**3rd SEPTEMBER**

Mr Romanski stated that Underground power had been shut off as per Inspector Marlborough's recommendation.

**4TH SEPTEMBER**

Mr Romanski stated that, although the TARP allowed re-entry following 4 consecutive samples below Level 3, the Mine was not intending to proceed until they were certain the risk was acceptable. He stated that they had started to develop a re-entry plan. I advised that the re-entry plan needs to address the critical work required to be completed to manage the situation in 9 North and to ensure the safety of the Mine. **Mr Anger agreed** **that was the approach the Mine was taking. I explained that the actions to date were managing the Oxygen but not addressing the heating.**

**5TH SEPTEMBER**

Meeting

Verified that all surface boreholes over the 9 North goaf were capped or sealed

Gas levels were reviewed from Tube 24;0

CH4 risen from 12.6% to 14.02%

CO dropped from 486 ppm to 447 ppm

02 dropped from 9.95% to 8.96% C02 increased from 1.9% to 3.19%.

Graham's Ratio falling. CO/H2 Ratio rising.

Mr Romanski stated that, although the TARP allowed re-entry following 4 consecutive samples below Level 3, the Mine was not intending to proceed until they were certain the risk was acceptable. He stated that they had started to develop a re-entry plan. ***I advised that the re-entry plan needs to address the critical work required to be completed to manage the situation in 9 North and to ensure the safety of the Mine. Mr Anger agreed that was the approach the Mine was taking. I explained that the actions to date were managing the Oxygen but not addressing the heating.***



**6th SEPTEMBER**

A risk assessment was to be conducted for the controlled re-entry to the Mine. ISHR Mr Stephen Woods had been invited to participate and would do so. The staged re-entry would commence with inspecting the Mine and conducting weekly stats on gas monitors and electrical system, as well as work necessary to ensure the safety of the Mine. Other details of planned work was included in the staged re-entry plan***. I recommended that the Mine consider triggers that would be used during the re-entry process such that, should conditions worsen in the LW9 North, then the Mine would reassess and possibly withdraw people if deemed necessary***; o

A large Floxal unit from NSW was expected to arrive on Friday afternoon.

***I suggested that the best location to utilise this unit was to inject the Floxal gas at hole 1991. This would assist in purging the entire TG corner of the goaf area and would be more likely to treat the area where the heating was believed to be located. The Mine agreed that this would be the preferred location for this unit. It was expected to be commissioned and running Saturday morning;***

A risk assessment was to be conducted for drilling a hole from the surface into the area where the Heating was thought to be located. This could then be used to inject Floxal gas and possibly to utilise this in conjunction with foam to assist in the treating of the heating. It would take 3 to 4 days to drill the hole once drilling commenced(400 m depth). **I recommended that the Mine considered having an ERZ Controller, or another person competent to monitor for gas, present at the drill site to monitor for gases when the drill was expected to hole into the goaf.**

**7TH SEPTEMBER**

Current Status;-

Gas levels show no issues of concern. Tube 24 showed a rise in Oxygen at around 4:00 AM. Investigation showed that it was an Issue with the Floxal that was producing too much oxygen. Unit repaired and now being manned at all times.

***The relocation of the Tube 29 in the TG Chute Road was discussed. Mine agreed to relocate this tube back to its original position to ensure consistency of monitoring and so that it effectively monitors the general body gases coming out of the TG Chute road.***

Still have CO reporting to TG Chute Road (around 160 ppm), TG end of face, tube 24 has CO at around 280 ppm and is fairly steady,

All other indicators are as expected with no cause for concern.

There was in depth discussion regarding the TARPS that the Mine is using during this period,

***The current TARPS are not completely relevant due to the current situation. The Active Goaf TARP is not totally relevant as the longwall is no longer active, The Sealed Goaf TARP is not relevant as the Longwall is not sealed. The inspectors made it clear that the Mine needs to establish trigger points to ensure there are no "false alarms" and equally as important, trigger points that identify when the situation changes so that investigation into the change can commence before it reaches a critical evacuation trigger. At the moment the Mine is using the Sealed GoafTARP as it more closely matches the situation but they agreed to review this.***

**8TH SEPTEMBER**

It was explained that the Mine is running under TARP 7 (sealed Goaf TARP). This was an outcome of the Risk Assessment conducted for the re-entry as being the TARP nearest to the cunent situation. It was decided to utilise this TARP rather than develop a new TARP. There are parts of the TARP that are not relevant as the goof is not sealed but the TARP allows for essential work to be conducted underground when in code Red with the Mine Manager' s permission. The Mine had decided that whenever the gas reached the code red trigger all non-essential work and the associated persons would be brought to the surface. I ***advised the Mine that they should consider establishing a list of what was considered to be essential work to avoid confusion. I also recommended that essential work should be that needed for the safety of the Mine and should include establishing pumping***

**9th SEPTEMBER**

The idea of swapping floxal units over at GN1991 and GN2470 was discussed at length with the team and Les Marlborough joined the meeting by teleconference. The idea was to improve the purge by having the larger capacity unit at GN2470. The plan was agreed upon to leave everything as is and gather further data over next 24hrs. The trends of all 3 tube Bundle points are going in the right direction, a significant change now could have a negative impact.

**10TH SEPTEMBER**

Current Status;-

Gas readings for the previous 24 hours were provided and discussed. Significant barometric pressure increase on evening of 9 Sep seemed to have an adverse effect on Tube 29 and hence, Tube 28. CO in TG Chute Road has risen slowly. This is reflected in the results at Tube 28 (Panel return).

The gas results were discussed at length. The results may indicate that there could be CO being generated from the MG side of the TG Chute Road,

**It was agreed that bag samples be taken from the 3 sample points at the goaf edge in the TG Chute road (one is located on either side of the road and one in the centre). These may give an indication of any indicators of Spon Com coming from the MG side of the Chute Road.**

***We attended a video conference with Darren Brady and Mick Brady to discuss the situation and the latest results. There was detailed discussion regarding the current situation and the gas results. It was apparent that the CO and CO make at Tube 28 (panel return) and 29 (TG Chute Road) were slowly increasing. The possible sources of the CO were discussed and the data could not rule out that there may be a source of CO on the MG side of the TG Chute Road. There was discussion regarding the injection plan for Floxal gas and the alternatives.***

**11TH SEPTEMBER**

Gas readings for the previous 24 hours were provided and discussed.

Tube 24 had shown significant improvement overnight. The CO in TG Chute Road seemed to rise at an Increased rate following the nagging off the shields and introducing Floxal gas into 3 and 4 CT. Bag samples taken from the TG Chute Road goaf edge were all very similar and did not indicate the CO being produced at any greater amount from either side.

***We discussed the bag sample frequency of the 3 tube bundle points. It was agreed that the TG sample point, Tube 24, could be reduced to 4 hourly. Tube 28 and 29 to continue with bag samples every 2 hours.***

**12th SEPTEMBER**

It was stated that the gas results seemed to confirm that there was a definite source of CO on the MG side of the TG Chute Road.

Plan for the next 24 Hours;-

Continue Floxal injection as per current status;

Continue inspections, monitoring and essential work as per the re-entry plan;

e The Mine is mobilising a large Floxal unit from Narrabri in NSW. This unit is capable of producing 2200 1/s of ineff gas at 3% Oxygen. The plan is to use this unit to release the two Millennium units and to provide additional Nitrogen capacity if needed. The unit should be ready for use Saturday/Sunday.

We held a discussion about options going forward. The Mine is working on options should the inertisation alone not be able to control the situation.

***The Inspectors raised that the Mine needs to establish what their criteria will be to make an assessment that the situation is under control and at this time the Mine would be able to make a decision as to whether the recovery of shields could be recommenced at an acceptable level of risk.***

***The Inspectors have previously advised the Mine that it needs to review the Sealing Management Plan in light of the changed conditions that now exist.***

**13th SEPTEMBER**

Gas readings for the previous 24 hours were provided and discussed.

***Tube 24 Stable and inert;***

***Tube 29 showed a slow decrease in CO level by approximately 20 ppm over the past 24 hours. The modified Graham's Ratio showed a continuing and steady downward trend. This was seen as a positive result. We explained that the rate of CO reduction was not expected to be rapid at this stage. This was confirmed by Mr Brady;***

***As expected, Tube 28 reflected the Tube 29 results with dilution from double doors etc.***

***Continue drilling of new hole at MG side of TG Chute Road. When this holes through the Mine will measure the gases coming out of the hole (expected to breath out after holing) and the temperature of this gas. Then the Floxal units from Hole 1991 and 2470 will be redirected to the new borehole.***

**We discussed various options should the inertisation plan not be successful.**

***Again, the inspectors stressed that, whether using an alternate recovery plan or the original shield recovery and sealing plan, the Mine must revise the sealing management plan in light of the current situation. The Plan should have specific reference to monitoring and ongoing inertisation.***

***The Mine should consider whether the current TARPS are still relevant given the events of the past few weeks.***

Copies of the current gas data spreadsheets, the Incident Action Plan and a plan showing the injection points being used and the quantities of inert gas being injected were provided.

***Following the meeting Inspector Marlborough at the request of the Mine Management and SSHR, attended a crew briefing where the Mine Management gave the workforce an update. I answered various questions from the Coal Mine Workers and explained current situation and the role of the Inspectors in the IMT process.***

**14TH SEPTEMBER**

***It was discovered that the new hole being drilled into the goaf was the wrong hole. It was not the hole being drilled on the MG side of the Tailgate Chute Road (as noted in the MRE of the site meeting dated 12 Sep) but the hole on the TG Side of the Chute Road; I requested that the Mine provide copies of the Permit to Drill documentation for the hole drilled in error.***

***The Mine had again opened up the surface borehole behind MG9 North 5 CT seal. The hole was breathing out and allowed to purge the Methane. This hole then showed over 80% Nitrogen;***

***As a result of this, the Mine altered the Floxal input into the MG seals to close off MG 4 CT Floxal input and diverted the Floxal gas into 3 CT Seal, utilising the water drainage pipe to take the additional Floxal gas;***

***0 The Mine also ran a pipe round to the Maingate and ran it behind the Maingate Shield to put Floxal gas into the goaf at this point;***

***I asked whether the Mine had taken measurements of the Floxal gas now being injected into the MG seals and was informed that they had not taken measurements. I stressed that they must measure whenever they introduce Floxal gas into the goaf so that the quantity of inert gas being injected is known; o***

**15th SEPTEMBER**

***Bag samples taken from MG Seals 3-8 CT. All results showing Low Oxygen and elevated Nitrogen and no CO;***

**Current Status;-**

Gas readings for the previous 24 hours were provided and discussed.

***Tube 24 Stable and inert;***

***Tube 29 showed a slight increase in CO in the TG Chute Road. The CO now, according to the Gas Chromatograph in the TG Chute Road was 470 PPM, an increase of 20 PPM from the same time yesterday;***

There was an issue with one of the Floxal units feeding the MG 3 CT. This was down for 4 hours during the night;

Repaired the leak in the Floxal pipe in the MG which meant no Floxal gas was injected into 3 CT for 1 hour;

**Tube 28 reflects the results shown in the TG Chute Road. However, there is still a significant difference in CO make when calculated between tube 28 and 29. This indicates there is a significant error in the ventilation quantity being used at one of these points. This should be investigated by the Mine.**

***We had further discussions regarding the Option B (closing off TG Chute Road and ventilating face with an auxiliary fan). I stressed that the Mine must validate the ventilation model as it was not representative of the situation underground. There were obvious errors in what the model was assuming were air quantities at the current time,***

Copies of the current gas data spreadsheets, an update summary and a plan showing the injection points being used and the quantities of inert gas being injected were provided.

***I suggested that the Mine should consider focussing on the Tube Bundle results rather than the GC results at this stage, as there is less variation with the Tube Bundle. There are variations depending on whether the Mine uses the SIMTARS GC or the Mine's GC, different operators and quality of bag sample taking is showing variations in the GC results that are not apparent in the Tube Bundle. The GC results are useful for other gases such as Ethylene and Hydrogen etc.***

***Mr Brady showed a graph that demonstrated that the accuracy of the Tube Bundle Analyser compared to the GC for CO is very good.***

***I also recommended that the Mine should take some pressure readings across the MG Goaf seals from 3 to 12 CT to gain an understanding of the pressures across the Goaf.***

**16th SEPTEMBER**

Measurements taken of actual flow of Floxal gas into each hole, as I had requested showed less Floxal gas being injected into each than what was previously understood (approximately 35% less).

**Plan for the next 24 Hours;-**

Continue Floxal injection and monitoring;

***It is planned to introduce methane into Hole 1991 from 6:00 PM to 6:00 AM to try to push the Nitrogen that has built up on the TG side of the TG Chute Road forward and towards the TG Chute Road;***

Floxal unit that is currently located on 2690 will be repositioned to direct gas down Hole 2693 ; Foam is to be introduced to Borehole 2470;

Continue Drilling new hole (MG side of MG Chute Road) and new hole (between MG and TG Chute Roads and further back into the Goaf.

***I recommended that the Mine needs to take additional time when drilling new holes to ensure that the holes get closer to the coal seam. There is a possibility that a lot of the inert gas being injected into the new goaf holes is filling cracks and joints etc high up above the seam and is not getting closer to the seam where it is needed. This is supported by reports from the new hole 2693 stating that when the Floxal was introduced, there was back pressure on the hole. This could be from the Floxal gas from the other units. I recommended that the holes should be drilled to between 30 and 50 m above the seam. Discussions with the Drill Supervisor revealed that this could be achieved.***

***We had further discussions regarding future options should the inertisation plan not prove successful. Copies of the current gas data spreadsheets, an update summary and a plan showing the injection points being used and the quantities of inert gas being injected were provided,***

**17th SEPTEMBER**

***Strategy remains to maximise inert gas flowing into the Goaf area on the MG side of the TG Chute Road.***

***Inspector Marlborough had yesterday recommended that the Mine needs to take additional time when drilling new holes to ensure that the holes get closer to the coal seam. He explained that there is a possibility that a lot of the inert gas being injected into the new goaf holes is filling cracks and joints. The Mine are attempting to achieve this aim.***

Copies of the current gas data spreadsheets, an update summary and a plan showing the injection points being used and the quantities of inert gas being injected were provided.

***It was again stressed that if the mine is to plug the TG chute road the impact must be assessed as part of the plan i.e. ensure the change management process is applied via a formal risk management process considering as a minimum, the impact to ventilation, gas monitoring (including the requirement for effective monitoring after the proposed change), the risk the change may cause to explosibility, and the risk to people on the surface conducting operations around boreholes and at portals.***

**18TH SEPTEMBER**

Current Status

Gas readings for the previous 24 hours were provided and discussed

Tube 24 Stable and inert

Tube 29 remains at 637ppm CO

Tube 24 indicates an increase of CH4 replacing N2 believed to be generated by injection of CH4 at IOS UIS 3ct LW9 TG.

Mobilising Liquid nitrogen tanker ETA Wed

***Reducing Bleeder Fan by 200pa will balance pressure differentials across the goaf preventing the drift of inert gasses to the bleeder all agreed this could only assist plan A — left to IMT to decide***

Practical peer review of strategy will be arranged

Review product availability of fly ash etc

Review potential for use of tracer gas analysis

Determined location of next boreholes directly between GN2470 and GN2693, also 50m in the goaf from 4ct MG seal

***It was reiterated by the Inspectors with all present that prior to any attempt to seal the TG chute with rocsil all attempts to bring the event under control should exhausted without major change to the existing ventilation system and thorough risk analysis process be completed.***

**19TH SEPTEMBER**

Current Status

Gas readings for the previous 24 hours were provided and discussed.

e Tube 24 Stable and inert noted that injection of methane had affected the readings

Tube 29 showed a decrease in CO due to the drop in the bleeder fan pressure and barometric changes believed that the effect of the change has yet to be fully experienced

Tube 28 reflects the results shown in the TG Chute Road. However, there is still a significant difference in CO make when calculated between tube 28 and 29. This indicated there was a significant error in the ventilation quantity being used at one of these points.

RA - for the risks of leaving power on without electrical stats since there is no persons underground.

RA - chute road sealing

RA - review Wilsons operational RA for remote Rocsil seal installation

RA - review LW Face ventilation with auxiliary fan for changed status, i.e re-entry and in association with TG chute seal in place

All issues are subject to serviceability of Floxal units

**Comments from the Group were as follows**

The meeting discussed the explosibility risk and potentially unknown explosibility environments from TB 29 to and around the heating event.

The Inspectors referred NGC management team to QMRS explosibility guidelines and re-entry procedures as a reference.

The NGC management team acknowledged the sealing management plan will need to be reviewed and submitted to DNRME also the need to redevelop of sealing TARP (7) to review triggers and actions, to include explosibility.

The status of incombustibles in and around Longwall should be understood from mine data as part of the re-entry risk assessment process when re-entry becomes an option.

***It was recommended that a TARP process for managing risk to surface workers which could be impacted by an explosion underground should be given consideration.***

**20TH SEPTEMBER**

***Current Status o Gas readings for the previous 24 hours were provided and discussed.***

***o Tube 24 Stable and inert but noted that injection of methane continues to affect the readings***

***o Tube 29 showed a decrease in CO due to the drop in the bleeder fan pressure and barometric changes believed that the effect of the change has yet to be fully experienced. This peaked at 5% methane as shown on information provided by Darren Brady. Mine were asked to report on the effect to any downstream monitoring.***

***o Tube 28 reflects the results shown in the TG Chute Road. However, there is still a significant difference in CO make when calculated between tube 28 and 29. This indicated there was a significant error in the ventilation quantity being used at one of these points***

***o The pluses and minuses experienced with the interruptions to Nitrogen injection meant that the status quo maintained in relation to trends was achieved with 2001/s less applied nitrogen over the last 12 hours — too soon to draw conclusions from this***

Bleeder fan operating at >3% and <4% methane - notified to Mines Department. This fell back to 1.3% once the barometer rose.(Barometer predicted to do the same in next 24 hours)

***The message sent by email yesterday to John Anger and Marek Romanski was reiterated to the management team ie***

***For the sake of clarity***

***The decision to alter the fan configuration is the Mine's and needs to align with the Mine risk assessment and TARP for the fan operation and the limit set in that document.***

***Any change to the plan formulated today should be risk assessed in the light of the current status and needs to at least give consideration to, and include coal mine workers who may be affected***

***o The risk to persons working in or around the portals, and, personnel deployed to drilling and inertisation activity with boreholes ie anybody who may be impacted***

***o The ventilation impact of shutting down the fan and the consequences of where the elevated methane levels will then report to***

***o What alternatives may be considered—is returning the bleeder fan to its previous status a viable option***

***Please forward a copy of the risk assessment on completion.***

***I also stressed that the matter must include the potential impact of elevated methane levels affecting the monitoring capability. The decision to turn off the fan will be tabled and actioned through the 1MT and Mr Roy Moreby and Mr John Rowland have been consulted.***

***I suggested that it may be of value to get a dialogue between the two and Darren and John Brady to share experience — I was informed that Dennis Black(VO) was dealing with that coordination.***

**21ST SEPTEMBER**

Meeting Notes

***NGC have conducted RA to turn Bleeder fan off provided explanation of impact of proposed change via ventsim.***

***Issue raised with accumulation of CH4 in 9N B heading at 8m3/s and bleeder heading, no RT monitoring in B heading due to power turned off from ION due to flooding, TB37 9N 24-25ct currently 0.08% CH4***

***No other monitoring in 9N bleeder or ION install and Bleeder. 4 Way monitor operating ION MG inbye A heading coffin seal CH4 increased from 0.5% to 0.76% after Bleeder fan turned off***

***Raised view that Plan B sealing appears to be priority over Plan A inertisation, assured Plan A is priority but operating in parallel***

***Discussed validity and applicability of TARPS being applied for any proposed re-entry, must have clearly defined conditions and parameters to demonstrate no ignition source exists and must contain explosibility risk.***

***Additionally once yet to be defined conditions are meet, demonstrating stability of the environment over a defined time prior to re-entry must be identified.***

**22ND SEPTEMBER**

**Meetinq Notes**

***Acknowledge injection of gas @ GN1991 is preventing the gas in the goaf presenting to TB24 impacting effective monitoring at the TG seal. Expected products of combustion reporting to TB29 and TB28***

Wilsons and drillers will conduct trial run of implementing process for plan B at a Borehole in south mains area.

Tuesday 25/9/18 N2 units to have maintenance conducted sequentially

***Plan for re-entry and Plan B will be delivered to DNRME 23/9/18 with list of associated RA Requested that plan and associated RA presented to Inspectors Keith Brennan and Geoff Nugent 22/2/2018.***

***John Anger (SSE) provided both draft power point presentation for re-entry plan and draft re-entry Risk Assessment***

RA for application of Rocsil and sealing TG chute road SSE to confirm it was conducted with NGC Personal under NGC SHMS and RM process,

**Gas Review**

***Barometric pressure abnormally high and expecting high pressure over next 3 days***

***TB29 gas levels remain stable, CO trending with Diurnal***

***TB28 Stable***

***Starting to see increase of CO at TB14 MG Chute (CO 49.6ppm 0800hrs) and TB38 E frame goaf side (CO 17 ppm 0800hrs).***

***Have not seen any major impact to gas composition since turning Bleeder fan off***

***N2 foam used to hole through into TG Chute (100m3), could impact TB29 from sucking foam. Additionally Foam may increase resistance in TG Chute contributing to CO presenting to TB14 &TB38 including PD change from turning bleeder fan off***.

***Darren Brady recommended a person to physically monitor TB29 in TB so analyser is not impacted by foam.***

***N2 injecting at 1991 (4431/s) may not be effective and following air path around TG to TG chute and not influencing generation of CO. NGC are considering moving N2 volume to another location and apply lower volume at GN1991 i***

***Current total volume of N2 being applied 2.1 m3/s***

**23rd SEPTEMBER**

Discussion

Gas analysis was discussed and from 5:45 am results came through that showed that -

***TB29 H2 jumped to 550 and then 745ppm — higher CO & hydrocarbons followed too o***

***TB28 reflected the same***

***TB38 (Eframe) & TB14 (MG chute) are now beginning to show presence of heating products - analysis records requested by G. Nugent(lnspector of Mines) by email separate to the meeting which Mr Stook undertook to provide e Mine understood that bag sampling would be necessary since +1000ppm CO level had been reached***

***Interpretation of the sudden increases was, that the anticipated flushing effect caused by introduction of liquid nitrogen to hole 2698, or, it could be acceleration of the spontaneous combustion event. The meeting was advised that the associated ratio information did not support accelerated oxidation.***

***Nitrogen injection had been decreased as liquid nitrogen supply to 2698 ran out at 1 1 pm last night — refiguration of the nitrogen feed will be considered at 1M T to target as much to GN2698 as possible (more liquid Nitrogen due 4pm today)***

***Plan B ie plug TG chute will take 18 hours to effect so work will continue to give this option while gas trends are continually reviewed. It was reiterated by Inspector Gouldstone that it is the Mine's decision on how best to effect the plan but to ensure acceptable level of risk to those who may be affected.***

***The Mine undertook to continue to keep inspectors informed of how matters progress.***

**24TH SEPTEMBER**

Liquid N2 ran out of flow at 6:32am, re-established at 4pm into GN2698

3rd Narrabri unit ETA on site Tuesday next week at 305 1/s

At EOS NS, the Floxal status indicates an overall increase of 471/s from start of shift DS 23/9/18

***At the 9:30am dial up, all parties agreed that considering the increasing gas trends the best strategy was to seal the TG chute road.***

***The decision was made then to consider parallel tasking Rocsil rod insertion and environment monitoring, this would be ratified by the NGC 1M T and if so by 5pm a firm commitment needed to be made via consultation to seal the TG chute road***

***At 5:00pm a meeting was held with relevant parties, Dr D.Cliff, D Brady, M. Carter, M. Romanski, P. Baker, G. Schuller, J. Anger and the NGC IMT. At this meeting it was agreed that the best course of action should be to immediately seal the TG chute road when the Rocsil rod insertion was scheduled to be completed at 10pm***

**25th SEPTEMBER**

***Darren Brady recommended most effective location for majority of N2 to be applied is GN2470 e Potentially 02 is still being supplied to Goaf, focus and inspection will be conducted on adjacent Goafs 8 and*** *7.*

***CO past TB 14 needs to be seen to be not replenishing before an assessment can be made heating*** *is arrested.*

*Discussed the influence of high H2 on the Oxygen Nose Point in current samples and to ensure it is considered when assessing explosibility risk.*

**Strategic focus today for NGC:**

***Review exclusion zones for explosibility at surface areas with intent remove based on current readings.***

***Most effective application of N2 strategy to be confirmed by EMT***

***Develop drilling strategy to consider; Floxal injection, appropriate monitoring points and contingency for sealing if required***

**27 SEPTEMBER**

**Directive issued verbally by Inspector Geoff Nugent on 27/09/2018**

**‘Due to the unstable and volatile conditions of fire and explosion risk in the underground environment of North Goonyella Coal Mine and its unpredictable potential to impact any people in all surface areas of the operation both from the risk of an explosion and toxic or irrespirable atmospheres, I Geoff Nugent Inspector of Mines am issuing the SSE of North Goonyella Coal Mine a directive under s 167 of the Queensland coal mines safety and health act 1999 to suspend all operations within the exclusion zones established today to remove persons from these until an acceptable level of risk is achieved’**

**28th SEPTEMBER**

***The situation at the Mine is escalating and the plan is to deploy the GAG and make arrangements to seal up.***

**5th OCTOBER**

Marlborough

There was further discussion regarding the air quantity coming out of Shaft H9 and how this could be measured, or estimated. This would give valuable information to help understanding the status of the Mine, There was discussion around possible sources of additional Methane. It was suggested that the gas risers be checked and the flows measured. The Mine explained that the gas risers had been turned off on the surface.

I recommended that the Mine reconsider this with a view to opening up the risers. The hazard being that, by closing the gas risers, the boreholes would pressurise from the underground methane standpipes. This pressurised gas could then cause the underground water traps to blow out. This would result in the in seam gas drainage holes free venting into the underground mine atmosphere. The Mine agreed to review this.

**7TH OCT**

Marlborough

I questioned why a re-sample was not taken during the night instead of waiting to the following day before investigating. I recommended that the Mine should ensure that, whenever a suspect or very unusual gas result is identified, it should be automatic that a re-sample is taken to verify the reading.

I also recommended that the Mine consider putting the gas results out in an excel spreadsheet with Tabs for each sample point rather than simply sending the Ezgas print out sheets. This enables the people receiving the results to easily look at how results are trending and how they compare to previous samples. It would also reduce the number of e-mails being sent out

After completion of the meeting I had a discussion with Mr Romanski and Mr Anger regarding their use of self-rescuers on the surface, The use of the self-rescuers was determined as a control by the Mine when there was large quantities of smoke issuing from the Mine. This is not now the case. The Mine intends to review this requirement and review the risk assessment to determine what is now required given the current circumstances. I suggested a risk based approach to determine what is required to achieve an acceptable level of risk.

I advised that the Mine needs to ensure that they have established sufficient reliable monitoring points around the Mine and in the sealed area to be able to effectively analyse the situation and that the Mine needs to determine from the monitoring results that the risk of explosion has been reduced to an acceptable level. The Mine can then use a risk management process to determine the controls required, which would include the need for and size of, any exclusion zones that may or may not be required.

**9th OCTOBER**

Discussion

Latest H9 results showing slight blip in readings — too soon to be indicative o E44 shows fresh air — to be replaced o D. Brady noted a change in results just in from 36Ct, floxal unit to be checked and a re-sample agreed

Volume at H9 still not known — option suggested to drop 'foil' and effect of updraft may give an order of magnitude

Still accepted that with the uncertainty of the status of VCDs potential impacts of changes will be difficult to predict — plugging of all access to LW9 should prove most informative — subject to the status of the two TG seals/plugs

***Advice was given in regard to alternative analysis device for 95% methane samples***

**10Th OCTOBER**

**It was explained that the strategy was founded on not pushing methane out over the heating. Les Marlborough stated that with 25% Methane at H9 shaft the methane was already being flushed out of the goaf. Mr Romanski stated that he did not want to inject Floxal gas with 3% oxygen into the goaf area. Les Marlborough explained that the Floxal units can be adjusted so that the flow from the unit is reduced and the oxygen content is lowered to between 1 and 2%. Les Marlborough stated that, as part of the Mine Record Entry from today there would be a recommendation for the Mine to review the Floxal strategy.**

Les Marlborough asked about how well developed the Mine medium and longer term strategy has been developed — Mike Carter undertook to give details after the meeting.

**16th OCTOBER**

Les Marlborough suggested taking bag samples from locations where concrete will be dropped underground for Longwall seals to determine if an explosive mixture exists. Mike Carter explained that the concrete will be delivered underground through the drill rods and will be a very wet mix.

**24Th OCTOBER**

Prior to the meeting Inspector Nugent raised the abnormal correlation between H9 shaft pressure readings and gas concentrations in the shaft. The pressure readings showed negative pressure since 9 Oct, ranging from -130 Pa to -360 Pa. Currently sitting at -260 Pa. It was suggested that moves in diurnal pressure could be influencing this, but there has been no obvious changes in pressure measured at these times. The pressure of -260 Pa indicates that the shaft is breathing in and yet the Oxygen level at the sample point 10m down still shows Oxygen at 2-3%.

The Mine explained that there was no pressure readings available for the Bleeder shaft. Inspector Nugent and myself recommended that the Mine establish a pressure reading in the Bleeder Shaft.

I discussed with the Mine the need to develop a mine re-entry management plan, based on risk assessment. I recommended that, when looking at options for re ventilating the Mine, that the Mine should consider the use of a forcing fan as this could be used to reduce the risk of high levels of methane passing over the blades of an exhaust fan. I suggested that H9 shaft could be used to site a forcing fan. It would take some modification to the infrastructure on the surface at H9. I recommended that the Mine should consider a staged re-ventilation and re-entry process.

**Recommendation**

***The Mine should develop a detailed Re-entry Management Plan, based on risk assessment, with the appropriate level of technical expertise involved in the development of the plan. The details of what the Mine should consider in developing the Re-entry Management Plan are included in the Recommendation attached to this Mine Record Entry.***

***I explained that Inspector Nugent would attend the Mine on Friday 26 October to attend the feedback meeting and to review progress.***

**Number Recommendation Due Date 9th November**

Mine Re-entry Management Plan

***1. The Mine should develop a detailed Re-entry Management Plan, based on risk assessment, with the appropriate level of technical expertise involved in the development of the plan. In developing the management plan the Mine should consider the following as a minimum;The re-entry process must not commence until the Mine has determined that the underground atmosphere is clearly understood such that the Mine can determine, with high confidence, that there are no sources of ongoing combustion occurring that could be re-ignited by the re-entry process and introducing an unacceptable level of risk to coal mine workers.***

***2. The Mine should consider whether a staged re-ventilation strategy would be a more appropriate method of re-ventilating the Mine;***

***3. The Mine should consider using the QMRS MRAS system and protocols as a standard for the requirements for re-entry;***

***4. A management structure that details the supervision for each stage of the process and for the competencies of the people/coal mine workers involved that are appropriate to the hazards being managed;***

***5. Requirement for detailed work instructions to coal mine workers for each stage of the re-entry process. This to include restrictions on persons working alone;***

**6. Establishment of appropriate "fresh air bases" or places of safety and the minimum requirements for these as they are established during the re-entry process;**

**7. A detailed gas monitoring plan that clearly shows the status of the mine atmosphere for each stage of the process and the appropriate location of monitoring/sampling points to achieve this;**

**8. The locations of gas monitoring points/sample locations must be accurately known and be located in locations that will give results that are reliable and representative of the mine atmosphere in that location;**

**9. Specific TARPs should be developed that are appropriate to the re-entry process and include actions to ensure that coal mine workers are not exposed to an unacceptable level of risk;**

**10When establishing a TARP the Mine should consider the rate of change to ensure timely actions are taken so that coal mine workers are not exposed to an unacceptable level of risk (very important when relying on tube bundle monitoring as the prime monitoring system);**

**1 1 . The reliance on monitoring that is not continuous, such as tube bundle monitoring rather than continuous real time monitors and the impact on the ability to detect changes and the rate of change in a time frame that ensures an acceptable level of risk to coal mine workers;**

**12. TARPs should include actions to be taken should the gas monitoring system fail during the re-entry process;**

***13. Management plan to address actions to be taken should conditions be encountered that are not as expected, (i.e. should re-entry process be halted while the change in conditions is investigated and assessed to determine the effect on the acceptable level of risk to coal mine workers;***

***14. Failed VCD's discovered during re-entry process — actions to be taken and reporting requirements. Including possible reassessment criteria;***

***15. Impact on the mine atmosphere of the re ventilation and the introduction of Oxygen into the airways and ventilation circuits (i.e. could create an explosive mixture or re-ignite any heating);***

***16. Communication requirements and the re-establishment of communications during all stages of the re-entry process;***

***17 Emergency response and first aid requirements to protect coal mine workers involved in the re-entry works;***

**18. Actions to be taken before any changes to the detailed re-entry plan are to be implemented, including risk management processes to assess the impact on the exposure of coal mine workers to an unacceptable level of risk;**

***19. Analysis and treatment of residue from the spontaneous combustion event that may be found on the roof, ribs and floor of the mine workings to ensure coal mine workers are not exposed to an unacceptable level of risk;***

**20. The status of the in seam methane drainage system throughout the Mine;**

**21 . The possible influence of the changes to previously sealed areas of the Mine;**

**22. The possible impacts on strata control of the events prior to re-entry;**

**23. The effects of GAG product and temperature on services and strata control;**

***24. The self-escape strategy for coal mine workers involved in the various stages of the re-entry process;***

***25. Firefighting capability during the various stages of the re-entry process;***

***26. The ability to emergency seal the Mine should conditions warrant it;***

**27. Re-establishment of services during each stage of the re-entry process. This to include a determination of which services must be re-established at each stage of the re-entry process**.

**The SSE to respond to this Recommendation to Inspector Marlborough by e-mail by Fri 9 Nov 2018**

**Please provide a written status report on each SCP together with the actions taken to address each item by their due dates**

**Please provide a written status report on each Directive together with the actions taken to address each item by their due dates**

**Please provide a written status report on each Directive and SCP together with the ac ions taken to address each item by their due dates**