SAFETY & SUSTAINABLE DEVELOPMENT

LEARNING FROM INCIDENTS

INVESTIGATION REPORT

MORANBAH NORTH MINE

Metallurgical Coal

Incident Number: IN.00205770
Classification: *DNRME HPI*
Incident Title: Methane exceedance in TG of LW604
Incident Date: 20.07.2019
Report Date: 20.07.2019

CONFIDENTIAL

Learning from Incidents Investigation Report

1 EXECUTIVE SUMMARY

Power to LW604 face tripped back to the DCB at 11:50am on the 20th of July while completing the 2nd run into the TG. During the initial investigation the face ERZ Controller identified methane (CH_4) blowers in the floor between #105 and #110 PRS and a GB CH_4 concentration up to 2.3%. Further investigation found the TG drive CH_4 sensor had failed and there was >2.5% CH_4 in the TG roadway.

Leading up to the time of the event CH_4 level in the TG roadway was between 1.6% and 2%. At 12:12pm the TG outbye sensor passed 2.5% CH_4, peaking at 12:22pm at a GB concentration of 3.36% CH_4 and did not drop below 2.5% until 1:25pm. SO670A was the closest goaf drainage well but was in standby mode due to low methane and high oxygen (O_2).

The face ERZ Controller used cool tubes and brattice sails along the face to direct ventilation into the rear walkway and dilute CH_4 make from #105 PRS to the TG. The TG drive, TG CMU, and the shearer were checked internally for gas, and the incident site was then cleared by the Undermanager in consultation with the Underground Mine Manager. Production then recommenced at 5:30pm.

2 INVESTIGATION TEAM MEMBERS

List of team members			
Name	Position Title	Designation	Qualifications
Kelvin Sloan	LW coordinator	Investigation Lead	S123, G2, Trade Cert
Tim Johnson	HSE coordinator	Facilitator	S123, G2, Dip
Scott Fraser	ERZ controller	ERZ Controller	S123, G2, Cert 4 U/G operations
Sam Watson	Geologist	Team member	S123, G2, Geology Batch
Hamish Rowland	Drilling supervisor	Team member	S123, G2
Ben Roberts	Mine Technician	Team member	
Tim Miller	Mine Technician	Team member	
Jamie Gibson	Shift Undermanager	Team member	S123, G2, Cert 4 U/G operations
James Grebert	Ventilation officer	Team member	S123, G2, VO
Colin Standley	Mine Technician	Team member	

3 KEY WITNESSES

List of Key Witnesses		
Name	Position Title	Statement
Tim Miller	Mine Technician	Yes
Scott Fraser	ERZ Controller	Yes
Grant Dixon	Mine Technician	Yes
Jamie Huff	Mine Technician	Yes

4 METHODOLOGY AND TOOLS USED

An investigation has been conducted in accordance with the Anglo American investigation methodology known as the Learning from Incidents model, supported by various investigative tools.

The analysis tools used for this investigation are:

Analysis Tool	Tools completed within this report - Yes/No
Time Series Events Chart	Yes – mandatory tool
Control Analysis	No
Human Behaviour Analysis	No
Change Analysis	Yes
Why Analysis	Yes

Supporting evidence	Attached as Appendix if applicable - Yes/No
Initial Incident Report	Yes – mandatory evidence
Relevant SHMS Documents	Yes
Photographs	No
Statements	Yes
Diagrams / Maps / Physical Evidence	Yes

5 INCIDENT REPORT SUMMARY

Summary of Incident						
Incident Number		IN.00205770		Department	Longwall	
Area / location		LW604 TG roadway		Company (Anglo/Contractor)	Anglo	
Summary of findings from Incident Investigation						
Incident Category	**Agent**	**Actual ISR Rating**	**Potential ISR Rating**	**Date of Incident**	**Time of Incident**	**Number of hours worked**
Legal	CH_4 exceedance	Minor	Moderate	20/7/19	11:50am	3hrs
Task being performed at time of incident	Production				Planned or Unplanned task?	
					Unplanned	Planned
Summary of Incident	Shearer cutting back into TG to complete second run of the shuffle cut. Once shearer reached #141 PRS face power tripped back to DCB.					
Immediate actions taken	Removed operators back to the MG and investigation power trip. Upon investigation found CH_4 blowers in the rear of PRS between #105 and #110 with GB CH_4 up to 2.3% in rear walkway at #110 PRS and PGD was reading >2.5%. Further investigation found >2.5% CH_4 in TG roadway.					

6 INCIDENT DATA COLLECTION

PEEPO	Facts/Observations
People	• Five CMW on the face at the time of the event • ERZC present
Equipment	• Shearer • TG drive • Personal gas detector • Static gas monitors • Goaf wells
Environment	• Goaf • TG roadway • Shearer at #141 chock • Adjacent goaf present • Close proximity of the GML seam (0.2 to 0.3 meters) • GP1, PTUFF, GP0 within six meters of the GM seam roof (7.5 meters from the cut roof) • Floor heave • Goaf well SO670A on standby due to low methane content until after the goaf event
Procedures	• Goaf drainage TARP • Gas Management TARP • Operational TARP • Goaf Drainage Management Plan • Longwall portion of degassing and purging procedure
Organisation	• Rates of retreat vs gas drainage capabilities

7 CONTRIBUTING FACTORS / CAUSES

Possible Causational Factors		
Factor	Describe Cause	Applicable
Organisational	• Rates of retreat vs gas drainage capabilities	Yes
Task/environment Conditions	• Goaf • Adjacent goaf present • Close proximity of the GML seam (0.2 to 0.3 meters) • GP1, PTUFF, GP0 within 6m of the GM seam roof (7.5m from the cut roof) • Floor heave	Yes
Individual/team actions		No
Absent/failed defences	• Goaf well SO670A on standby due to low methane content until after the goaf event	Yes

8 CRITICAL CONTROL FAILURE

(List any identified critical control failures that contributed to the event. Liaise with the relevant department superintendent or critical control owner to establish if this section is applicable.)

CC Failure Identification	
Did any critical controls fail?	No
What / which critical controls failed? (List CT number)	
Why did the critical control fail?'	
How did the critical control fail?'	
What additional or revised critical controls and/or monitoring activities need to be established/change to mitigate risk of recurrences, or to improve risk control?'	

9 FINDINGS / CONCLUSIONS

- Prior to the incident the TG roadway CH_4 had been sitting between 1.6 and 2% GB.
- Prior to the incident a total of 5 goaf drainage holes online.
- SO670A was in standby mode due to low CH_4 and high O_2.
- Close proximity of the GML seam (0.2 - 0.3m)
- At 12:12pm the TG outbye sensor passed 2.5% CH_4 peaking at 12:22pm at a GB concentration of 3.36% CH_4 and did not drop below 2.5% until 1:25pm.
- 72m^3 ventilation across face at time of incident.

10 PREVENTATIVE ACTIONS / RECOMMENDATIONS

The following key actions were identified to prevent recurrence and have been assigned as detailed below in Enablon.

Task Description	Hierarchy of Control	Task Assignee	Due Date	Task ID
Revise the UIS strategy in similar areas to ensure adequate drainage of the GML	Admin	Kevin Doyle	15/9/2019	TS.01096536
Revise the degassing and purging procedure to ensure specific to longwall operations	Admin	Luke Hamilton	15/9/2019	TS.01096537
Review geotechnical goaf caving around TG 604 with adjacent goaf	Admin	Charles Sweeney	15/9/2019	TS.01096538
Review GML gas content to ensure drainage strategy is effective	Admin	Ken Blades	30/10/2020	TS.01096539

11 TEST FOR EFFECTIVENESS

Post Implementation Action Plan

Test of effectiveness is to be done to ensure that the above actions to prevent recurrence have worked as intended. (Nominally scheduled 3,6 or 12 months after completion of preventative action plan)

Enablon Task No.	Action Description	Responsible Person	Due Date	Completed Date
TS.01096540	Review actions from completed LFI to ensure all actions have been completed and are effective.	Wesley Noble	30/11/2020	

12 INVESTIGATION REPORT SIGN –OFF

The Incident Investigation Team submits this report as a true reflection of the information gathered. To maximize the preventive potential of the investigation report, the findings, conclusions and learning's of the report should be distributed as appropriate.

Department Manager		
Wesley Noble	**Signature**	**Date**
	Confidential	30-8-19
SHE Manager		
Chris Moger	**Signature** Confidential	**Date** 30/8/19.
General Manager		
Scott Dobbie	**Signature** Confidential	**Date**
		30/8/19
Head of Operations		
Paul Stephan	**Signature**	**Date**
Additional EXCO member signoff – if applicable		
Michael Lerch	**Signature**	**Date**
	Confidential	30/8/19.

Confidential

G. Britton

24/09/19.

13 ANALYSIS TOOL APPENDICES

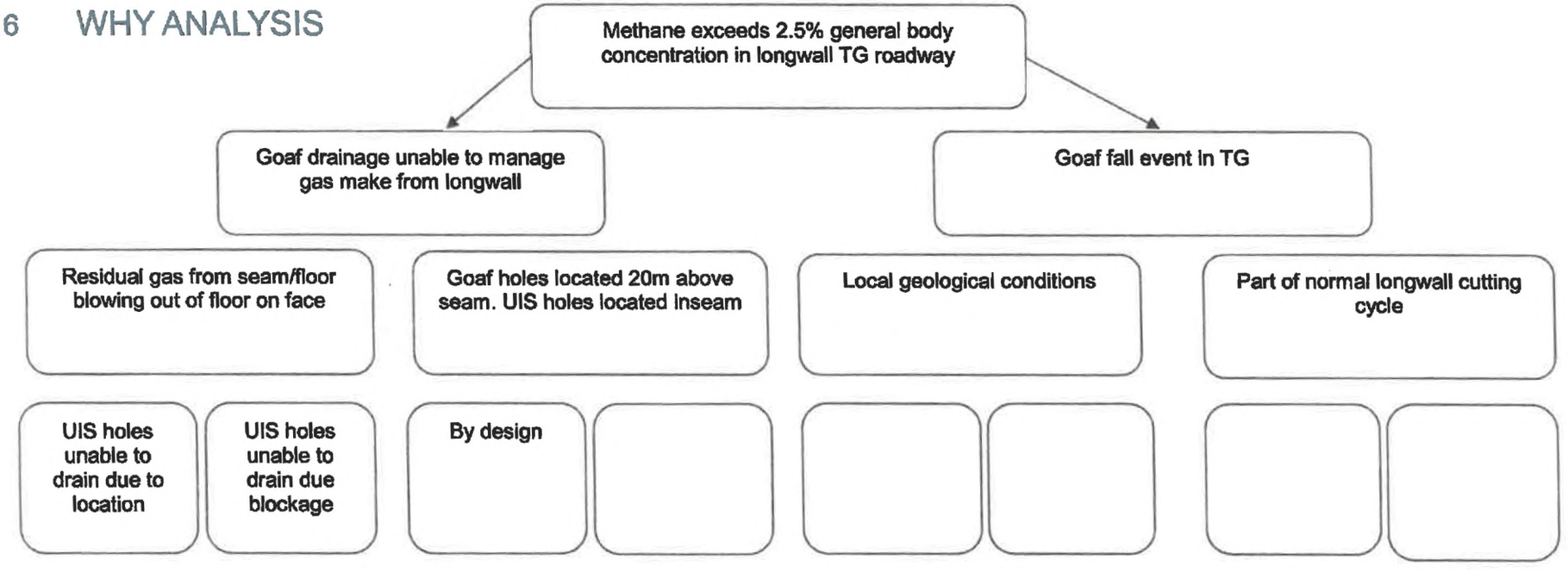
14 TIME SERIES EVENT CHART

Time	Event or Condition
20/7/19	
9:00am-10:00am	Completed start of shift briefing and travelled into LW604.
10:00am-11:50am	Production as planned.
11:50am	Lost face power due to CH_4 trip.
1:00pm-5:00pm	Setup brattice wings and sails onface to manage CH_4. Degassed Shearer, TG CMU and TG drive motors.
5:00pm-5.30pm	Crew waiting for approval to start production.
5:30pm	Commenced production.

15 CHANGE ANALYSIS

Change Analysis			
Normal Practice	**Situation or practice at the time of the incident**	**Gap (difference)**	**Impact of Difference**
Goaf drainage well operating	Well SO670A in standby mode due to low methane and high O_2	Can't pull gas from the TG goaf area, closest to the face	With closest goaf well on standby will result in less control of the gas content in the TG roadway
Methane content in TG generally between 1.2% and 2%	Leading up to the time of the event CH_4 level was between 1.6% and 2%. Shearer speeds whilst coming into the TG was being halted to assist with reducing CH_4 levels.	Modified operation of the shearer with consideration of the methane content	Gas management to prevent exceedance

16 WHY ANALYSIS



17 SUPPORTING EVIDENCE APPENDICES

18 INITIAL INCIDENT REPORT

Enablon ID No.

Hazard & Incident Report Form

AngloAmerican

To be completed by reporting person with assistance from Supervisor (Surface Incidents) or ERZ Controller (UG incidents).
ALL Sections of this form are mandatory unless marked.

Title of Hazard / Incident:	>2.5% METHANE AT TG DRIVE. & IN LW604 TG ROADUM.
Date occurred:	20/7/19 **Time:** 1150 pm
Classification: Hazard ✓ Safety ✓ Material Losses / Damage / Business Interruption ✓ Legal / Regulatory ✓ Environment ☐ Social / Community ☐ Impact on Reputation ☐ Health Illness ☐ Workplace Exposure ☐	
Department: Outbye ☐ Development ☐ Longwall ✓ Compliance ☐ Tech Services ☐ Seamgas ☐ SHE ☐ Business Improvement ☐ Human Resources ☐ Commercial / Supply Chain ☐ Maintenance / Engineering ☐ Other	
Specific Location:	LW604 TG ROADWAY & TG DRIVE.
Reported By: *Include ID#*	S. FRASER 605239
Key Person(s) involved: *Include ID #*	TIM MILLER, JAMIE HUFF & SCOTT FRASER.
Others involved: *Include ID #* (e.g. Witnesses)	AS ABOVE.
Equipment involved:	TG DRIVE, SHEARER.
ERZC / Supervisor: *Include ID #*	SHEARER 605239
Crew:	C
Contractor Group:	LONGWALL.
Shift Length:	12 HRS
Hours into Shift:	3 HRS
Consecutive days worked:	1
Incident Description:	THE TG UNDERMAN WHO JUST USED CUT OUT ON ITS FIRST RUN, THE SHEARER CUT BACK TO #129 CHECK & WAS CUTTING INTO THE TG FOR ITS SECOND (SNAKE) & AT #144 POWER WAS LOST TO THE FACE BACK TO THE DOS.

Diagram: (Attach additional notes if required)

Immediate Direct Cause:	METHANE.
Mechanism:	EXCESS METHANE
Immediate Corrective Actions Taken:	REMAN ORDERED BACK TO THE MG, INVESTIGATED TRIP. USING INVESTIGATIONS FOUND CH4 BLOWERS IN REAR OF CROSSCUT BETWEEN #105 & #110 WITH >2% CH4 UP TO 2.3% IN REAR HEADING AT #110, FOUND TG DRIVE SENSOR HAD FAILED OVER & PCD WAS REMOVED, >2.5% CH4 NEXT TO SHEARER, FURTHER INVESTIGATIONS FOUND >2.5% CH4 IN TG ROADWAY.

Refer to attached Moranbah North Risk Matrix for below:

Actual Consequence: **Not Applicable for Hazards**	Insignificant (first aid case, damage <0.01% annual revenue etc.)	Minor (medical treatment, damage 0.01 - 0.1% annual revenue)	Moderate (lost time injury, damage 0.1 - 1.0% annual revenue)	High (permanent disability/ fatality, Anglo HPI)	Major (multiple permanent disabilities/ fatalities Anglo HPI)
Potential Consequence:	Insignificant (first aid case, damage <0.01% annual revenue etc.)	Minor (medical treatment, damage 0.01 - 0.1% annual revenue)	Moderate (lost time injury, damage 0.1 - 1.0% annual revenue)	High (permanent disability/ fatality, Anglo HPI)	Major (multiple permanent disabilities/ fatalities Anglo HPI)

Has the hazard, defect or incident been effectively controlled on shift? YES ✓ NO

If not, why not?

MN1470 MS Print

Hazard & Incident Report Form AngloAmerican

People's Behaviours:	Timeline	
NIL	0900 - 1000	START OF SHIFT & TRAVEL TO LW.
	1000 - 1200	CUTTING TG → MG & MG → TG (2 SHEARS)
Environment:	1200 - 1300	POWER LOST ON FACE - INVESTIGATED.
HIGH CH4 IN SEAM BELOW. GOAF HOLE NOT YET ON SUCTION.	1300 - 1400	DECASED SHEARER, TG ROLL & TG DRIVE - [illegible] WINCH & [illegible] TO MONITOR CH4 ON FACE.
Equipment:	1700 - 1730	WAITING ON APPROVAL TO START UP
TG DRIVE SHEARED.	1800 - 2000	PRODUCTION.
	2000 - 2100	TRAVEL OUT.
Procedures:		
DE-GASSING PROCEDURE FOLLOWED.		

Additional Actions to prevent reoccurrence: (ERZ Controller/ Supervisor to complete)

Action Description	By Whom	Action Due (date)	Enablon ID #
INVESTIGATE UG DRAINAGE OPTIONS FOR LOWER SEAMS.	K. SLOAN.	20/8/19.	
INVESTIGATE GOAF HOLE SPACINGS AND [illegible].	K. SLOAN.	20/8/19.	

Is a Banner Alert required to be issued? Yes No
If yes, which Banner Alert: Green Orange Red

Incident Sign Off: (TO BE SIGNED OFF AND RETURNED TO SAFETY DEPARTMENT WITHIN 24HRS OF INCIDENT)

Person Reporting	Date: 20/7/19.	Supervisor (for Surface Incidents) ERZ Controller (for UG Incidents)	Date: 20/7/19
Name:	S.FRASER	Name:	S.FRASER
Signature:	[redacted]	Signature:	[redacted]

Verification Sign Off:				
Undermanager	Name: JAMIE GIBSON	Signature: [redacted]	Date: 21/7/19.
Superintendent / Manager	Name:	Signature:	Date: / /
Entered into Enablon by (Name):			Date: / /

CONFIDENTIAL

19 STATEMENTS

Statement – Tim Miller

Document No.	MNM_HS0001.10_FRM	Revision No	2	Issue Date	31/12/14
Print Date	31/12/2014	Authorised by	S Grennan / HSE Manager Rep		

AngloAmerican Anglo American Metallurgical Coal – Moranbah North
Operations PO Box 17 Tel (07) 49688 00
Moranbah Qld 4744 Int +61 749 68 600
Qld 4744

Incident Investigation Initial Witness Statement Form

Name:	Tim Miller	Job Title:	Mine tech
Telephone No.	Confidential	Supervisor:	S Fraser
Interviewer: Title/Positio		Date/Time:	21-7-19
Work Location:	604 Longwall		
Location of Incident:	Chock 140		
Incident Time and Date:	20-7-19	11-50AM.	

Please describe fully everything that you saw and heard before, during and after the incident (use additional paper as needed):

was cutting from 129chock towards tailgate, shearer stopped tramming on gas when gas subsided was told to keep tramming from maingate operator, moved two or three chocks and power went down on high gas.

Please describe all that you know about the work and conditions leading up to the incident (use additional paper as needed):

gas was decreaseing when I was told to keep tramming

Note anything unusual you observed before or during the incident (sights, sounds, odours, etc.)

Document No.	50026.10	Revision No	2	Issue Date	31/12/14
Print Date	31/12/2014	Authorised by	S Gannan / HSE Manager Rep		

What conditions influenced the incident (weather, time of day, equipment malfunctions, etc)?
How could the incident have been prevented?
Please list other possible witnesses:
Additional comments/observations:

Signature:		Date/Time:	

File Ref	http://samomonsp.anglo.local/sites/SHE-MS/Lah/SHEDocuments/ViewOnly/FRM - Fo.../HNM_HS0001.10_FRM_Incident Investigation Initial Witness Statement Form.docx	Page 2 of 2

Statement – Scott Fraser

Met Coal_11-9 **Incident Investigation Report**

Document No.	MNM_HS0001.10_FRM	Revision No	2	Issue Date	31/12/14
Print Date	31/12/2014	Authorised by	S Gilmivan / HSE Manager Rep		

AngloAmerican Anglo American Metallurgical Coal Operations
Moranbah Old 4744
P ox 172 Moranbah North Old 4744
Tel (07) 49688 6 0
Intl + 61 749 68 600

Incident Investigation Initial Witness Statement Form

Name:	SCOTT FRASER.	Job Title:	DEPUTY.
Telephone No.	Confidential	Supervisor:	S. GILMOUR
Interviewer: Title/Positio	N/A.	Date/Time:	29/7/14.
Work Location:	LW60A.		
Location of Incident:	LW60A FACE.		
Incident Time and Date:	12:00PM 29/7/14.		

Please describe fully everything that you saw and heard before, during and after the incident (use additional paper as needed): I CARRIED OUT MY FIRST INSPECTION OF THE FACE WITH NO ISSUES OR CHANGES OF CONCERN, I NOTICED THE TG DRIVE SENSOR WAS 0.6% CH4 ON FIRST INSPECTION, MID FACE 0.5% & 0.5% @ #140. THE SHEARER HAD CUT BACK IN TG, I MADE MY WAY BACK TO MY & AT #140 PANEL WAS LOST TO FACE, I REMOVED PERSONS FROM FACE TO MG & INVESTIGATED. AT #100 I NOTICE THE TG CH4 IN RETURN WAS >1% & FOUND CH4 BLOWING IN REAR OF WINNOWY WITH MAX 2.3% CH4 IN REAR WINNOWY AT #140. I INSPECTED TG DRIVE. SENSOR & FOUND >2.5% CH4 AT SENSOR 15 MINUTES AFTER PANEL WAS LOST. I CONTINUED UNDERMANNED

Please describe all that you know about the work and conditions leading up to the incident (use additional paper as needed):
& PROVIDED UPDATE OF WHAT I FOUND. SHEARER STOPPED AT #141. WE THEN CONTINUED FCM & WAS TOLD TO DE-ENS SHEARER, TG CTRL & TG DRIVE. LEOKS STARTED MY SHUTDOWN PROCESS FOR DE-ENSING. WE EXECUTED 2X WASH TO VENTILATE REAR WINNOWY @ 95 & 100 CHOCKS WE

Note anything unusual you observed before or during the incident (sights, sounds, odours etc)
MOVED THE COOL TUBES TO FACE ROOF OF CHOCKS 100 REAR WINNOWY TO DILUTE & DISPERSE LAYERING. WE DE-ENSED ELECTRICAL EXCLUSIONS AS MENTIONED ABOVE & CHANGED OUT TG DRIVE SENSOR. SENSOR WAS STILL READING UP & DOWN SO ORDERED PARTS FOR TG CTRL & PUT WICK UP TO FLUSH CH4 OUT UNDER CANOPY WITH VENTILATION. SENSOR STABILISED.
ERECTED BRATTICE ACROSS REAR OF CHOCKS FROM #140-#130 TO BLOCK CH4 FROM ENTERING WINNOWY. NOT ABLE TO STRIP ROAD CUT 1.5 SHEARS WITH NO ISSUES.

Document No.	50076.10	Revision No	2	Issue Date	31/12/14
Print Date	31/12/2014	Authorised by	S Ginnivan / HSE Manager Reg		

What conditions influenced the incident (weather, time of day, equipment malfunctions, etc.)?

IT WAS BETWEEN DIGGING HIGH & LOW

How could the incident have been prevented?

INCREASED WIS & ROAD DRAINAGE.
WAS NOT CAUSING ISSUES BEFORE SO SLURRY
RAN INTO TE WAS NOT CONSIDERED

Please list other possible witnesses:

S. WYATT, T. MILLER.

Additional comments/observations:

AS PER FRONT PAGE.

Signature: Confidential Date/Time: 20/7/19.

Statement – J Huff

AngloAmerican

Incident Investigation Initial Witness Statement Form

Name:	J HUFF	Job Title:	OPERATOR
Telephone No.	-	Supervisor:	
Interviewer: Title/Positio		Date/Time:	21/7/19
Work Location:	MG 604		
Location of Incident:	LONGWALL FACE TAILGATE		
Incident Time and Date:	20/7/19 11-50 AM		

Please describe fully everything that you saw and heard before, during and after the incident (use additional paper as needed):

WHILE STANDING AT 115 CROCK WAITING FOR THE SHEARER TO GO IN AND OUT OF T/GATE TALKING TO BLAKE TO SWAP OUT, THE LIGHTS WENT OUT, THEN TOLD TO PROCEED TO THE MAINGATE.

Please describe all that you know about the work and conditions leading up to the incident (use additional paper as needed):

HORIZON OR
DUSTY AS USUAL

Note anything unusual you observed before or during the incident (sights, sounds, odours, etc.).

NOTHING OUT OF THE ORDINARY

Document No.	50026.10	Revision No	2	Issue Date	31/12/14
Print Date	31/12/2014	Authorised by	S Ginnivan / HSE Manager Rep		

What conditions influenced the incident (weather, time of day, equipment malfunctions, etc.)?

How could the incident have been prevented?

Please list other possible witnesses:

Additional comments/observations:

Signature:

Date/Time:

Met Coal_11-9 **Incident Investigation Report**

Primary information gathered during initial investigation.

Primary Information

- Precise location of the accident/Incident.
  - Longwall 604 Maingate Chainage.2398m
- When the accident/Incident happened
  - 20/07/2019 1200 hrs
- Number of persons involved with the Incident

  Nil – HPI gas exceedance.

  TG 604 B Heading 1 c/t > 2.5 % @ 1212 Hrs

  TG 604 B Heading 1 c/t = 3.36 % @ 1222Hrs

  TG 604 B Heading 1 c/t < 2.5 % @ 1325Hrs

- 4.Name of person who was injured from the Incident. Nil
- Name of any person who saw or was present when the Incident happened.

  Longwall C Crew Shearer Op Tim Millar ,, Chock Jamie Huff. ERZC Scott Fraser.

- 6.A brief description of the accident/Incident

  Shearer was docking at the tailgate drive. Goaf flushed in forcing methane over the tailgate drive Sensor which tripped power to the face . Methane levels reached outbye as above , Ventilation Dept will trend Sensors.

  EEM UMM notified, Degassing as per SWG 52315

  Incident Report and witness Statements being prepared.

See Attached Control Room Timeline.

Timeline of events gathered by CRO

Sullivan, Mick

From:	O'Hara, Glenn
Sent:	Saturday, 20 July 2019 1:46 PM
To:	Lerch, Michael; Sullivan, Mick; Gibson, Jamie; Tait, Patrick; Dobbie, Scott; Bruce, David; Grebert, James; Sloan, Kelvin; Kelly, Brendan
Subject:	Timeline LW CH4 HPI Sat 20 Jul 19

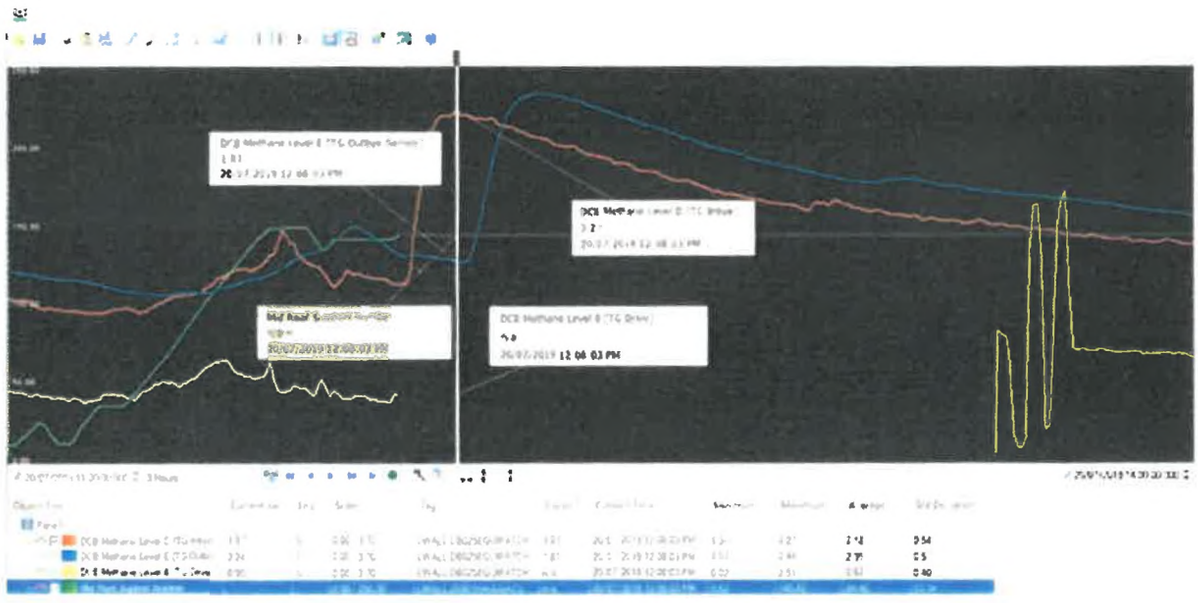
The below is the time line from control

1144 Shearer in TG
1152 K Sloan: ask Seamgas to see if they can increase CH4 suction
1159 CH4 on face TG drive rising
1159 CH4 sharply rises to over 3% and sensor falls and goes into negative reading, U/M V/O notified
1205 TG inby sensor rising to over 3% max reading 3.29% at 1208
1210 SO670A turned up to draw 300l/s
1217 TG O/B sensor rises to over 3% max reading 3.40% at 1218
1230 S Fraser #97 >1% rear walkway, #99 > 1% walkway, #108 GB 2.3%, TG off scale
1231 Audible blower rear #109
1230 SO670A flow from 305 l/s to 1219 l/s
1234 Contacted M Lerch, Plan in place to brattice chocks to flush rear of chocks, called S Dobbie, P Taite, B Kelly, D Bruce
1327 K Sloan booking out Brattice, Gas detectors, probe, venturi, etc.
1343 Time of email TG inby 2.09% CH4 O/B 2.38% CH4

20 DIAGRAMS/MAPS

1. Shearer @ #140 shield - start to rise CH_4 at TG Inbye sensor

1. Max CH_4 - TG Inbye sensor



1. Max CH_4 - TG outbye sensor

21 INVESTIGATION REPORT ASSISTANCE

1) Anglo American Risk Matrix
2) Anglo American Incident Agents List
3) Anglo American Hierarchy of Controls
4) DNRM Causational Factors Examples

22 RECORD OF AMENDMENTS

Issue 7	:	Site adaptation to Moranbah North Mine requirements and guidelines.	06 January 2019, Chris Moger, Timothy Johnson
Issue 6	:	Full review to align the investigation report to the Learning from Incidents process being rolled out at Met Coal in 2018.	08 June 2018, Chris Gately, Lynda Butler
Issue 5	:	• Sign off table updated to include "Additional EXCO" member signoff. • Section 7 – New – Critical Control Failure (for HPI's only) • References to Met Coal removed.	15 September 2015, Allan Gordon
Issue 4	:	Reviewed Sign off table updated to include sign off from Head of Operations	22 April 2014, Allan Gordon
Issue 3	:	Reviewed for currency – reformatted	8 January 2014, Bruce Gavin
Issue 2	:	Reviewed to align with Enablon Incident Database	6 March 2013, Graeme Redding
Issue 1	:	New Template	15 December 2011, Bruce Gavin