

Moranbah North Coal Mine

Level 1 Emergency Exercise

Industry report



Conducted on:
Sunday 21 August 2005

Table of Contents

Main Topics	Page
Executive Summary	3
Definitions	4
General Scenario	5
Scope	7
Objectives	7
Industry Recommendations	8
Mine site, Mines Rescue and Emergency Exercise Recommendations	9
Observations Summary	11
Conclusions	12
Appendix 1: Gas Contaminant Distribution	15
Appendix 2: Description of ICS	19
Appendix 3: Exercise Timeline	23
Appendix 4: Emergency Exercise Management Team	26

Executive Summary

A Level 1 Emergency Exercise was conducted at Moranbah North Coal Mine on Sunday the 21st of August 2005. The exercise was initiated by an Eimco loader transporting a pod of PUR resin colliding with a transformer at 41c/t D heading. The resulting fire propagated a smoke and gas cloud that triggered an evacuation of affected panels and a fire fighting response from the unaffected panels.

The underground escape, as triggered by signage from exercise assessors, was accomplished in a generally sound and effective manner by all personnel. All evacuating personnel had restricted vision simulated with painted goggles to replicate smoke levels anticipated in the panels. The vast majority of personnel used some form of operational Self Contained Self Rescuer (SCSR) either actual Dräger Oxyboks or CSE SR100 training units. This provided a realistic and valuable experience for mine personnel and was both adequately done and appreciated by escaping miners. The initial responses of all underground personnel and their collective knowledge of what to do, where to go and how to respond was commendable and of a high standard.

The responses of the shift coordinator and the initial control brought to the situation were as would be hoped of an underground supervisor in assessing and controlling a situation of this nature. As time wore on and coupled with the artificial nature of the incident and increasing numbers of people in the vicinity it became more difficult to maintain a state of heightened awareness and response.

Mine management formulated an Incident Management Team for the control and containment of the incident. This was loosely formulated along the lines of the Incident Management System (Mine Emergency Management System). This system has not been sufficiently established in industry to date and the IMT was therefore at some disadvantage with regard to its full implementation.

The IMT managed the multiple roles of situational assessment, data interpretation, incident control and media and police management. The management of both police and media in particular was effective and well done.

In summary, the response to and management of the scenario was adequate and effective. The exercise, as is required, highlighted areas for improvement and refinement. Suggestions for enhancement are provided in the recommendations, and should be considered as opportunities rather than criticisms. It is recognised that such events either in reality or practice are debilitating to varying degrees for all involved.

David Reece
Chairman
Emergency Exercise Management Team

Definitions

Communications or Comms:	Generally used as a shortened tag for either the Communications Office or Communications Officer.
CABA	Compressed Air Breathing Apparatus
CO	Carbon Monoxide
c/t	Cut through
ERZ	Explosion Risk Zone
PUR	Polyurethane Resin, used for the consolidation of broken ground
Fire COM	Emergency notification system provided by QF&RS in response to call out of QMRS
CRO	Control Room Operator
GC	Gas Chromatograph
I/C	Incident Controller
ICS	Incident Control System
IMT	Incident Management Team
PED	Personal Emergency Device – underground paging system
QF&RS	Queensland Fire and Rescue Service
QMRS	Queensland Mines Rescue Service
SCSR	Self Contained Self Rescuer
T	Commencement time of exercise
VO	Ventilation Officer
UM	Undermanager

General Scenario

The emergency exercise was triggered at 9:37 pm on Sunday 21 August 2005 by simulating an incident at 41 c/t, D heading Main Headings, where an Eimco loader carrying PUR resin and two cans of diesel had collided with a transformer. The collision caused damaged to a high tension cable, which arced and ignited the PUR and diesel mixture as well as tripping all underground power. (See figure 1). The driver of the Eimco was severely injured but managed to escape to the intake side of the fire. For the purpose of the exercise it was decided that the driver would become a fatality as he was being transported to surface.

The products of combustion, smoke and toxic gases, spread inbye around the longwall panel (105) and the development panels 106, 107 and 108. (See figure 2). Full details of the smoke spread and predicted carbon monoxide levels are shown in Appendix 1. The power trip underground, which caused an alarm in the surface control room, was investigated by the shift undermanager and the crew from 202 Bord and Pillar Panel. This team searched for the cause of the power failure and on discovery, commenced the initial fire fighting response. This response was later supplemented by inbye personnel who evacuated to a position outbye of the fire. All underground personnel were required to evacuate to a place of safety as required by the mine's emergency response management plan. The situation was then brought under control by the mine's Incident Management Team directing control and recovery operations using both mines rescue teams and trained mine personnel.

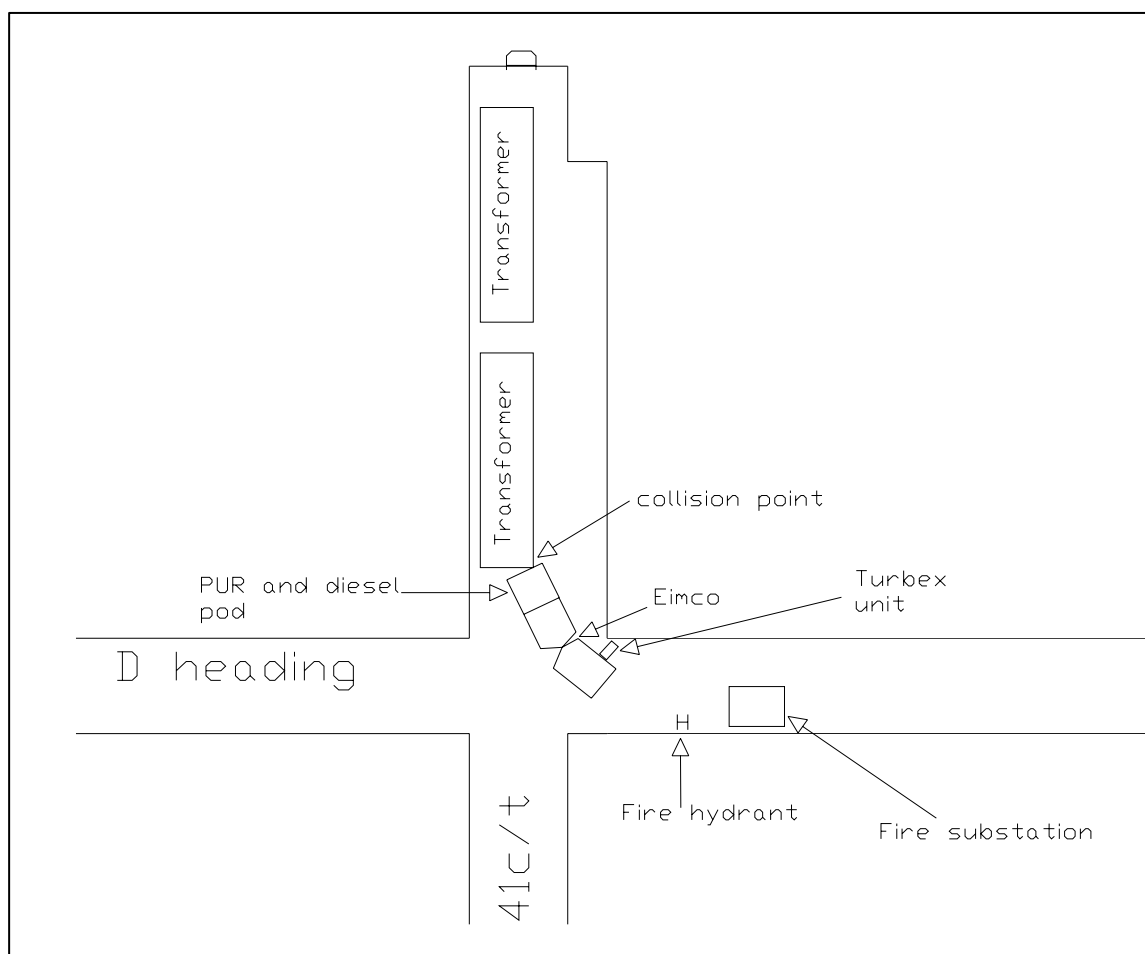


Figure 1 drawing of incident site

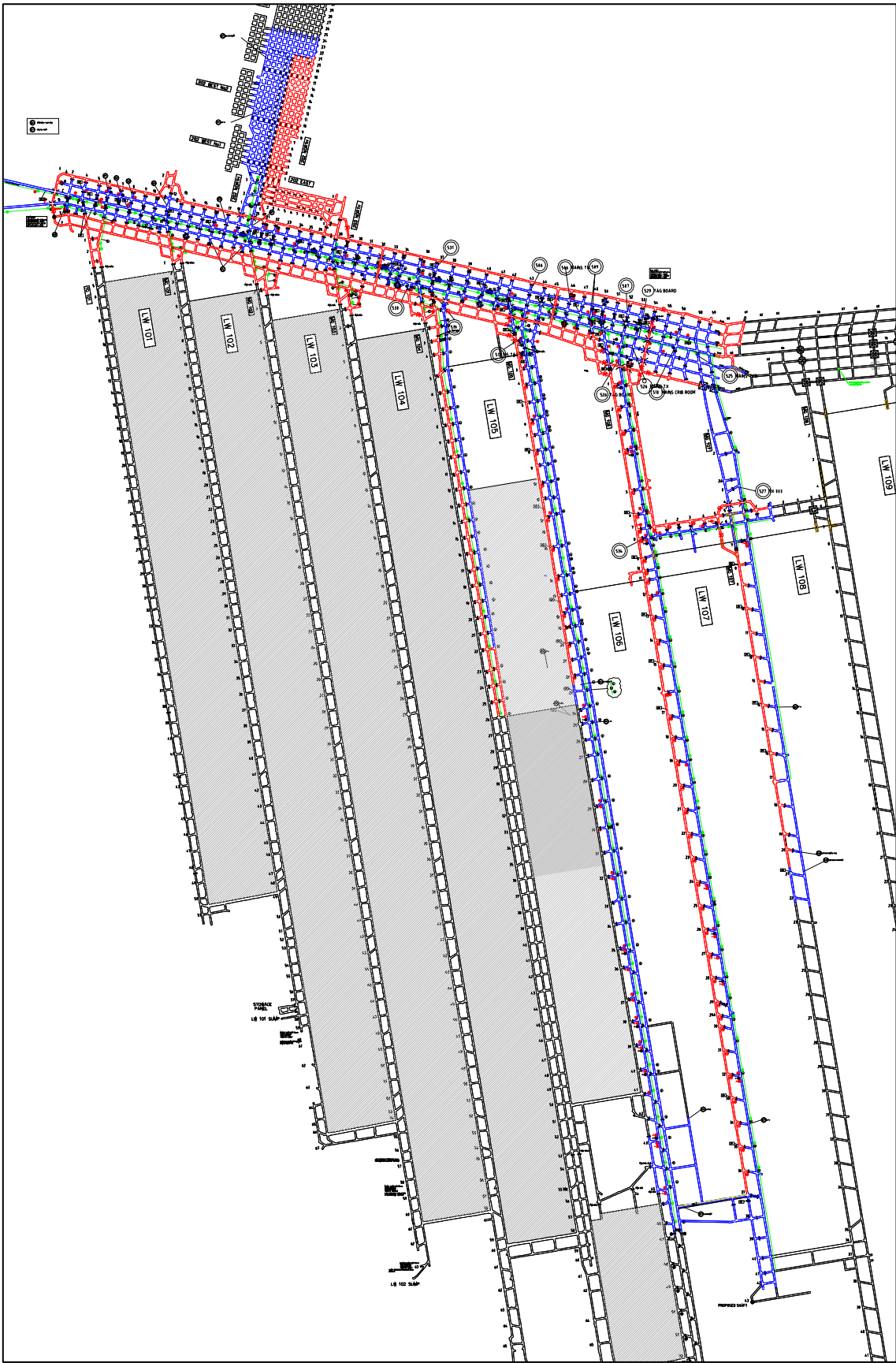


Figure 2 Mine Plan

Preamble

This report is divided into two main sections:

- A brief report focusing on key recommendations and observations distilled by the assessors from their interpretation of events, **and**
- Appendices, including details of the exercise planning and unedited comments and discussion by the assessors for more specific reflection by the site as desired.

Scope

The most prevalent and obvious source of a full and immediate mine evacuation as recognised by all underground coalmine management is that of a fire in the main intakes. This has largely, and rightly, been the focus for previous level one emergency exercises. The intent for this exercise was to test the mines emergency preparedness and also to raise industry awareness of the dangers associated with fires involving chemicals, electrical installations and the requirements for fighting large fires in underground roadways.

Objectives

The primary objectives for the emergency exercise at Moranbah North Coal Mine were as follows:

- Assess the reaction to and interpretations of personnel, to an underground fire.
- Full mine evacuation.
- Evacuation using vehicles from development panels.
- Assess the ability of personnel to escape given limited visibility due to the presence of smoke.
- Use of fully functional Self Contained Self Rescuers (as opposed to training units).
- Evaluation of fire-fighting capability as well as the realisation of the dangers associated with burning Polyurethane Resin.
- Observation of the communication system between Control and the IMT
- Observation of the process followed by the IMT for managing the incident.

Industry Recommendations

The following recommendations are applicable to the underground coal industry as a whole either because they are considered to be of a more universal nature or the deficiencies have been repeatedly observed at recent exercises.

Major Recommendation

There are three functions or activities that must continue to be reinforced to the industry as being of fundamental importance in the successful management of an emergency:

1. It is critical to debrief survivors and eye witnesses as soon as practicable and transfer this information to the decision makers;
2. Gas analysis and interpretation must occur as soon as skilled personnel are available and must be conducted to a sufficient degree of detail so that it aids in good decision making – i.e. gas chromatography and the analysis and trending of ratios; and,
3. A mine must have an established, structured and comprehensive system for managing an emergency with a trained, disciplined response team. Duty Cards are not a comprehensive system; they are simply a functional aid for the overstressed cognitive processes of the human brain in the early stages of an emergency.

These three issues will be the overriding focus of all Level 1 emergency exercises in the short-term future.

General Recommendations

- An automated emergency callout system should be utilised and triggered from the CRO's computer, with a voice message to land lines and SMS to mobile phones.
- Duty cards should be cards (rather than lengthy books) and simple to follow.
- Information into and out of the Communications or Control Office must be effectively and simply administered.
- The CRO cannot be the first aid attendant at the same time during an incident.
- Off-scale readings on the tube bundle should trigger immediate bag sample collection. There is a slow response to obtaining and analysing bag samples.
- Mine personnel, particularly the CRO should be fully aware of the ranges of the gas analysers.
- Dedicated personnel need to be assigned to the debriefing of underground eyewitnesses as well as collation and communication of this information to the IMT.
- Mine plans are vital tools in a debriefing to allow persons to orientate themselves; they need to be up to date and quickly available in the debriefing areas.
- Training in donning SCSRs should be conducted in vision-impaired environment. Ensure that mine inductions indicate that no talking is allowed when using an SCSR due to the danger of inhalation of poisonous gas.

-
- Correct the regional issue of the shortage inspectors.
 - Consider the use of CABA for evacuating personnel to enable verbal communications with evacuating team members as well as the IMT.
 - Utilise realistic SCSR training units as often as possible.
 - Mine sites should review the ICS (to be modified for mining as the Mine Emergency Management System) system for application in emergency management.

Mine site, Mines Rescue and Emergency Exercise Recommendations

Mine

- Improve information flow back to the Communications Officer. The system needs to specifically address how communication is to flow around the site and to which particular team members or individuals.
- Communication via the emergency button on the phones was difficult, neither the underground evacuees nor control could understand each other. An adequate means of communication needs to be implemented.
- Consider using electronic reporting systems.
- A standard question list should be developed for the use of the communications officer to gain information from those underground who are phoning in.
- Dedicated personnel need to be assigned for the debriefing, collating and communication of information from the underground eyewitnesses to the IMT.
- Incident Action Plans should be developed and documented with time and date on them to enable all persons to be briefed on current situation and for clear understanding of required actions by operational teams.
- Operational teams such as mines rescue, need an allocated, convenient location for marshalling – teams tended to find a space in the lamp area with equipment spread all over the place.
- If the mines drift block lights are used as an additional means to stop personnel from entering the mine the underground light should remain green to enable personnel to exit to the surface. Normal controls will be needed when a mine re-entry or deployment of vehicles from the surface is undertaken.

Mine Monitoring Systems

- The mine monitoring system should include a facility to print a table of the latest data for all locations with date and time of all gases and be able to export to other programs or for email. This would allow error free transfer of data to other interested persons.
- Ensure that gas chromatograph analysis of the atmosphere is undertaken as soon as practicable. Utilise Simtars or other relevant expertise for additional review and verification of gas data.
- When a monitor reaches full scale, it should read “full scale”, instead of displaying a value. The value – 999, can be and has at times been interpreted as actual.

-
- The mine monitoring system should have the ability to display trends of more than one sample point at a time.
 - Nitrogen dioxide should not be monitored via the tube bundle system. Underground personal monitors should be used instead.
 - The mine should use statistical analysis to determine the set point for alarm levels.

Fire Fighting

- Training for personnel working alone in the mine for the discovery of fires, incidents and their actions to minimise the affects to the underground environment.
- Training in incident management in areas such as the role of delegation for improved control of an emergency.
- A realistic fire gallery should be used to train mine personnel in fire-fighting.

Mines Rescue

- Ensure that in future, mines rescue resources are made available.
- Protocols, such as FAB establishment must be followed.

Exercise Management Team

- Future level 1 exercises should allow for the full mobilisation and deployment of mines rescue personnel as well as the Industry Safety and Health representative, Mine Inspector and local emergency teams as appropriate and be alerted by the mine as part of the mines emergency call out procedures.
- Quarantining of personnel should be avoided if at all possible. The quarantining of the longwall production crew due to longwall problems, though necessary, added some confusion to the communication process with personnel in that panel.
- Team members must commit to the entire exercise including preparation and briefing so that a full appreciation of the scenario is obtained. This should include an additional meeting of the full team, i.e. two separate meetings of the full team prior to the exercise.
- The mine manager who will be at the mine where the next emergency exercise is to be held, should be part of the exercise committee.
- Administration support is required for dealing with exercise logistics and providing secretarial support for the report-writing phase.
- At the site of the fire, the use of a red brattice screen would help the crews fighting the fire to visualise the area that they can operate in safely.
- The availability of drinking water for the crews who have escaped & fighting the fire would be a plus in future.
- The opportunity to actually operate fire hoses would have benefited those involved in the exercise.
- Time periods were appropriate but duration could have longer than T+60 eg extend to T+90 minutes.
- If maps are double sided, put same way up not upside down.
- Should not delay commencement of the exercise as it adds to the stress of those required to respond.
- Ensure that requirements of the CRO are achievable and supply additional resources if not.

Observations Summary

The following listed comments have been made by the respective assessors as feedback to the mine on the systems assigned to them and are the basis of the recommendations.

Fire Site

- Initial management of incident site & UG workings handled well by Shift Supervisor.
- Identification of hazards with exploding PUR drums was not fully appreciated or communicated to the crews fighting the fire.
- Treatment, evacuation, & management of casualties given priority.
- Inappropriate use of SCSR's for fire fighting & carrying out activities in irrespirable atmospheres – searches, retrieval of men, & ventilation control.
- The fire fighting in general was not adequately controlled and there was insufficient knowledge of the equipment and procedures.

Communications Room

- There were 4 official CRO's allocated during the exercise, as well as two other people who temporarily manned the desk during a period when the CRO was out of the office. This created confusion when CRO(1) was then deployed to his duties as 'Fire Officer'. At one stage the Senior Mining Engineer was allocated to CRO duties and was unavailable to provide specialist assistance to the IMT. There must be consistency in the response and the discipline to adhere to allocated duties.
- The CRO responded correctly to the initial incident and being the appointed fire officer also provided valuable advice on fire fighting and information on the location of fire fighting equipment.
- Allocation of the duty cards was not done effectively and if anything the CRO duty card is impractical. The duty "card" is now **12** pages long. In fact only the vest was utilised from the CRO duty card folder.
- Only having one control room operator created problems particularly when he had to give first aid to the injured personnel being transported out of the mine. The other available surface personnel could not adequately take over control room duties.
- The Communications Officer questioned escaping personnel, when they phoned in.
- Control and knowledge of personnel locations underground was incomplete.
- Communications Officer didn't receive feedback on decision-making from IMT or Operations, or on the actions to be taken.
- There was, at times, a failure to recognise that full-scale gas readings could have been higher than the reading indicated on the sensor (i.e. 999 is full scale, not a correct reading).
- There was no formal process for restricting unnecessary access to the control room.
- The non verbal communication system from underground (tapping on the phone) did not work effectively.
- The CRO continually fed information to personnel in close proximity to the Control Office expecting that this would be conveyed to IMT – this did not happen. Some of this information was essential to the decision making process.

Underground Evacuation

- Having different types of SCSR onsite creates confusion during changeovers.
- Awareness and understanding of required evacuation actions was good.
- PED messages were confusing due to content and order. Also it is hard to read in limited visibility.
- There was a high level of motivation, knowledge and cooperation demonstrated by the workforce throughout the evacuation process.

Incident Management Team

- IMT actions commenced promptly.
- Management of the media and police was of a high standard.
- Duty cards were not fully or effectively distributed.
- The Incident Controller assumed much of the workload due to the duty card issue, and to some extent a shortage of people. An opportunity was missed in delegating some tasks to relieve the burden.
- Though planning, logistics and operational teams were established they achieved variable degrees of success due to a lack of knowledge and in some cases discipline.

Surface Control

- Debrief of persons as they came out of the mine was not carried out in an orderly or efficient manner.
- Accounting for underground persons/roll call was ineffective, both from collecting lists of personnel deployed and from the check board. This was further hindered by the fact that underground personnel evacuated to outbye of the fire site and no effective underground roll call was taken.
- Improvement in debriefing and control of personnel on the surface is needed. Whilst the raw data download did finally occur, the opportunity for the crews to debrief on what had worked or had not worked was delayed.
- Personnel who came out with the deceased were deployed to mine access road security without being debriefed.
- Telephone numbers for the security firm were not answered, they rang out to the answering machine.
- Mutual response telephone numbers were not immediately available.
- Sentry location in and around the portal was somewhat confusing with some sentries moving locations at least twice, one of these locations was within the range of a secondary explosion.

Mines Rescue

- QMRS were thrown into some confusion by there only being an (intended) simulated response. This made it difficult for personnel to function as they normal would – too much was left up to the imagination.

Conclusions

The primary objectives of the emergency exercise as laid out were achieved through the process of this response. The workforce evacuated as was anticipated and as would be required in such a circumstance. Personnel who were out by the incident and therefore unaffected, quickly searched for the cause and provided remedial action. The incident was ultimately brought under control though could have been done so more quickly and in a more controlled manner had there been greater knowledge of the components of the fire and more appropriate means of combating it.

From an industry perspective, there continues to be a slow response to gathering information that is available from the mandatory monitoring systems and eye witnesses. This may well be due to what is being understood as the debilitating effect of stress on a person in such cases. This needs to be addressed as a matter of importance in the same way as a structured approach is now being embraced. If people are not able to adequately manage the psychological impacts of such an incident, no amount of structure will succeed.

Appendices

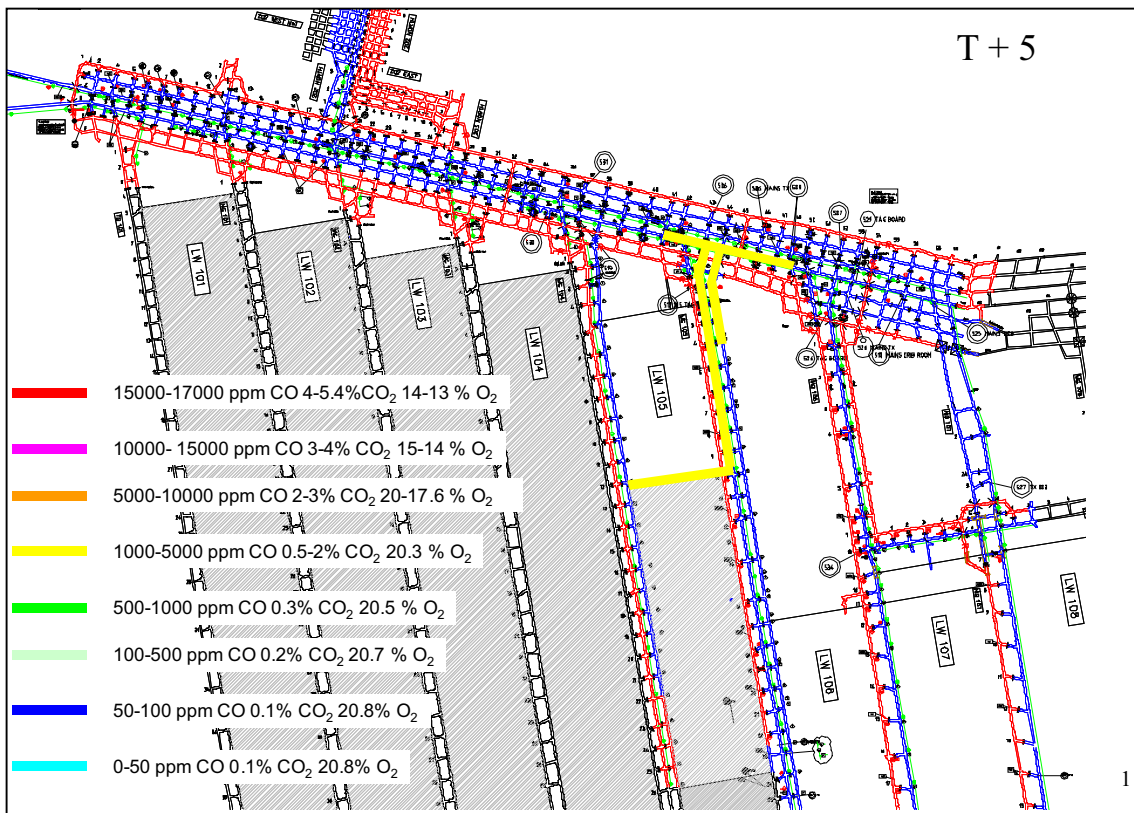
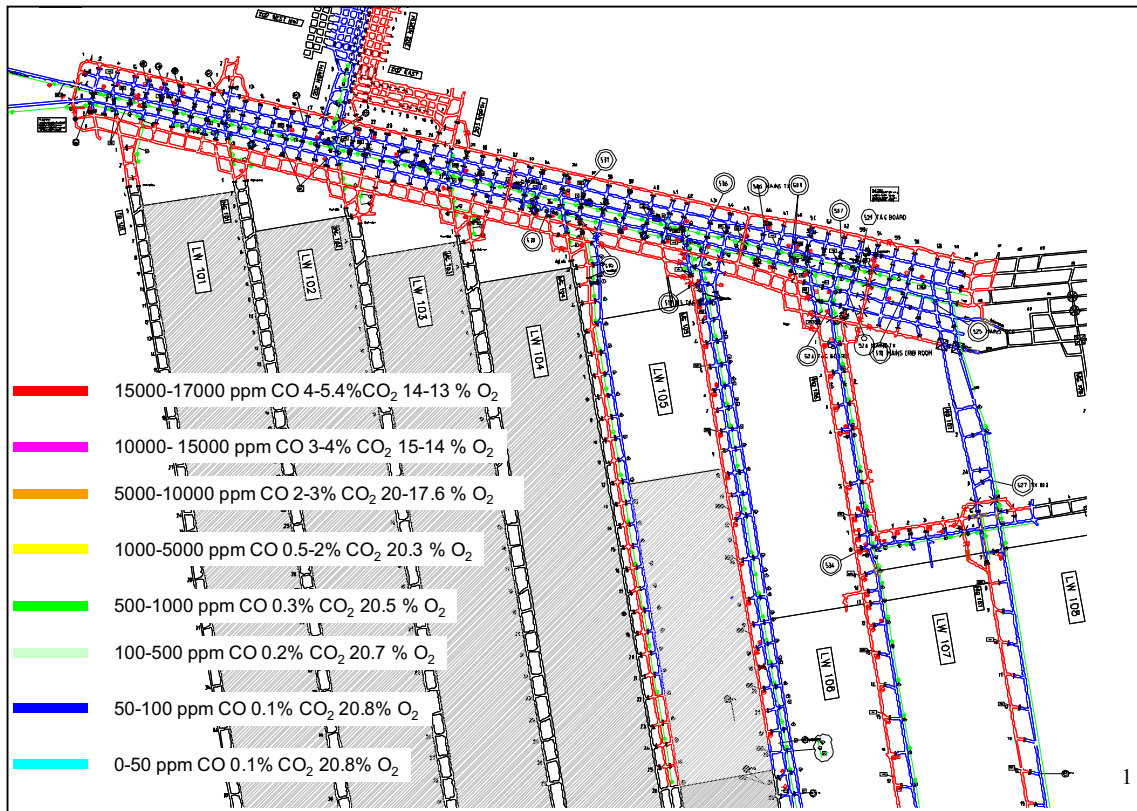
Appendix 1: Gas Contaminant Distribution

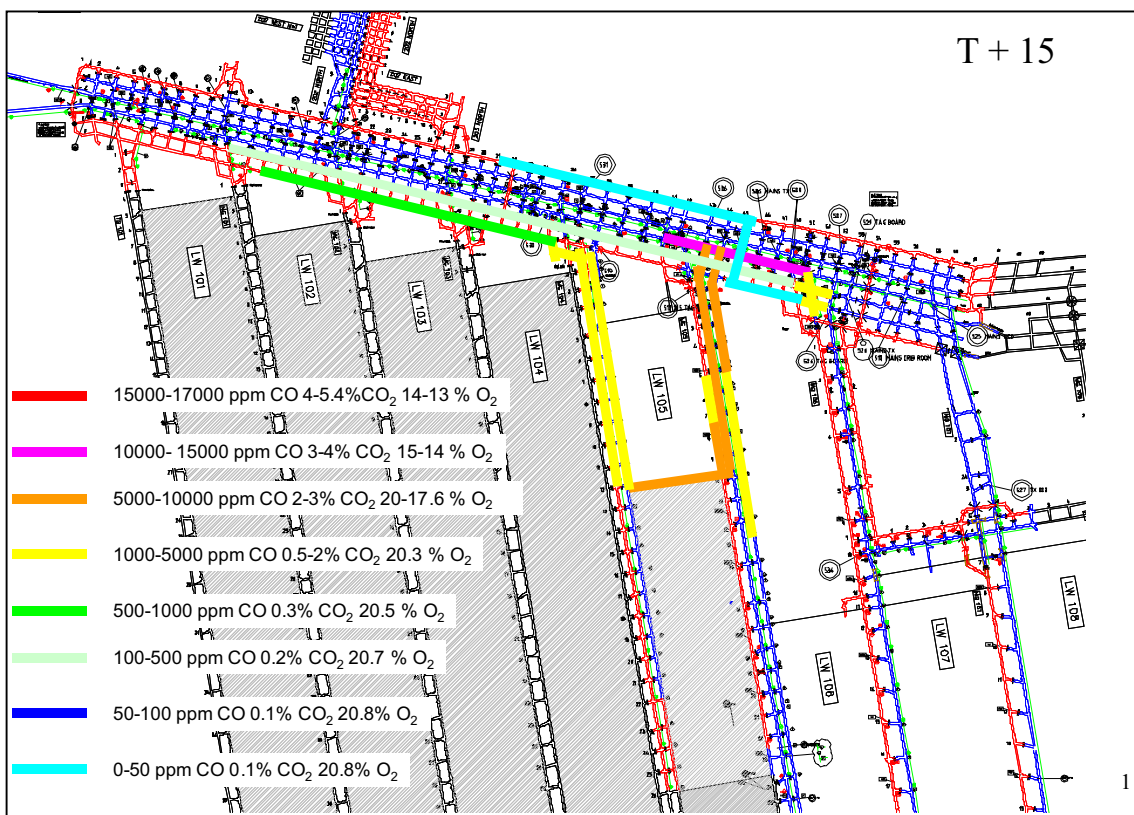
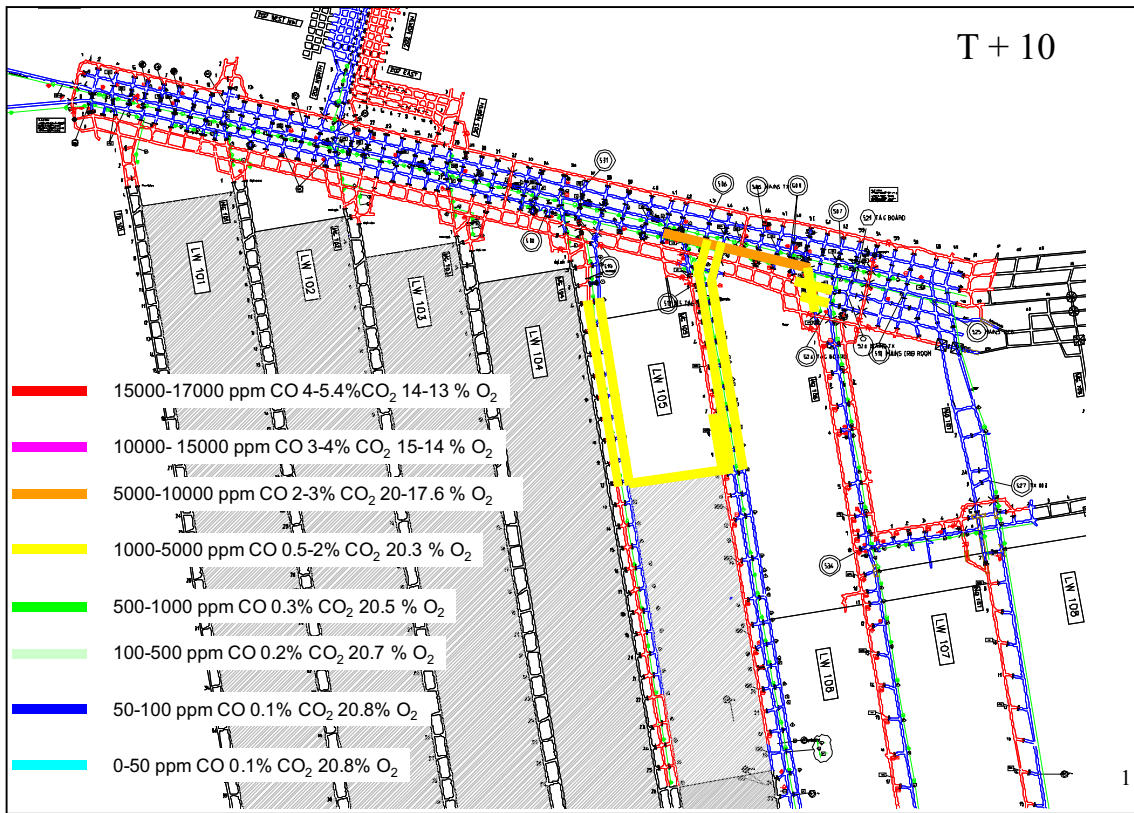
Appendix 2: Description of the Incident Control System (ICS)

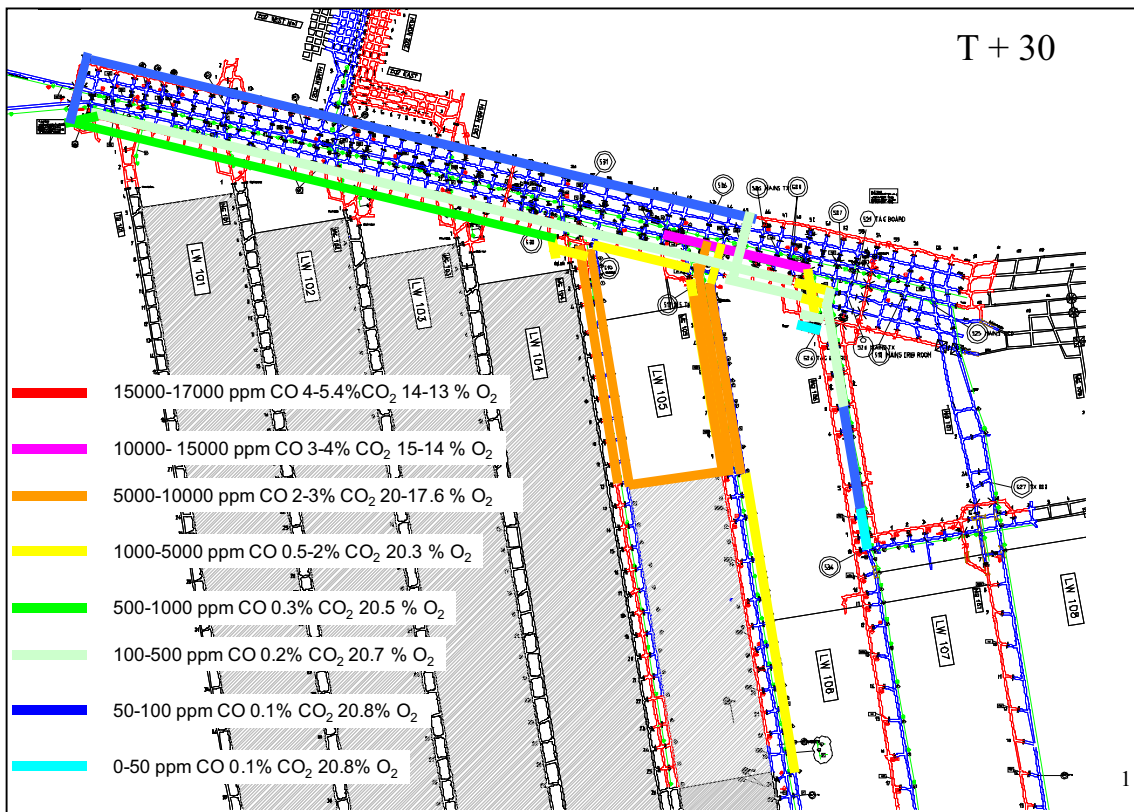
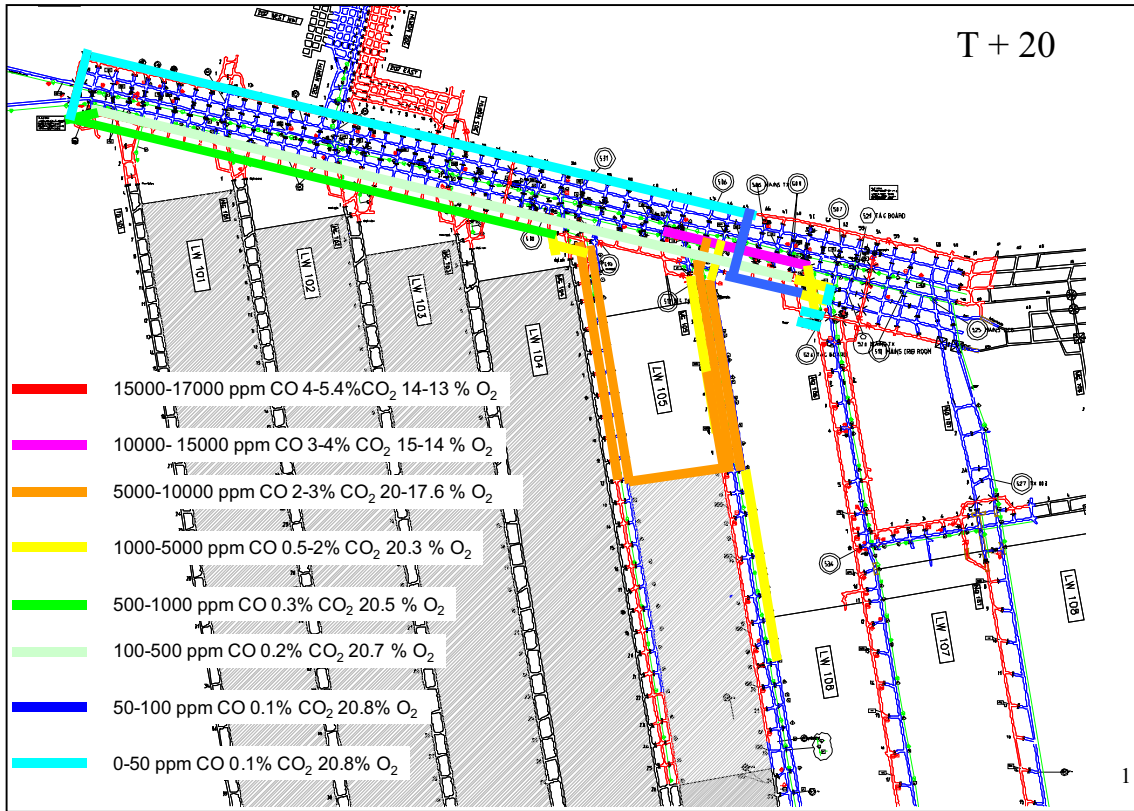
Appendix 3: Exercise Timeline

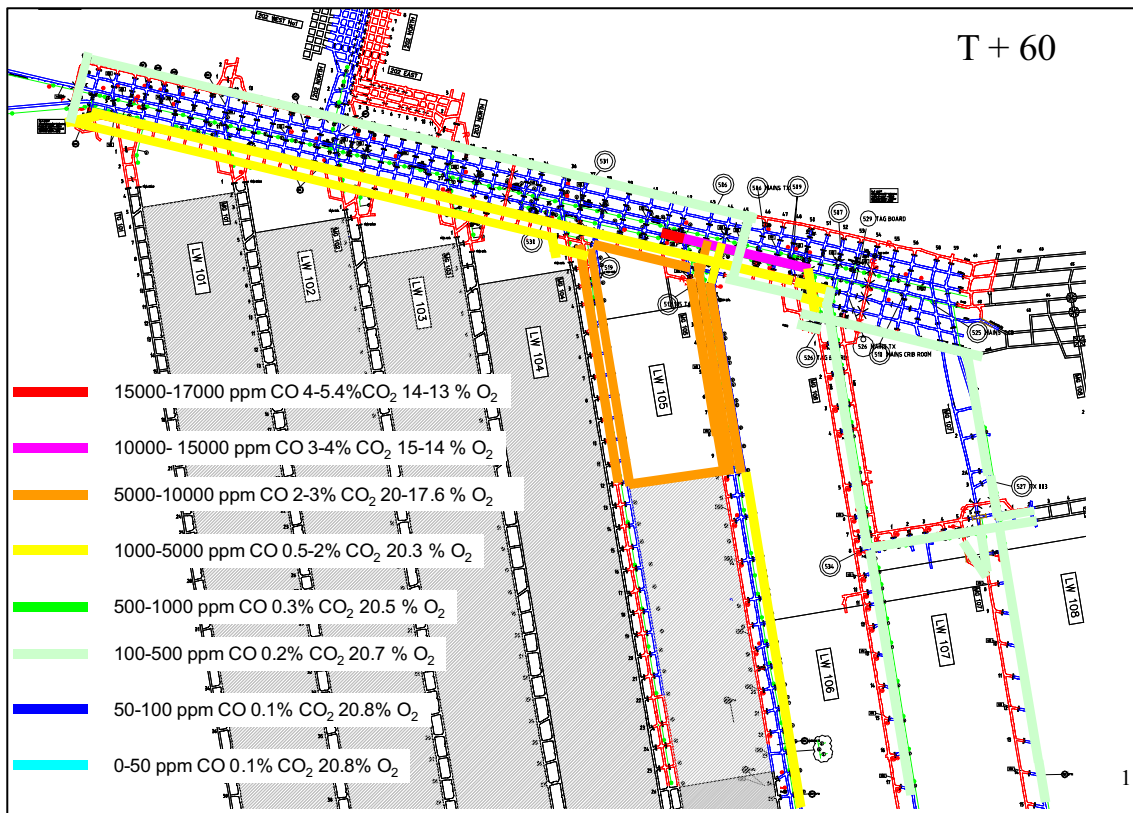
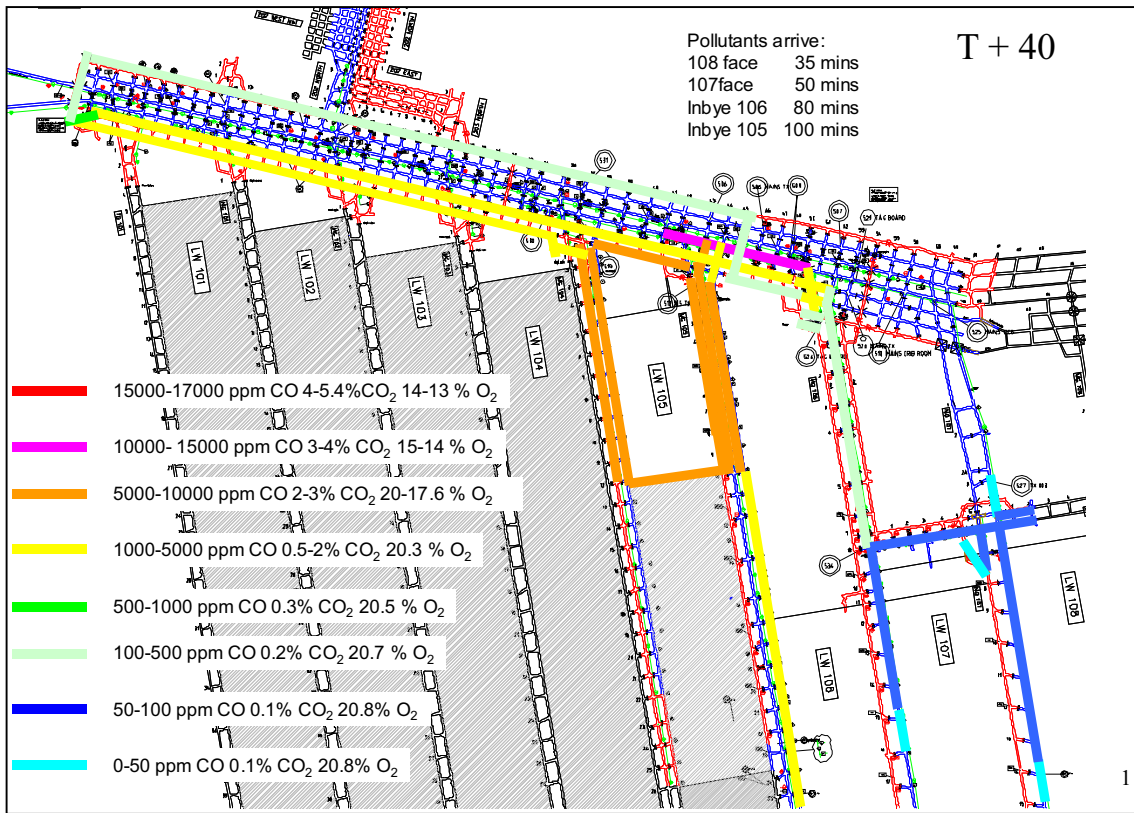
Appendix 4: Emergency Exercise Management Team

Appendix 1: Gas Contaminant Distribution









Appendix 2: Description of the Incident Control System (ICS)

Now referred to by Queensland Fire and Rescue Service as: AIIMS – Australian Interagency Incident Management System.

Operations Officer Checklist

The Operations Officer is responsible for the management of all operations directly applicable to the primary mission. The Operations Officer activates and supervises organisation elements in accordance with the Incident Action Plan and directs its execution. The Operations Officer also directs the preparation of unit operational plans, requests or release resources, makes expedient changes to the Incident Action Plan as necessary and reports such to the Incident Controller.

- Obtain briefing from Incident Controller.
- Develop Operations portion of Incident Action Plan.
- Brief and allocate Operations personnel in accordance with Incident Action Plan.
- Supervise Operations.
- Determine need and request additional resources.
- Review suggested list of resources to be released and initiate recommendation for release of resources.
- Assemble and disassemble strike teams and task forces assigned to Operations Section.
- Report information about special activities, events, and occurrences to Incident Controller.
- Ensure safety and welfare of all personnel.
- Maintain log of activities.

Planning Officer Checklist

The Planning Officer is responsible for the collection, evaluation, dissemination and use of information about the incident and status of resources.

- Obtain briefing from Incident Controller.
- Negotiate with Operations Officer the allocation of initial attack personnel to incident positions as appropriate.
- Establish information requirements and reporting schedules for all ICS organisational elements for use in preparing the Incident Action Plan.
- Notify Logistics of Planning Section Units activated, including names and locations of personnel.
- Establish a weather data collection system when necessary.
- Supervise preparation of Incident Action Plan (See Action Planning Process Checklist).
- Assemble information on alternative strategies.
- Assemble and disassemble strike teams not allocated to Operations.
- Identify need for use of specialised resource(s).
- Perform operational planning for Planning Section.

-
- Provide periodic predictions on incident potential.
 - Compile and display incident status summary information.
 - Advise Incident Controller and Operations Officer of any significant changes in incident status.
 - Provide incident traffic plan.
 - Supervise Planning Section Units.
 - Activate technical specialists as required.
 - Prepare and distribute Incident Controller's orders.
 - Provide management support to the Incident Controller.
 - Prepare material for distribution of incident information to the media.
 - Ensure that responsible agency information collection and reporting requirements are being met.
 - Prepare recommendations for release of resources for submission to the Incident Controller.
 - Ensure safety and welfare of all personnel.
 - Maintain log of activities.

Logistics Officer Checklist

The Logistics Officer is responsible for providing facilities, services and material in support of the incident. The Logistics Officer participates in development and implementation of the Incident Action Plan and activates and supervises the units – within the Logistics Station.

- Obtain briefing from Incident Controller.
- Plan organisation of Logistics Section.
- Allocate work locations and preliminary work tasks to section personnel.
- Notify Planning Section of Logistics Section Units activated including names and locations of personnel.
- Assemble and brief Unit Leaders.
- Participate in preparation of Incident Action Plan.
- Identify service and support requirements for planned and expected operations.
- Provide input to and review communications plan, medical plan and traffic plan.
- Co-ordinate and process requests for additional resources.
- Review Incident Action Plan and estimate Section needs for next operational period.
- Ensure Incident Communications Plan is prepared.
- Advise on current service and support capabilities.
- Prepare service and support elements of the Incident Action Plan.
- Estimate future service and support requirements.
- Receive Demobilisation Plan from Planning Section.
- Recommend release of unit resources in conformity with Demobilisation Plan.
- Ensure safety and welfare of all personnel.

- Maintain log of activities.

ICS Action Planning Process Checklist

The checklist provides steps appropriate for use during action planning.

Check List	Primary Responsibility
• Briefing on situation and resource status	Planning Officer
• Prepare alternative objectives and strategies	Planning Officer
• Select control objectives and strategies	Incident Management Team
• Plot control lines and Division / Sector boundaries	Operations Officer
• Specify strategies for each Division / Sector	Operations Officer
• Specify resources needed by Division / Sector	Operations Officer Planning Officer
• Specify all facilities and reporting locations	Operations Manager Planning Officer Logistics Officer
• Specify availability of facilities, materials and services	Logistics Officer
• Consider welfare, communications, medical and traffic requirements	Planning Officer Logistics Officer
• Approve Incident Action Plan	Incident Controller
• Produce approved Incident Action Plan	Planning Section
• Implement Incident Action Plan	Incident Controller Operations Officer Planning Officer Logistics Officer

Agency Representative Checklist

An Agency Representative is a person sent to an incident by an assisting or co-operating agency who has been delegated full authority to make decisions on all matters affecting that agency's participation at the incident. Agency representatives report to the Liaison Officer if that position has been filled. If there is no Liaison Officer, Agency Representatives report to the Incident Controller. There will be one (1) Agency Representative from each agency allocated to the incident.

- Check-in at the Incident Control Centre.
- Obtain briefing from Liaison Officer or Incident Controller.
- Establish working location. Advise agency personnel at the incident that the Agency Representative position has been filled.
- Attend planning meetings as required.
- Provide input on use of agency resources.
- Co-operate fully with Incident Controller and Incident Management Team on agency's involvement at the incident.
- Oversee the well-being and safety of agency personnel at the incident.

-
- Advise Liaison Officer of any special agency need or requirements.
 - Determine if any special reports or documents are required.
 - Report to agency headquarters on prearranged schedule.
 - Ensure that all agency personnel and / or equipment is properly accounted for and released prior to your departure.
 - Ensure that all required agency forms, reports and documents are completed prior to your departure from the incident.
 - Have debriefing session with Liaison Officer / Incident Controller prior to departure.
 - Maintain log of activities.

Incident Controller Checklist

The Incident Controller is responsible for incident activities including the development and implementation of strategic decisions and for approving the ordering and releasing of resources.

- Assume control and obtain incident briefing from prior Incident Controller.
- Assess incident situation.
- Conduct initial briefing.
- Activate elements of the Incident Control System.
- Conduct briefings.
- Ensure planning meetings are conducted.
- Approve and authorise the implementation of Incident Action Plan.
- Co-ordinate staff activity.
- Manage incident operations.
- Approve requests for additional resources and requests for release of resources.
- Authorise release of information to news media.
- Regularly report to the responsible agency.
- Approve plan for demobilisation.
- Ensure safety and welfare of all personnel.
- Maintain a log of activities.

Appendix 3: Summary Exercise Timeline

TIME (24HR)	OBSERVATION/ACTION TAKEN
21:37:00	Exercise begins
21:37:00	CRO notified of loss of power underground
21:42:00	LW C/T 50ppm alarm
21:46:00	Call from Undermanager in 202 panel – CRO told him lost UG power and 50 PPM CO at LW face
21:47:00	CRO Sent PED All persons to go to crib rooms
21:52:00	Encountered smoke at 106, decided to travel via B Hdg - crossed via underpass
21:54:00	Gas alarm at pit bottom
21:55:00	Alan Harris called control - informed of crash at 41C/T
21:59:00	Emergency Siren activated
22:00:00	PED to all to use B Hdg go to Mains 40ct
22:03:00	Man informs ERZ Controller of fire, Walters to fight fire at D40c/t
22:04:00	Ambulance, Police and Fire Brigade notified.
22:05:00	ERZ Controller told men to grab all fire extinguishers and put them in the front of the PJB
22:07:00	ERZ Controller phones Comms, confirms fire D40c/t asks if stretcher is required, men will attend fire and to take rescuers with them.
22:09:00	Message received that 106,107,108 crews all on the way out.
22:11:00	Ambulance called
22:12:00	Encountered smoke in MG107, stopped vehicle, donned smoke glasses and SCSR
22:12:00	CRO rang 000 for police and ambulance
22:12:00	Sentries appointed for main portal and belt portal.
22:15:00	PED received - Fire in D Hdg, go out of 40c/t
22:17:00	Al Harris requested a message be sent "Exit via B to O/B 40C/T then to D to fight fire"
22:21:00	ERZ Controller approached the 2 injured people and check for vital signs, two men then place one on a stretcher and took him to the ambulance
22:22:00	Duty Card 2 - Incident Controller given to Stores person
22:24:00	Underground Mine Manager notified
22:25:00	Wayne Hartley received the emergency call to Mines Rescue
22:26:00	SSE notified
22:26:00	Request from underground "More assistance required at fire"
22:26:00	Call received by Firecom Rockhampton – briefed Firecom attendant
22:36:00	Mick Farrag called in - was briefed on incident
22:37:00	Transport ready to leave for surface with casualties - (generic induction) first aid trained persons accompanied
22:43:00	Mine manager on site briefed by CRO verbally
22:43:00	Tube bundle system not yet scrutinised
22:47:00	VO, Snr Mining Eng and Deputy Manager called to mine
22:48:00	ERZ Controller took control of fire and took gas readings in the area
22:52:00	ERZ Controller asked to get a foam generator and more foam ASAP to nearby crew
22:52:00	Casualties arrive on surface
22:52:00	Tech Services Manager (Planning Co-ord) called
22:52:00	QAS ambulance arrived on site.
22:53:00	3rd hose run out
22:53:00	HR Manager called
22:55:00	Driver was pronounced dead
22:55:00	No person in Control - CRO rendering First Aid
22:55:00	SSE arrives at Control Room
23:00:00	IC briefed SSE. IC told EO that priority is to get 107 men who are missing. IC told SSE to take charge of the fatality and the survivors.
23:01:00	Ran out of foam
23:01:00	MP checks PHMP - duty cards 3 and 9 looking for contact list
23:02:00	Fire trailer from surface requested underground

23:03:00 Foam arrived on site and set up, water was turned off, nozzle setup and then water turned back on

23:03:00 MP checking gas concentrations in CR

23:04:00 UGMM announces the objective is to make sure everyone is accounted for and the fire is out.

23:08:00 3 men in CABA and 3 Assisting, fighting fire

23:10:00 CRO to ring Dist Insp, Check Insp and Health and Safety rep.

23:15:00 Surface Coordinator arrived at Control and assumes Duty Card 5

23:15:00 VO asks for print out of gas readings

23:16:00 Rest of the fire crews change over and the relieved men were going to the surface

23:20:00 Men noticed using S.C.S.R to fight fire

23:22:00 Planning Coordinator arrived at Control

23:23:00 Transport leaves for surface with casualty - no first aid trained person with casualty

23:25:00 Administration and Debrief duty cards distributed

23:29:00 First planning meeting

23:30:00 Mick Farrag (QMRS) on site

23:32:00 Arrive surface with patient and others

23:33:00 VO checks gas readings on office computer "CO off scale and O2 depleted

23:34:00 Foam arrives and taken into men to use by man with rescuer, water turned off and then back on again

23:35:00 First IMT meeting - present - IC, EO, PC & Mick Farrag. IC briefed IMT. IMT discussed priorities. IC expressed concern that the Roll Call was taking too long.

23:40:00 Mines rescue team forming on site

23:40:00 HR to handle the media

23:45:00 Surface Coordinator interrupted IMT to inform them they had a News crew at the font gate. IC said let Rebecca deal with it (HR).

23:48:00 Deputy Manager briefed "Debriefing Coordinator"

23:48:00 Planning coordinator asks VO what the implications are of the ventilation short circuiting. Tells VO and others to check their duty card. Tells them there will be another IMT meeting in 30 minutes

23:50:00 Debrief Coordinator starting debriefing Mains crew. Caused confusion with Mains crew when he insisted that the fire was at 40 c/t

23:55:00 Surface Coordinator to SSE – relatives and media at the font gate. Surface coordinator the he will look after the relatives. There are three relatives of staff at the front gate.

23:59:00 High expansion foam generator is setup in middle of D heading and commences operation

0:25:00 IMT meeting #3. Present, IC, EO, PC & QMRS. IC told QMRS that there were 2 Anderson men missing. They are lost in the LW belt road, or possibly they may have made it to the Trunk belt road. There was a discussion on where they would search. QMRS stated that he believed the PUR burning was the biggest risk.

0:45:00 Men at 41c/t informed that fire is intensifying

0:53:00 Informed that mines rescue are on way underground

0:55:00 Mines Rescue Team goes U/G - no contact with control prior to entry,

1:01:00 SIMTARS to be contacted

1:10:00 SIMTARS called by PC

1:10:00 IC at control room. Told CRO to mobilise the GAG.

1:12:00 Rescue team arrives at 40 c/t

1:15:00 Debrief completed

1:23:00 Rescue team enters return at 40 c/t, D to E, E to F.

1:28:00 Mines Rescue setting up to fight fire in return.

1:30:00 The 5 x Mines Rescue members who went through the c/t doors into the return had to be told it is too hot and they should get out

1:33:00 New TURBEX arrives at fire scene with foam

1:40:48 IMT meeting #4. Present - IC, EO, PC. They discussed the gasses and the ventilation options, where to get bag samples. IC briefed EO - fire in 41 c/t D to E it is a coal fire, they are losing control.

1:50:00 Mines Rescue members attempt to install brattice at the fire site to contain the foam. Disbanded the idea when the generator ran out of foam.

1:55:00 IMT meeting #6. Present IC, EO, PC, Mining Eng, VO, M Parcell. IC said he had spoken to UM. They were fighting the fire in the c/t not the return. The people fighting the fire were suggesting putting less air over the fire not more. They discussed accessing through the Longwall dogleg regulator to the return inbye of the fire in the return and then fighting the fire from this side.

2:10:00 IC confirmed all persons accounted for

2:22:00 IMT meeting #7. Present - IC, EO, M Parcell, PC, SC, VO, Mining Engineer. Discussed alternatives. Discussed cutting tube bundle tube 15 and putting through stopping at 36 to 40 c/t into return and get gas data. Get T Christianson (Deputy), any c/t between 31 and 39 c/t would do. Simtars were contacted to provide support. PC stated that IMT has been going for nearly 4 hours, should start thinking about reliefs. These were discussed. PC to organise. Then IMT discussed options if fire continued to get worse - Gag, Boreholes and fly ash, Nitrogen, flooding.

2:25:00 PK checked bag sample results not explosive fuel lean

2:35:00 IMT ruled out using the GAG. Would take too long and mine too complicated. Suggested drilling and putting fly ash down boreholes. PC told to start planning and organising rigs. IC stated -get Simtars people here. Organise Dongle from Capcoal for Ventgraph and someone to operate Ventgraph if required

2:47:00 105 regulator now opened

2:53:00 Message received from UG - 41 c/t F Hdg is in clean air. IC sent message to fire-fighters to inform IMT when they get water on the fire from the return side. Message received that UM has enough men to fight fire and they are winning against the fire from the D heading side.

2:55:00 QMRS set up in E road (after travelling via B road and regulator 105, which they opened) to fight fire

3:00:00 QMRS advanced on fire using water

3:00:00 Fighting fire both sides - out in 30 minutes.

3:00:00 Mine Manager briefs fire fighting crews from U/G about current situation

3:10:00 SIMTARS lab 15 hours away

3:15:00 A back-up Mines Rescue team arrives at the fire site

3:17:00 Second rescue team arrives at fire

3:17:00 Word came to IC that the fire was out. There were 2 fire watch teams in place. EO asked that fire teams report out every 15 minutes. IMT organised debriefs of people who fought fire. Organise other resources such as Tim Harvey etc for analysis and investigation.

Appendix 8: The Emergency Exercise Management Team

David Reece



David is the Senior Inspector of Mines (Coal) with the Department of Natural Resources and Mines based in Brisbane. Some of the duties associated with this role include co-ordination of the annual Level 1 Emergency Exercise, Examiner for Statutory Qualifications - 1st and 2nd Class Certificates of Competency and Deputy's and Open Cut Examiner's Certificates of Competency, and is actively involved in industry based training and competency development committees.

David held various positions within the mining industry before joining the Department in 2002, some of which include Mine Manager at Dartbrook (NSW), Central and North Goonyella Coal Mines. These operations assisted him in gaining knowledge and experience in gassy and geologically complex mines in Queensland and New South Wales.

He holds a Bachelor of Engineering (Mining); Graduate Certificate in Mineral Resources (Risk Management); Managers and Undermanagers Certificates of Competency, Underground Mines Rescue Certificate and Certificate IV Assessor and Workplace Trainer.

Martin Watkinson



Martin is the Principal Mining Engineer at SIMTARS. He is involved in spontaneous combustion training, testing and research, mining research and consultancy and is responsible for the modelling of the scenario and running of the gas simulation programs for the emergency exercises.

Martin was employed as Technical Services Manager at North Goonyella Coal Mine, Senior Mining Engineer and Ventilation Officer at Moranbah North Coal Mine during the initial mine development and longwall installation. Prior to accepting his appointment at Moranbah North, Martin worked for International Mining Consultants for seven years, undertaking assignments in China, India, Iran, Siberia, Tanzania and Vietnam.

Les Marlborough

27 years experience in Longwall coal mining. Started work as a coal miner in the UK. Did 10 years at Dawdon Colliery as a miner, mainly on Longwall, then worked as a Deputy and Overman before becoming an Undermanager at Westoe Colliery. Both mines were located multi seam Longwall mines with workings extending under the North Sea. During time in the UK obtained a Honours degree in Mining Engineering (BSc (Hons)) and a 1st Class Certificate. Moved to Australia in 1994 and worked at Southern and Central Collieries. Obtained Queensland 1st and 2nd class Mine Manager's Certificates and a NSW Graduate Diploma in Mine Ventilation. Worked for Wilson Mining as Queensland Manager for 1 year before moving to North Goonyella as Ventilation Officer, and later as Mine Manager. Moved to Oaky No1 Mine as Mine Manager in December 2003 to the present day.

Involved as Mine Manager for the level 1 exercise at North Goonyella in 2002 and again as Mine Manager for the level 1 exercise at Oaky No1 mine in 2004. Currently working with QMRS to develop the MEMS system of incident management to produce a system based on the

internationally used ICS system that can be utilised for the management of emergencies at coalmines in Queensland.

Cambridge Claassen

Currently working at Moranbah North as mining engineer for the past 2.5 years. Prior to that employed in the coal mining industry in South Africa for 13 years.

Seamus Devlin



Seamus holds the position of Regional Manager – Newcastle Mines Rescue with the NSW Mines Rescue Service and has 29 years coal mining experience, including 26 years mines rescue experience.

Seamus has held various management positions in both the NSW and Queensland Mines Rescue Service for the past ten years in Dysart, Blackwater, Collinsville, Hunter Valley and Newcastle and holds an Undermanager’s Certificate of Competency and a Graduate Certificate in Risk Management from Monash University.

Gary Horne

District Check Inspector South Western District N.S.W.
24 years in industry; Kemira, Wongawilli & Appin Collieries, operator.
Relief District Check Inspector 1997, District Check Inspector 2002 to date

Tanne Johnsen

H&S Advisor Solid Energy New Zealand. Spent a little over 10 years working at the face – machine operator, acting supervisor. NZ Mine Deputies Ticket. Held H&S Position since Dec 2004

Bernard Vandeventer

Underground coal mining experience since 1998. Worked as trainee, miner and mining supervisor/manager at various mine sites in South Africa, New Zealand and Australia. Involved in a level 1 emergency exercise in 2004 at a NZ underground colliery. Exercise was coordinated by SIMTARS and directed by David Reece. Currently Development Superintendent at Broadmeadow Mine.

Shane Wright

Started in industry at Oaky No.1 Mine as a Graduate Mining Engineer in January 2002. I had 1 year underground working in development and longwall and also was the Gas drainage Engineer before taking the job as the Ventilation Officer. Ventilation Officer at the mine for almost 2 years. Involved in Level 1 exercise at Oaky No.1 in 2004 at Oaky No.1 Mine as the Ventilation Officer.

Owen Salisbury

Ventilation Superintendent North Goonyella Coal
Employed in various positions in underground longwall coal mines in NSW & Qld. Currently managing the ventilation & gas drainage operation. 2nd Class Certificate of Competency.

Associate Professor David Cliff



Associate Professor David Cliff is currently Director of Research for the Minerals Industry Safety and Health Centre (MISHC). Prior to that he spent eighteen months as the Health and Safety Advisor to the Queensland Mining Council and over 10 years at SIMTARS, the last three as Manager, Mining Research Centre where he was responsible for directing the research effort of SIMTARS. He is actively involved in promoting the awareness of hazards in the mining industry, principally focussing on the prevention of fires and explosions and health and safety promotion. He has been actively involved in spontaneous combustion research since 1989 and has investigated a number of mines fires and spontaneous combustion episodes.

David's qualifications include a Bachelor of Science Degree (Honours) from the Monash University, a Doctor of Philosophy in Physical Chemistry from Cambridge University and post-graduate studies in Environmental Studies, Outdoor Education and Business Administration. He is a member and chartered Chemist of the Royal Australian Chemical Institute, Environmental Chemistry Section, a Member of the Combustion Institute, Member of the Safety Institute of Australia, Past President of the Queensland Branch of the Clean Air Society and a Member of the Australasian Institute of Mining and Metallurgy.

Web: www.mishc.uq.edu.au

Email: d.cliff@mishc.uq.edu.au

Wayne Hartley



Wayne is the State Manager for the Queensland Mines Rescue Service. He has an extensive background in emergency services and his earlier career in the coal industry was at Peak Downs and Goonyella Riverside Coal Mines. His experience from his fire service role as Chief Executive in Queensland, National Council membership and his role at the National Community Safety as chair included influencing the establishment of Australia's response to urban search and rescue.

Andrew Monaghan



Andrew is the Mine Planning Superintendent at North Goonyella Coal Mine. He has had a wide range of experience in both underground and open cut mining. Andrew has worked as an open cut mining engineer, underground miner and underground mining engineer at Oaky Creek Coal and Mining and Planning Engineer at Cook Resources. He holds a 2nd Class Certificate of Competency as well as degrees in Mining and Mechanical Engineering.

Stuart Vaccaneo

Details not supplied

Ben Webb

Details not supplied.

Tony Wahiri

Details not supplied.

Neville Stanton

Details not supplied.