



## TARP.001.PHMP.GTM.005.1 GAS MANAGEMENT TARP

- ALL SAMPLES AND READINGS ARE TO BE VERIFIED / CONFIRMED AS SOON AS IS REASONABLY POSSIBLE
  - VERIFICATION AND CONFIRMATION MAY INCLUDE METHODS SUCH AS
    - USING A 2ND GAS DETECTOR TO CONFIRM READING
    - COLLECTING BAG SAMPLES AND RUNNING ANALYSIS

Level	Green – Level 1	
Conditions	<p><b>General Body</b></p> <ul style="list-style-type: none"> <li>• Methane (CH<sub>4</sub>) &lt; 0.25% NERZ</li> <li>• Methane (CH<sub>4</sub>) &lt;0.5% ERZ1 Methane (CH<sub>4</sub>) &lt;2% ERZ0</li> <li>• Carbon Dioxide (CO<sub>2</sub>) &lt;0.5% (&lt; 1.0% for the LW tailgate when ERZ0)</li> <li>• Oxides of Nitrogen &lt;2ppm</li> <li>• Oxygen (O<sub>2</sub>) ≥ 20%</li> <li>• CO &lt; 10ppm</li> </ul>	<p><b>Longwall</b></p> <ul style="list-style-type: none"> <li>• Methane (CH<sub>4</sub>) &lt;2% in the tailgate where the tailgate drum cuts into the roadway.</li> <li>• Methane (CH<sub>4</sub>) &lt;1.5% LW tailgate</li> <li>• 0m TG Roadway Sensor (Positioned on last Shield) &lt;1.5% CH<sub>4</sub></li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>• All gas monitoring operational</li> <li>• Methane drainage plant operational</li> </ul>

Level	Yellow – Level 2	Orange - Level 3	Red - Level 4
Conditions	<p><b>General Body</b></p> <ul style="list-style-type: none"> <li>• CH<sub>4</sub> ≥0.25% &lt;0.50% NERZ</li> <li>• CH<sub>4</sub> ≥0.5% &lt;1.25% ERZ1</li> <li>• CH<sub>4</sub> ≥ 1.0% (Diesels, ≥0.9% for 3126 engine package)</li> <li>• CO<sub>2</sub> ≥0.5% &lt;1.25%</li> <li>• CO<sub>2</sub> ≥1.0% &lt;1.25% (in the LW tailgate when ERZ0)</li> <li>• Oxides of Nitrogen ≥2ppm &lt;5ppm</li> <li>• O<sub>2</sub> ≥19% &lt;20%</li> <li>• Carbon Monoxide ≥10ppm &lt;30ppm</li> </ul> <p><b>Longwall</b></p> <ul style="list-style-type: none"> <li>• CH<sub>4</sub> ≥1.5% in the Longwall tailgate return for more than 1 minute (either at the dogleg or roadway sensor) CH<sub>4</sub> ≥ 2.5% measured by ERZ Controller in the tailgate where the tailgate drum cuts into the roadway.</li> <li>• TG Roadway Sensor (Positioned at 0m from the face on the on last Shield) &lt;2% CH<sub>4</sub></li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>• Failure of 1 gas monitoring point</li> <li>• Low level alarm on hand held instruments, mine monitoring system or machine mounted monitors</li> <li>• CH<sub>4</sub> ≥ 1.25% at the collar/surface GB real time monitor for any upcast shaft</li> </ul>	<p><b>General Body</b></p> <ul style="list-style-type: none"> <li>• CH<sub>4</sub> ≥0.5% NERZ (Electric)</li> <li>• CH<sub>4</sub> ≥1.25% ERZ1 (Electric)</li> <li>• CH<sub>4</sub> ≥1.25% ERZ1 (Diesels, ≥1.0% for 3126 engine package)</li> <li>• CO<sub>2</sub> ≥1.25%</li> <li>• CO ≥30ppm</li> <li>• Oxides of Nitrogen ≥5ppm</li> <li>• O<sub>2</sub> &lt;19%</li> </ul> <p><b>Longwall</b></p> <ul style="list-style-type: none"> <li>• CH<sub>4</sub> &gt; 1.9% in the longwall tailgate return pause shearer(either at the dogleg or roadway sensor) To latch until methane levels have dropped to below 1.75%.</li> <li>• NOTE: If TG CH<sub>4</sub>&gt;2%, as recorded by the 0m TG.TG roadway or dogleg sensor, trip the electrical supply to the armoured face conveyor and the longwall shearer cutters. To latch until methane levels have dropped to below 1.75%.</li> <li>• CH<sub>4</sub> &gt; 2.5% at the real time GB gas monitor in any panel roadway</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>• Failure of the gas monitoring system</li> <li>• CH<sub>4</sub> &gt; 2% at the real time GB gas monitor at the base of an upcast shaft</li> <li>• CH<sub>4</sub> &gt; 1.75% at the collar/surface GB real time monitor for any upcast shaft or through any Main mine Fan.</li> </ul>	<ul style="list-style-type: none"> <li>• CH<sub>4</sub> ≥ 2.5% GB at the real time monitor at the base of an upcast shaft</li> <li>• CH<sub>4</sub> ≥ 2.5% GB at the collar real time monitor for any upcast shaft or through any Main Fan</li> </ul>
Coal mine workers	<ul style="list-style-type: none"> <li>• Report any unusual conditions</li> <li>• Report any methane trips or alarms to relevant ERZ Controller</li> <li>• Rectify any observed defects, damage if competent to do so</li> <li>• If methane concentration is &gt;0.9% remove diesel vehicles from area and restrict access – inform relevant ERZ controller</li> <li>• If CO<sub>2</sub> greater than 0.5% in face area take measures to dilute and remove gas.</li> </ul>	<ul style="list-style-type: none"> <li>• As per yellow TARP</li> <li>• Cease mining operations in affected district</li> <li>• If methane concentration reaches 1.00% stop use of diesel vehicles, take measures to dilute gas- inform relevant ERZ Controller</li> <li>• If methane concentration reaches 1.25% isolate electrical power if competent to do so,</li> <li>• ≥2.5% CH<sub>4</sub> in roadway of a district any persons in that district are withdrawn to a place of safety</li> <li>• For a development gateroad, the withdrawal must be to a place of safety out of the panel to ensure there are still two escapeways available.</li> <li>• Follow instructions from the ERZ Controller</li> </ul>	<ul style="list-style-type: none"> <li>• Withdraw to surface as instructed.</li> <li>• Assist with rectification work as required</li> </ul>
Control Room Operator	<ul style="list-style-type: none"> <li>• Ensure that communication is passed in an efficient and timely manner to Mining Senior Official and affected ERZ controllers, or if unable to contact the ERZ controller, notify the affected CMW's</li> <li>• Continue routine monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Notify Mining Senior Official and all ERZ controllers</li> <li>• Continue monitoring</li> <li>• Record all alarms</li> <li>• If unable to contact the ERZC, stop the belt in the affected production panel.</li> <li>• If the Longwall tailgate dogleg or roadway sensor is greater than or equal to 2.0% CH<sub>4</sub>, ensure that the cage has been stood (unless there is an emergency or mine withdrawal).</li> </ul> <p>Note – the cage will stop automatically at 2.0%. Can be manually overridden if there is an emergency or mine withdrawal. This requires approval from the MSO.</p>	<ul style="list-style-type: none"> <li>• Initiate emergency as directed by Mining Senior Official</li> </ul>



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Level	Yellow – Level 2	Orange - Level 3	Red - Level 4
<b>ERZ Controller</b>	<ul style="list-style-type: none"> <li>Investigate and rectify any unusual conditions and if not resolved report to MSO and control room operator</li> <li>Ensure workplaces in district are secure</li> <li>Confirm gas monitoring is working correctly</li> <li>Refer to Gas Monitoring SOP for failure of 1 gas monitoring point</li> <li>Record results of inspections on statutory reports (inclusive of gas and ventilation readings).</li> <li>Cutting from MG to TG and the road way sensor or dog leg sensor for CH<sub>4</sub> ≥1.5% manually adjust Shield advance sequence (S Save AQS MT) from its current level of 9 to a maximum of 13 shields.</li> <li>If methane concentration in the tailgate where the tailgate drum cuts into the roadway is greater or equal to 2.5%, implement measures to reduce the gas levels (i.e. Venturi, Sherwood Curtain, halt production to let gas levels come down)</li> </ul>	<ul style="list-style-type: none"> <li>Cease mining operations in affected district</li> <li>Confirm the workplace is safe and withdraw personnel to a place of safety</li> <li>Once withdrawn to a place of safety: account for personnel, check communication devices and maintain contact with the CRO, ensure transport is ready if a mine withdrawal is called.</li> <li>Investigate and rectify any unusual conditions and if not resolved report to shift coordinator and control room operator</li> <li>ERZ Controller is to take measures to rectify the hazard</li> <li>Brief crew in preparation to withdraw from the mine if triggered</li> <li>Fence off affected area</li> <li>Report to Mining Senior Official and CRO</li> <li>Refer to Gas Monitoring SOP for failure of gas monitoring system</li> <li>If TG CH<sub>4</sub>&gt;1.9%, as recorded by the roadway or dogleg sensor, stop shearer haulage. Production may not recommence until methane levels have dropped to below 1.75%.</li> <li>If TG CH<sub>4</sub>&gt;2%, as recorded by the 0m TG, TG roadway or dogleg sensor, trip the electricity supply to the armoured face conveyor and the longwall shearer cutters. To latch until methane levels have dropped to below 1.75%.</li> </ul> <p>Note – the shearer haulage stop is automatically engaged once the above level is reached on the tailgate roadway and/or dogleg sensor. The mine manager can authorise the shearer haulage stop to be overridden to bring the shearer to a safe location if required.</p>	<ul style="list-style-type: none"> <li>Coordinate district withdrawal to surface</li> <li>Account for all persons in his control / district</li> <li>Assist with rectification work as directed by the Incident Controller</li> </ul>
<b>MSO</b>	<ul style="list-style-type: none"> <li>Communicate with ERZ Controllers and assist in any actions required to rectify problems</li> <li>Record events and action taken on shift report and communicate with relevant people as required</li> <li>Establish monitoring regime as per Gas Monitoring SOP - failure of 1 monitoring point</li> <li>Contact Gas Drainage Technician to investigate options to increase CH<sub>4</sub> goaf drainage adjacent to active TG roadway.</li> </ul>	<ul style="list-style-type: none"> <li>Communicate with ERZ Controllers and give all assistance in any actions required to rectify problems</li> <li>Inform Mine Manager, VO, and SSHR</li> <li>Form ICT and commence corrective actions.</li> <li>Inform EEM, Gas Drainage Technician and Superintendent and relevant Dev/Longwall Superintendent</li> <li>Record circumstances of incident and actions taken to rectify problem</li> <li>Instigate monitoring regime for failure of gas monitoring system</li> <li>Initiate incident investigation</li> </ul>	<ul style="list-style-type: none"> <li>Co-ordinate mine withdrawal to surface</li> <li>Determine rectification works and/or sampling regime as required</li> <li>Notify the Mine Manager and VO</li> <li>Debrief crews on arrival to surface</li> <li>Initiate ICT and develop action plan</li> <li>Initiate incident investigation</li> </ul>
<b>Ventilation Officer</b>	<ul style="list-style-type: none"> <li>Confirm that the correct action has been taken</li> <li>Verify that the Ventilation system is healthy.</li> <li>Review potential to increase LW Split ventilation Quantity for dilution</li> <li>Review ventilation readings to ensure appropriate distribution of air.</li> <li>Review barometer trend</li> <li>Review barometer forecast</li> <li>Confirm ventilation and gas drainage actions are consistent</li> <li>Communicate findings to MSO, gas drainage technician and UMM.</li> <li>Record the operational, ventilation and goaf drainage scenarios for Monthly review.</li> </ul>	<ul style="list-style-type: none"> <li>As per level 2 responses</li> <li>To give all assistance as required</li> <li>Confirm all required actions</li> <li>Record events in the Monthly Ventilation Report and actions taken.</li> </ul>	<ul style="list-style-type: none"> <li>Participate in ICT</li> <li>Advice on remedial action as required</li> <li>Confirm that the correct action has been taken</li> </ul>
<b>Gas Drainage Technician</b>	<ul style="list-style-type: none"> <li>Take appropriate measures to rectify problems reported with the gas drainage system</li> <li>Conduct inspection of current face position and next available goaf well.</li> <li>Physical check on goaf trailers, hole gas flows and gas composition, check on plant and blowers (includes skids and venturis).</li> <li>Communicate changes to methane drainage system to Shift Supervisors</li> <li>Notify Seam Gas Superintendent to confirm actions taken.</li> </ul>	<ul style="list-style-type: none"> <li>Take appropriate measures to rectify problems reported with the gas drainage system</li> <li>Same physical checks as code yellow response</li> <li>Communicate changes to methane drainage system to Mining Senior Official</li> <li>Investigate potential to increase capacity (e.g. are there any additional venturi's available?)</li> </ul>	<ul style="list-style-type: none"> <li>Participate in the ICT</li> </ul>
<b>Underground Mine Manager</b>	<ul style="list-style-type: none"> <li>Confirm that the correct action has been taken</li> <li>If there are concerns over upcoming barometer or cage activity, either: <ul style="list-style-type: none"> <li>Step this TARP up to Orange – Level 3</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Inform SSE and SSHR</li> <li>Confirm the incident control plan and prepare to lead the ICT</li> <li>Ensure action plan is implemented</li> </ul>	<ul style="list-style-type: none"> <li>Maintain ICT</li> <li>Notify SSE, inspector, SSHR &amp; ISHR</li> </ul>

**Place of safety:** Any positively ventilated place on the intake side of an accumulation of gas, communication available i.e. crib room

All gas readings refer to the general body of an airway

\*This TARP does not apply to sections of the mine that are set up for purging gases from a goaf that is in final stages of sealing and managed under an approved sealing management plan. Main return and upcast shaft triggers still apply though.

**ICT:** Incident Control Team

**MSO (Mining Senior Official):** Person appointed by the underground mine manager to control and manage the mine in his/her absence

High CO levels or indicators of Spontaneous Combustion refer to TARPs: TARP.001.PHMP.GTM.005.2; TARP.002.PHMP.GTM.005.2; TARP.003.PHMP.GTM.005.2.



## GAS MANAGEMENT TARP

Document N°: TARP.001.PHMP.GTM.005.1

Approval: SSE

ISSUE N°	ISSUE DATE	ORIGINATOR	REVIEWED DOCUMENT OWNER	REVIEWED UNDERGROUND MINE MANAGER	REVIEWED H & S MANAGER	APPROVED SSE	SIGNATURE
14	21 January 2020	Braedon Smith					
			Braedon Smith				
				Kelvin Schiefelbein			
					Steph Papperman		
						Damien Wynn	

## AMENDMENTS

ISSUE N°	ISSUE DATE	DESCRIPTION	INITIAL
1	17 <sup>th</sup> July 2014	New document. Following document made obsolete PHMP.UGGT.026.4 PHMP.UGGT.149(b).TARP SOP.UGGT.735.1 UGGTHS009 SOP.UGGT.735.1	DL
2	11 <sup>th</sup> November 2014	Code Green CO Trigger level changed from 20%ppm to 20 ppm. Changed the wording "effected" to "affected". Add "as per Yellow TARP" to operator actions in Code Orange. Add "inform relevant ERZ Controller" to Code Yellow operator actions. Change Code Green to "CO<10ppm" – Original was a typo. TARP number changed to TARP.001.GTM.005.1	RLB
3	24 <sup>th</sup> November 2014	In code red conditions, removed "that are classed as ERZ1" from first dot point. Updated note in dot point one to "Mains from the Longwall tailgate to the base of the upcast shaft are not included in this trigger as they are classed ERZ0"	RLB
4	6 <sup>th</sup> August 2015	Minor administration changes	LH
5	27 <sup>th</sup> October 2015	Review Updated trigger actions in the Gas Management TARP	RLB
6	11 <sup>th</sup> November 2015	Change head trip triggers	RLB
7	29 <sup>th</sup> April 2016	Review of SOP.PHMP.GTM.005.1.249 Taking Action when Methane Detected at a Ventilation Split or Main Return Airway and; TARP.001.PHMP.GTM.005.1 Gas Management TARP	RU
8	10 <sup>th</sup> November 2016	Review of TARP.001.PHMP.GTM.005.1 Gas Management TARP in line with MRE	DP
	16 <sup>th</sup> November 2016	Review of TARP.001.PHMP.GTM.005.1 Gas Management TARP in line with MRE	RU
	17 <sup>th</sup> November 2016	Review of TARP.001.PHMP.GTM.005.1 Gas Management TARP in line with MRE	DP / RU
	18 <sup>th</sup> November 2016	Administrative change – Remove appendix SOPs and publish standalone documents	SS
9	14 <sup>th</sup> December 2016	Review	AM
10	27 <sup>th</sup> January 2017	Review	RU
11	9 November 2017	Review. Update levels for shearer triggers Add triggers and actions for methane in longwall goaf stream. Add actions for UMM to implement restrictions on cage movement or to escalate level if severe barometric changes forecast. Added separate CO2 trigger in for TG ERZ0	DB
12	25 April 2018	Review Updated shearer trigger to unlatch again at 1.65% (instead of 1.5%). Added limit for cage in at 2.0% Clarified that TG gas levels are measured at the roadway or dogleg sensor Added in an allowance for the UMM to authorise the shearer to be moved to a safe location when stood for gas. Separated diesel limits for CAT engines and other vehicles.	DB
13	30 October 2018	Partial Review – update TARP triggers for trial	MMOR
14	21 January 2020	Review – Reviewed along with Gas PHMP to reflect monitoring changes required under the CSMH Reg 2019 Amendment. Specifically TARP now includes requirement for TG Shield sensor for compliance with S243A.	James Moreby



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ISSUE N <sup>o</sup> .	ISSUE DATE	DESCRIPTION	INITIAL
14	9 April 2020	Adding additional trip points to dogleg and TG roadway sensors to align with S243A	James Moreby

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