.

No mention of meeting design criteria. Mentions looks visually good quality. Any process of sign off sheets audits to ensure VCD is constructed to standard; eg anchored to strata as required

2.11.0 R 351 Intefferring with VCDs

- UMM to designate as not to be interfered with, other than by VO or other authorised personnel

The Ventilation workforce training package was viewed as evidence.

2.12.0 R 352 SOP for VCD

- SOP required for construction, installation, use and maintenance of VCDs

Documents provided as evidence are shown above at 2.10.0

2.13.0 R 353 using fans Underground

- SHMS to provide for use, SOP to include
- Auxiliary fans, degassing for CH₄ accumulation ●
- Booster and scrubber fans or combination
- CA powered fans - SSE to ensure provision for de-energising C/A fan when vent system fails
- Different fans require different SOP for each

Documents provided included -

GRO-5884-REG - Air Fan Register

GRO-21-SOP - Using fans Underground

GRO-3270- swi - Degassing using Auxiliary Fan

*Practical evidence inspected included Auxiliary fans at developments 101 and 102, stub ventilation and ERZ Controller reports

2.14.0 354 Fans in PI-IMP

- Main fan — State CH₄ GB concentration for alarm and action to be taken ●
- Booster fan — Procedure for use and action if CH₄ alarm is triggered

Documentation provided as evidence - see 2.13.0 above

Fan intertrips for methane levels and low collar pressure

Evidence viewed included control room gas alarm log and information relayed from instrumentation the main fans.

2.15.0 R 355 Auxiliary Fans

- VO responsibility for no recirculation, and
 - 130% of open circuit capacity of largest fan
- SSE responsible for auto cut off in event of main vent system failure

Documentation supplied is listed above at 2.13.0

*Practical evidence was provided when Inspector Dobson viewed and was satisfied with the auxiliary fan installation at MG 101, TG 101 and MG 102 developments.

216.0 R356 Scrubber Fans

- VO responsible for no recirculation by scrubber fan .

No scrubber fans are in use at the Mine

2.17.0 R 357 Monitoring Fans

- SSE responsibility for Main and Booster fans monitored for ● Condition
- Static pressure and alarm if departure from normal to then will alarm, trip power and records it ref date and time put on display for person checking fan condition

Documentation provided is listed above at 2.13.0

*Evidence viewed included, Citect monitoring, fan monitoring, inspection of main fan area, control room gas alarm log.

2.18.0 R358 Dealing with Auxiliary and Booster Fans

only

- ERZ
- VO or person he authorises
- Or under direction from either one of them to deal with fan to
- Alter-on/off or adjust
- Before start/stop inform
- ERZ controller for place and
- Anyone who may be affected

Documentation provided is listed at 2.13.0

*Evidence viewed included auxiliary fans in developments. There are no plans to use booster fans.

2.19-0 R 359 Exposure to Contaminants and CO2

- VO responsible see above section

Documentation provided as evidence Is given above at various locations.

*Evidence of monitoring was given by gas bag sampling regime, ERZ Controller reports, monthly ventilation reports, and Gas Chromatograph analysis.

2.20-0 R 360A ICE Pollutants

- SHMS include scheme required includes DPM

Documentation provided was -

GRO-47- BMP - Engine Pollutants

Evidence was seen of good standards with Diesel tag boards underground.

2.21.0 R 361 Prohibition on working in poor Quality Air

- No work in contaminants + those in tabulation subject to caveats of rescue and twa and CO₂ +1.25% Document produced -

GRO 750 TARP for General Body Contaminants

2.220 R 362 Air Distribution

- VO measure quality and flow rate minimum monthly at
- Main intake closest to surface
- Intake on return side of seals
- Main return closest to surface
- Return side of each vent split
- Return side of unsealed waste, idle workings and goaf areas
- Each return away at upcast fan
- Any other place VO considers necessary
- Air flow rate calculated and recorded for
- Combined intakes and combined returns and each vent split ● Once/ shift flow rate measured and recorded for each working face ● VO to ensure mine monitors ICE/DPM

Documentation provided included -

See section 5.5.1.2 of PHMP-15-Ventilation

Evidence was viewed of monthly ventilation survey.

223.0 R363 Barometric Pressure

- VO to ensure continuously measured/recorded-disp/ayed and available
- ERZ read start/end shift for trend

Evidence Citect monitoring of main fan and barometric pressure and records on all officials statutory reports.

2.24.0 R 364 Effective Temperature

- e VO ensure wet/dry temperature hence effective at coal face when mining in progress recorded as required

Documentation provided was -

Evidence ERZ Controller reports, monthly ventilation reports, Control Room Operator effective heat calculator, Shift Co-ordinator reports referring to heat TARPs.

2.250 R 365 Measurements following Changes

- VO ensure measurements immediate post change are done and recorded

Evidence was provided of a completed ventilation change permits referred to earlier.

2.260 R366 Withdrawal in case of Danger

- If GB > 25% CH₄ then deemed dangerous withdrawal required other than transient

Documentation provided was -

TARP-3442- Evacuation Triggers

Given the circumstances two days previously no mention of sighting when and how many times it has been enacted

227.0 A 62- 64 Spontaneous Combustion

SHMS must be,

Auditable and include:•
organisational structure ●
planning activities ●
responsibilities ● practices ●
procedures

There must be processes and resources for developing, implementing, achieving, reviewing and maintaining a safety and health policy

A PHMP must:-

- identify, analyse and assess risk associated with a principal hazard ● include standard operating procedures and other measures to control risk ● Be subject to review in a new mine, as soon after coal mining operations have started or, before a change occurs at an existing mine. (CMSHA Section 64)

Standards which are current and relate to SC are:-

- The Monitoring of Sealed Areas (RS 09)
- Draft Guidance on 'Sealing a part of a coal mine'
- Hazards and Controls

- Risk
- SOPs
- Work Procedures
- Policy-consistent with overall SMS
- Triggers
- TARPs
- Change Management
- Coal Analysis
- Worker Involvement
- Delegated Responsibilities
- Resources
- Communication
- Training
- Review
- e Corrective action
- Document Control
- Records

Documentary evidence provided was -

GRO-I O-PHMP - Spontaneous Combustion

3.0 Close-out Comments

The Mine has a robust well documented system. A small sample of the system was examined with, in most cases practical evidence of effective implementation.

The Mine is relatively uncomplicated at present but it is anticipated that the future will present more challenging conditions especially in regard to working temperatures and effective pre-drainage of methane from Goonyella Middle seam and surrounding strata.

POINTS TO MEASURE FUTURE EVENTS AND VENTILATION AND METHANE AGAINST



Richard Gouldstone
Inspector of Mines
Central Region

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The Ventilation Plan.

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Monthly Ventilation Surveys

There is a Six (6) day gap between VO and Mine Manager signing off.

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