



VULCAN MINE

Trigger Action Response Plan High Wall Miner Gas Management

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Highwall Mining Manager

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METHANE (CH⁴) – GASGUARD

Conditions / Triggers / Positions	Normal State	Level 1 Response	Level 2 Response	Level 3 Response
	No adverse conditions	Warning alarm only in launch vehicle cabin @1.0%	Power tripped to miner cutter head motors @1.8%	All power tripped underground @2.0%
Mining Crew	Normal Duties	- Advise HWM Crew Supervisor of the intention to reduce the cutting rate. - Reduce cutting advance rate to minimise the likelihood of gas level rising to Level 2 trip. - Record drive number and odometer reading when reduced cutting advance rate commences and which sensor alarmed. Enter on Shift Log.	- Notification to the HWM Crew Supervisor and deck crew that the alarm set point has been reached. - Stop cutting advance rate to minimise the likelihood of gas level rising to Level 3 trip. - Record drive number and odometer reading when reduced cutting advance rate commences and which sensor alarmed. Enter on Shift Log. - Ensure that the Nitrogen flow to the drive is maintained. - Once gas level drops to Level 1 alarm, re commence operations.	- Notify the HWM Crew Supervisor and deck crew that the power to the miner has tripped. - Confirm actual CH₄ and O₂ levels on Gas Guard unit. - Record drive number, odometer reading and gas levels when trip occurred, and which sensor tripped. Enter on Shift Log. - Turn dust suppression water flow to the miner off and wait for the gas level to drop below trip level. - Ensure that the Nitrogen flow to the drive is maintained. - If gas levels drop below trip level allow power restoration, seek approval from HWM Crew Supervisor to restore 1000V power supplies. - Reset power trip on Gas Guard, reset 1000V outlet, restart sequence and clear coal from push beams and cutter head module
HWM Crew Supervisor	Normal Duties	Record drive number, odometer reading, which sensor alarmed, gas levels and action taken in Production Report.	- Communicate with the Launch Vehicle Operator to monitor trending of gas level and confirm floxal is operating correctly. - Record drive number, odometer reading, gas levels and action taken in Production Report.	- Advise HWM Manager. - Once gas level drops below power trip level approve crew to reset 1000V outlet, restart sequence, clear coal from push beams and cutter head module. - Notify HWM crew of the possibility of the requirement to withdraw the system if gas level does not show signs of decreasing or cannot be managed.
HWM Manager	Normal Duties	Normal duties	Normal Duties	Notify the SSE as soon as practicable



Conditions / Triggers / Positions	Normal State	Level 1 Response	Level 2 Response	Level 3 Response
	No adverse conditions	Warning alarm only in launch vehicle cabin @1.0%	Power tripped to miner cutter head motors @1.8%	All power tripped underground @2.0%
				If loss of power occurs for 3 consecutive plunges, cease mining and review data with SSE and EEM and review Permit to Mine.

METHANE (CH⁴) - PGD

Conditions / Triggers / Positions	Normal State	Level 1 Response	Level 2 Response	Level 3 Response
	No adverse conditions	Warning alarm only on CMW PGD @1.0%		
Mining Crew	Normal Duties	- Ensure operating diesel equipment is 10m away. - Record drive number and odometer reading when reduced cutting advance rate commences and which sensor alarmed. Enter on Shift Log.		

CARBON MONOXIDE (CO)

Conditions / Triggers / Positions	Normal State	Level 1 Response		
	Gas monitors recorded levels of co <30ppm in drive and co > 15ppm on launch deck	Gas monitors record level of co > 30ppm in drive or co > 15ppm on launch deck with audible and visual alarm in operators cabin		
Mining Crew	Normal duties	- Advise Crew Supervisor of alarm. - Check portal for any smoke. - Prepare fire-fighting equipment. - Stop cutter head motors. - Keep conveyor cars running. - Withdraw system from drive. - Monitor each conveyor car for heat when on launch deck.		
HWM Crew Supervisor	Normal duties	Advise HWM Project Manager.		



Conditions / Triggers / Positions	Normal State	Level 1 Response		
	Gas monitors recorded levels of co <30ppm in drive and co > 15ppm on launch deck	Gas monitors record level of co > 30ppm in drive or co > 15ppm on launch deck with audible and visual alarm in operators cabin		
		Record gas reading, cause if known and action taken in Production report.		
HWM Manager	Normal Duties	Monitor situation and respond accordingly.		

OXYGEN

Conditions / Triggers / Positions	Normal State	Level 1 Response		
	Gas monitors recorded levels of O2 >19.0% on launch deck	Gas monitors recorded levels of O2 <19.0% on launch deck		
Mining Crew	Normal duties	- Withdraw to a place of fresh air. - Investigate nitrogen plant connections for leakage and rectify.		
HWM Crew Supervisor	Normal duties	- Advise HWM Manager. - Record gas reading, cause if known and action taken in Production report.		
HWM Manager	Normal Duties	Monitor situation and respond accordingly.		



GAS MONITOR FAILURE

Conditions / Triggers / Positions	Normal State	Level 1 Response	Level 2 Response	
	No adverse conditions	Warning alarm only in launch vehicle cabin	Power tripped to miner cutter head motors	
Mining Crew	Normal Duties	- If gas sensor fault is detected, contact Electrician to confirm sensor failure. - If no other sensors are currently inoperable, contact HWM Crew Supervisor for permission to override single sensor fault on Gas Guard to allow completion of drive. - Record sensor failure on Shift Log. - Do not commence next drive until all faults repaired.	- Notify HWM Crew Supervisor. - For continuous miner withdraw system from drive and repair all faults. - For transition zone stop mining and repair faults. - Record sensor failure on Shift Log.	
HWM Crew Supervisor	Normal Duties	- Ensure no other sensors are inoperable. - Approve sensor override and completion of drive. - Schedule repair of all faults before commencement of next drive. - Record sensor failure and action taken in Production report.	- Advise HWW Manager at first opportunity. - Record sensor failure and action taken in Production report.	