Kemsley, Stan

From:	Kemsley, Stan
Sent:	Friday, 29 June 2012 8:03 AM
To:	Marino, Rino
Cc:	Day, Doug
Subject:	One off Incidents
Attachments:	Report on Major Incidents.docx

Rino, Please see attached. I have been advised (verbally)of the status of the recommendations and also checked Paradigm regarding the status of the 2008 and 2005 incidents, but have not had the time to fully populate the body of the document. I don't think this affects the report as the summary capture the actions anyway

Hope this helps

Stan Kemsley | Mine Technical Compliance Manager
IPR-GDF SUEZ Hazelwood

Box 195, Morwell, Victoria 3840
T
www.iprplc-gdfsuez-au.com

Review of Specific Major Incident Recommendations

1 Review Brief

This review looks at 4 specific major "on off "incidents in the mine to determine:

- What the recommendations for each of the incidents were
- What is the status of these recommendations?
- What recommendations are still outstanding?
- Consideration of the effectiveness of the recommendations

2 Incidents

The four identified incidents are:

- 11 DREDGER CENTRE CHUTE FIRE INCIDENT - 2012
- MINE FIRE SEPTEMBER 2008
- MINE FIRE OCTOBER 2006
- HAZELWOOD SLOT BUNKER COAL FIRE -2005

3 Summary of Findings

In summary the findings are:

Incident(Fire)	No of recommendations	Recommendations addressed	Recommendations not addressed
D11 Fire 2012	16	0	16
Mine Fire 2008	38	28	10
Mine Fire 2006	20	19	1
HSB Fire 2005	18	15	3

4 Specific Incident Summaries

The following tables outline the findings of the review

D11 Fire - 21st January 2012

Recommendation	Addressed (Y/N)	Effective? **
1	N	To be assessed when implemented
2	N	To be assessed when implemented
3	N	To be assessed when implemented
4	N	To be assessed when implemented
5	N	To be assessed when implemented
6	N	To be assessed when implemented
7	N	To be assessed when implemented
8	N	To be assessed when implemented
9	N	To be assessed when implemented
10	N	To be assessed when implemented
11	N	To be assessed when implemented
12	N	To be assessed when implemented
13	N	To be assessed when implemented
14	N	To be assessed when implemented
15	N	To be assessed when implemented
16	N	To be assessed when implemented

*- released 4/6/12
** Subjective assessment

Mine Fire 14th and the 22nd September 2008.

Recommendation	Addressed (Y/N)	Effective? **	Comments
1			
1.1	Y	Y	
1.2	Y	Y	
1.3	N		Training not undertaken
1.4	N		Discussed but not implemented
1.5	Y	Y	
2	Y	Y	
3	Y	Y	
4	N		Video not produced
5	Y	Y	
6	N		
7			
7.1	Y	Y	
7.2	Y	Y	
7.3	Y	Y	
7.4	Y	Y	
7.5	Y	Y	
7.5	Y	Y	
7.6	Y	N	Not used often
7.7	Y	Y	
7.8	N		No TV provided
7.9	Y	Y	
7.10	Y	Y	
7.11	N		Done as needed
7.12	Y	Y	Done as needed
8			
8.1	Y	Y	
8.2	Y	Y	
8.3	N		Stored in one area but controlled by Services group
8.4	Y	Y	
8.5	Y	N	Considered but not implemented
8.6	Y	Y	
8.7	Y	Y	
9	N		Considered but insufficient resources
10	Y	Y	
11	Y		TI cameras purchased
12			
12.1	Y	Y	
12.2	Y	Y	
13	Y	Y	
14	Y	Y	
15	Y	Y	Used when necessary
16	Y	Y	Done again in 2012

** Subjective assessment
Information obtained from Paradigm and discussion with site personnel

5 Specific Recommendations for each incident

D11 Fire - 21st January 2012

Location of Report: Paradigm Document - 47276

1 No birds mouth sprays are directed at the belt in the discharge boom chute area. Review the system and determine the practicality of installing birds mouth sprays in this area.

Hazelwood Response/Action
Underway – Responsible Officer Wayne Buckley – Target date 31/8/12

2 The flow rate from the 3000 litres on board water tank was too slow to be effective in fighting the fire. Determine if a fire hydrant can be connected to this tank to allow higher flow rates to be directed to a fire hose at the discharge boom chute area. An alternative could be to have a dump system down the centre chute to flood the area from this tank. When the fire fighting effort moved off the dredger, the water supply in the dredger tank had not been exhausted.

Hazelwood Response/Action
Underway – Responsible Officer Stan Kemsley – Target date 31/8/12 but to be integrated into Recommendation No 4.1

3 Look at the possibility of installing a fire damper above the discharge boom chute to stop the spread of fire up the machine centre chute. This could be manually or automatically operated.

Hazelwood Response/Action
Underway – Responsible Officer Wayne Buckley – Target date 31/11/12

4 Maintenance practices require review for all machine centre chutes due to the high consequences of potential fires.

Hazelwood Response/Action
Underway – Responsible Officer Garry Wilkinson – Target date 30/6/12

4.1 This review needs to cover the potential methods for the detection of hot idlers and or fires together with improved maintenance strategies. i.e. early fire detectors

Hazelwood Response/Action
Underway – Responsible Officer Stan Kemsley – Target date 31/11/12

5 Due to the rapid acceleration and intensity of the fire a technical assessment of the flammable materials within the centre chute areas in use on all machines is recommended.

Hazelwood Response/Action
Underway – Responsible Officer Wayne Buckley – Target date 30/11/12.

6 Review recommendations arising from the Loy Yang Powers centre chute fire on Dredger 15 where it is believed a fire detection system may have been investigated. Review any practices being developed at TruEnergy Yallourn

Hazelwood Response/Action
Underway – Responsible Officer Garry Wilkinson – Target date 30/6/12.

7 A coordinated focussed approach is recommended for the effective management of the fire service responsibilities within the Mine.

Hazelwood Response/Action
Underway – Responsible Officer Richard Polmear – Target date 30/6/12.

8 The International Power GDF Suez Hazelwood Mine – Mine Fire Service Policy & Code of Practice (doc Ref 2589) requires review to cover significant fire events within the Mine including;

- Requires review to cover significant fire events occurring on machines. Specifically for procedures covering different machine digging configurations and water supply access requirements
- Actions required for the effective management of fire equipment and its maintenance.
- Consideration of installing monitors on booster pump trailers.
- Consideration of installing signage on large fire fighting equipment (fire truck and equipment trailers) identifying inventory that is to be carried and inspection and audit mechanisms that ensure compliance.
- Content of the annual training program for mine personnel, specifically relating to fires on machines and/or conveyors relating to all fire types i.e. coal, electrical, rubber and fire on elevated structures.

Hazelwood Response/Action
Underway – Responsible Officer Garry Wilkinson – Target date 31/7/12.

9 The International Power GDF Suez Hazelwood Mine – Fire Instructions (doc Ref 2758) requires review to cover significant fire events occurring on machines.

Hazelwood Response/Action
Underway – Responsible Officer Garry Wilkinson – Target date 31/7/12.

10 Training manuals for machine operators and the fire instructions require review and alignment to ensure clarity is provided on the fire prevention procedures applicable for machine protection.

Hazelwood Response/Action
Underway – Responsible Officer Richard Polmear – Target date 31/8/12.

11 The provision of an adequate water supply to meet fire service protection obligations for different machine configurations where long hose runs are required should be part of the daily digging plan process. In the configuration on the day of the fire there was insufficient water supply to protect both D11 and S96 in the event of a fire on the coal surface.

- Consideration should be given to the use of multiple hydrant banks on headers in lieu of the existing 50 – 55m spacing standard.
- Consideration for additional spur line installation to have a water supply close to a dredger operating on bottom side and especially double bottom side.
- Consideration must be given to the time required to connect the machine configuration to the available water supply.
- Testing of the water pressure applicable at 5 hose lengths of 90mm hose to mimic the incident set up is recommended. Under these conditions the effectiveness of both the rotary and birdsmouth spray lines need to be assessed (suggest Dredger 9 or 10 used). Based on the findings a limit on the distance from a hydrant to a machine connection could be established.

Hazelwood Response/Action
Underway – Responsible Officer Garry Wilkinson – Target date 31/7/12

12 Strategies for fighting fires at height on machines is required, consideration should be given to remote ground attack to prevent personnel risk due to potential machine failure.

Hazelwood Response/Action
Underway – Responsible Officer Garry Wilkinson – Target date 31/10/12.

13 Portable radios should be carried by operational machine crews whenever the dredger operators' cabin is not manned.

Hazelwood Response/Action

Underway – Responsible Officer Garry Wilkinson – Target date 29/6/12.

14 Conveyor fire service header tail end feeds must only be removed for the immediate travel requirements of machines and should be reinstated as a matter of priority as they form an integral part of the Mines fire prevention defence.

Hazelwood Response/Action
Underway – Responsible Officer Garry Wilkinson – Target date 30/6/12

15 Due to the failures sustained by the discharge boom fixed stay ropes a technical assessment of their failure together with their history is recommended. A review of the current policy for the replacement of machine fixed stay ropes should be based on the results of the assessment.

Hazelwood Response/Action
Underway – Responsible Officer Wayne Buckley – Target date 31/12/12.

16 Given the intensity of the fire in the centre chute, a review should be conducted of the benefit of coating important structural elements above the chutes with fire protection materials.

Hazelwood Response/Action
Underway – Responsible Officer Wayne Buckley – Target date 30/11/12.

Mine Fire 14th and the 22nd September 2008.

Location of Report: Paradigm Document 40703

Recommendations

Recommendation 1

Improved integration between IPRH and CFA

- ***IPRH & CFA to discuss potential for deputy roles in line with CFA roles as undertaken in the September 2008 fire.***
- ***IPRH to continue "deputy" roles equivalent to the CFA roles in a CFA run incident response with the formalisation of a document consistent with CFA ICS processes.***
- ***IPRH ER Team members to undergo CFA Incident Control System (ICS) training to better understand the CFA ICS process.***
- ***IPRH ER Team to undertake regular fire exercises in conjunction with CFA.***
- ***Improve shift changeover process in conjunction with CFA***

The integration of the IPRH ER personnel into a similar structure to the CFA made significant improvements in the co-ordination between IPRH and CFA. IPRH EC (Emergency Commander) assumed the role of Deputy IC (Incident Commander) and also established a Deputy Operations Officer role.

IPRH should review the AIIMS ICS (Australian Inter-service Incident Management System Incident Control System) as established by the Australasian Fire Authorities Council (AFAC). Better alignment between IPRH and CFA will also assist in resolving issues relating to naming of sectors to correspond to mine areas.

Exercising is a critical part of an Emergency Response process and should reflect the typical emergency scenarios that are prevalent at the site. Exercises relating to the management of fires and the integration between IPRH and CFA personnel should be run at regular intervals.

The CFA took up to 3 hours for shift changeover, which was undertaken away from the fire, causing significant lost time in fighting fires. There were also issues in relation to the most effective time for shift changeover of maintenance alliance partners.

The shift changeover process and timings should be discussed with CFA and maintenance alliance contractors in advance and the co-ordination of this process allocated to the Planning role.

Recommendation 2

Allocate IPRH personnel to CFA strike or zones/sectors teams as required.

A recommendation from the previous fire investigation was that the allocation of IPRH personnel to CFA strike teams was effective and should be undertaken during future incidents. This recommendation was written into the Emergency Response Plan but was not undertaken within the first few hours during the September 2008 fire. The responsibility of allocating IPRH personnel to CFA strike teams should be allocated to the Deputy Operations Officer role as soon as practicable after the CFA crews are on site. Having an IPRH person allocated to a CFA strike team will also ease the issue relating to multiple radio systems.

Recommendation 3

IPRH ER personnel should utilise a handover form and log sheet similar to that of the CFA.

The CFA keep very extensive handover note and logs focussed on key missions and objectives. IPRH handovers tended to focus on what was being done rather than passing over a key message and objectives. The CFA handover form has specific sections that cover objectives for the next shift, etc. This applies at all levels of the IPRH ER structure.

Recommendation 4

Develop a mine safety briefing video and coal mine fire fighting techniques video.

CFA fire fighters are generally inexperienced in fighting coal mine fires. A video should be developed showing the key techniques and shown on a television in the rest room at the ICP for CFA and IPRH personnel awaiting briefings or on breaks and used as part of the IPRH staff induction.

Recommendation 5

The annual audit of the fire system must include the fire system and access in non-operational areas

A critical element of the initial response and the ongoing emergency response was the lack of fire water supply to the non-operational areas and the restrictions in access due to the condition of the roads, the accumulation of debris and that some batters did not have road access. The annual audit should include fire water supply to non-operational areas, access and housekeeping.

Recommendation 6

A risk assessment should be undertaken on the non-operational areas to determine if further prevention work is required. The risk assessment should include a Cost/ Benefit Analysis.

A range of options have been identified in terms of prevention of hot spots from reigniting and detection of hotspots.

Recommendation 7

A number of potential improvements to the ICP at the Training Centre were identified and should be considered.

Refer to Appendix B

Recommendation 8

A number of potential improvements to fire fighting equipment were identified and should be considered.

Refer to Appendix C

Recommendation 9

IPRH should improve the practical fire fighting skills through training in advanced coal mine fire fighting techniques

A number of key techniques were identified in the September 2008 fires that may be lost unless those people are involved in the next fire. IPRH should determine whether training an Elite group of Fire Fighters would assist in maintaining those techniques within the corporate memory or if the advanced training should be provided to all personnel.

Suggestions to consider are:

- The importance of the decisive initial response
- Containment if the initial response fails
- How to fight fires in conjunction with the CFA (Strike teams, etc)
- Creating fire curtains by removing a limited number of spray heads
- Use of crane mounted monitors
- Use of excavator-mounted hoses / monitors
- Equipment sourced from other sites (eg Ground Monitors from Esso Longford)

Recommendation 10

Pre-existing geological hot spots need to be better monitored.

The source of the September 2008 fire was very likely to be a pre-existing geological hotspot. The location is in the same area as the fire in December 2005, which was extensively covered in clay. Better monitoring processes need to be developed. Hot spots in non-operational areas have an added complexity due to the difficulty in access. Monitoring should consider:

- Known potential Hot Spots within the Mine are to be identified & included as part of the weekly Batter Stability Monitoring program.
- Records / history of hotspots
- Remote monitoring devices such as Thermal Imaging
- Local monitoring devices such visual inspection or buried temperature gauges (eg thermocouples)

Recommendation 11

Review selection criteria for purchasing Thermal Imaging cameras.

Thermal imaging cameras can play a significant role in the detection of fires at IPRH and in assisting to extinguish fires. They are an expensive purchase and it is important that the objectives are considered in the purchase. Areas where thermal imaging could assist are:

- Determine if fire has been extinguished in an area
- Mounting on cranes to determine if fire is out as it takes a long time to relocate cranes if a fire restarts
- Monitoring hotspots remotely
- Detection of fires

Recommendation 12

Consider developing an IPRH Welfare Officer role to monitor CO, fatigue, time spent in the mine, etc.

- ***Maintain a computer-based register of check-in/ check-out and use to assist in monitoring fatigue and CO exposure***
- ***Streamline the Carbon Monoxide (CO) monitoring process.***

Welfare of staff was well managed but always needs to be a priority in terms of food, water, fatigue, locality, safety, general health, CO exposure, stress, etc.

The Carbon Monoxide (CO) monitoring process needs to be streamlined and made more appropriate to an emergency response. During the September 2008 fire, personal CO monitors were activating frequently resulting in personnel leaving the work area immediately when they were not in any immediate danger and could have waited until their next break.

Monitoring of CO level should be part of safety training video.

However, in a lot of cases, personnel who had been exposed to the fire for long periods were not reminded about health checks.

A Welfare Officer role should be considered either as a dedicated role or as a combined role. Their responsibilities would be to:

- Ensure Health checks and CO monitoring is undertaken;
- Routinely check that personnel are getting sufficient breaks and monitor fatigue levels;
- Ensure personnel located away from the mine or ICP (eg stores, etc) receive meals, breaks, etc;
- Review general health and safety activities.

Recommendation 13

Consider establishing a role with responsibility for access and infrastructure

During the September 2008 fire, access to areas and work on civil infrastructure (eg water pipe, channels, mine roads, etc) was an issue and managing roads, access and civil infrastructure should be allocated to either one of the existing Emergency Response roles or a new Access Officer role identified.

Recommendation 14

Consider establishing a role with responsibility for monitoring water supply

During the September 2008 fire, a number of people were pro-active in monitoring the supply of fire water as it had been an issue in previous fires. However, the responsibility should be formally allocated to either one of the existing Emergency Response roles or a new Water Supply Officer role identified.

The status of the fire water supply system is available on a screen in the ICP.

Recommendation 15

Identify potential roles and personnel from the Power Station or Administration.

Information Technology (IT) officer onsite during initial establishment of the ICP.

There are a number of roles that are part of the Emergency Response team that do not require mine knowledge and may be better undertaken by other personnel allowing the mine personnel to use their knowledge in a more operational role.

The potential roles that could be resourced from the Power Station or from the support departments (eg mine admin, power station admin, procurement etc) should be identified in advance. Typical roles could be CO monitoring, supplies and logistics, etc.

Recommendation 16

Review status of recommendations from October 2006 fire investigation.

Refer to Appendix A.

Mine Fire -12th to 18th October 2006

Location of Report: Paradigm Document 28324

Recommendations

Recommendation 1

In July of each year, a plan should be developed for the upcoming fire season based on weather predictions and mine conditions. Note that with the current conditions, a fire season may need to be designated from October to March.

The 'Pre Summer & Fire Season Works' program is based on a fire season that starts in January and requires a number of activities to be undertaken in December. Developing a plan would ensure that this program is rescheduled according to the most recent fire conditions.

Hazelwood Response/Action

The fire season is declared as defined the paradigm document 36547, Fire Instruction – Mine, Section 5

Recommendation 2

An annual audit of the fire system should be undertaken prior to the start of the fire season in accordance with the fire season plan (Refer to Recommendation 1). The audit should review all aspects of the fire service facilities, systems and procedures. This should include hardware, documentation (eg. emergency response plan), fire pumps and electrical supply, spray coverage of coal levels and fire fighting training, etc.

The 'Mine Fire Service Policy and Code of Practice' states that an annual audit of all fire service facilities, systems and procedures is to be undertaken using checklist information.

As reported from the incident investigation, the fire service equipment, services and procedures were not as effective as they should have been including the following:

- Some hydrants were damaged resulting in wider spacing between fire fighting areas, which required the use of extra hoses.
- Water spraying was insufficient to wet coal faces since water pipes were located too far from coal faces particularly as wind pushed spray water in other direction.
- Fire fighting was interrupted due to loss of power supply to the external fire pump stations at PH5O and PH53 that led to severe reduction of water supply.
- Insufficient supply of PPE led to IPRH mine personnel being removed from fighting fires.
- Damaged equipment including stands on the fire monitor trailers required fire fighting personnel to manhandle.

An annual audit of the fire service facilities, systems and procedures would ensure that the above listed fire systems including crucial systems such as the pump system power supply would have been reviewed and controlled or mitigated accordingly prior to an incident.

Hazelwood Response/Action

Once the fire season is determined the annual fire equipment annual audit and inspection and checklist (Paradigm document 36548) are completed as defined in the paradigm document 36547, Fire Instruction – Mine, Section 5.

Although the audit was commenced on 2nd July 2011, to date the audit has not been closed off. The audit documentation needs to be reviewed to for completeness. There appears to be insufficient information to determine if the actions identified have been completed. There is room for reporting additional comments and this appears to be completed randomly.
When listing equipment to audit, it is unclear the quantities of each area.

Recommendation 3
Predefined conditions should be identified to assist in determining whether a Fire Alert should be declared. The criteria should not be based solely on CFA Total Fire Bans as the CFA criteria includes factors relating to conditions that are not applicable to an open-cut coal mine. These conditions should include ranges in outside temperature, outside humidity, and wind direction and speed that can define 'severe weather conditions'.
Currently the declaration of Fire Alert varies according to differing opinions of mine personnel, their interpretation of 'severe weather conditions', and the CFA Total Fire Bans. Pre defined conditions could include consideration of outside temperature, outside humidity and wind conditions in addition to mine personnel experience. The CFA criteria are inconsistent with the mine conditions as they include factors that are not applicable to an open-cut coal mine.

Hazelwood Response/Action
The declaration of fire alert is declared as defined in the paradigm document 36547, Fire Instruction – Mine, Section 6

Recommendation 4
Fire Alert processes are understood but are not always fully complied with. As the Fire Alert is a critical control to prevent fires, the procedures including roles and responsibilities should be reviewed, updated, reiterated and enforced for mine personnel.
Subsequent to the Fire Alert declared on the 12th of October '06 there were a few contributing factors that could have been managed if the Fire Alert procedures were reviewed, updated, reiterated and enforced for mine personnel. These factors included:

- Maintenance work was still being completed after the Fire Alert was declared. Non-urgent vehicle access to coal levels during Fire Alert.
- Authorisation to access the coal level by a vehicle was given by the Control Centre independent of Fire Services.
- Mobile water tanker units were not full of water and were not immediately available on coal levels as they were being used elsewhere (eg. on roads) for wetting down.

Hazelwood Response/Action
The action required of personnel when a fire alert has been declared and listed actions are defined in the paradigm document 36547, Fire Instruction – Mine, Section 6.2

Recommendation 5
Roles and responsibilities of Fire Services and personnel to support Fire Services during a Fire Alert and in an incident should be reviewed. The review should cover the responsibilities and tasks required by the Fire Services Group including the Fire Services

Officer, Supervisor and Operators for the normal daily tasks, during a Fire Alert and during an incident. The review should also cover which mine personnel or contractors would provide a valuable and effective resource to support Fire Services during a Fire Alert and an incident dependent on their roles and responsibilities. For instance, utilising the maintenance crew for additional fire spotting after a Fire Alert has been declared.
The incident investigation determined that after the Fire Alert was declared, there were insufficient Fire Service resources to undertake all the required tasks including the fire spotting, event logging, the sourcing and setting up of fire equipment. The number of personnel initially available on the 12th of October '06 was also insufficient to assist in suppressing all the spot fires reported.
The following factors would require review within the Fire Services as they were contributing factors to this incident that could have been managed to eliminate or minimise the impact of the incident:

- Insufficient Fire Service resources during a Fire Alert to undertake fire patrol (spotting), as they are busy preparing fire system.
- Maintenance crews were not used for fire patrolling (spotting) and fire fighting as they were sent off site or deployed elsewhere during the Fire Alert.
- Fire Service Operators are busy preparing fire systems and are not available to undertake fire spotting during initial reports of spot fires.
- Too few mine personnel available to control initial spot fires.
- A comprehensive log of events was not maintained after Fire Alert was declared.
- Personnel were unclear of when or where spot fires were reported, and were too slow to arrive at location of fire.
- Decreased ability to fight fires due to a slow process of replacing damaged or used fire fighting equipment for fire fighters at the fire front (eg. replacement of damaged hoses).
- Unclear role between Control Centre and Fire Service Office.

Hazelwood Response/Action
The action required of personnel to support the fire services are defined in the paradigm document 36547, Fire Instruction – Mine, Section 6.2 & 6.3
The titles of personnel responsible need to be updated to reflect the current organisational structure.

Recommendation 6
Interface and communications between Operations, Fire Services and Maintenance needs to be reviewed in terms of fire systems, particularly in relation to the power supply for the fire pumps.
During the incident, Operations and the !PRH EC were unaware that the external fire pump stations PH50 and PH53 were operating on a single power supply. As a result once the single power supply was no longer available, fire fighting was interrupted due to a severe reduction of water supply.

Hazelwood Response/Action
The action required in relation to the power supply for the fire pumps is defined in the paradigm document 2589, H&S- Mine Fire Service Policy and Code of Practice, Section 4.5

Recommendation 7

Roles, responsibilities and procedures outlined within the IPRH Emergency Response Plan should be reviewed and rewritten utilising a checklist approach so that each person undertaking an emergency role can confirm that they are undertaking their key activities. Roles, responsibilities and procedures were not systematically referred to during an emergency as mine personnel took up and immediate roles very quickly and efficiently, based on competence and experience. The current Emergency Response Plan defines many roles and creates confusion between each role, as it is not user friendly.

Contributing factors to this included:

- Too many personnel went to fight the fire, and not enough co-ordination of fire fighting. The Production Supervisor was controlling too many fire fighting activities at all coal levels.
- Assignment of emergency roles and responsibilities for the strategic ongoing emergency response was a slow process due to lack of knowledge and duplication of roles and responsibilities.
- Emergency response took too long to change from the initial reactive response into a strategic ongoing response.
- Fire fighting was interrupted due to loss of power supply to the external fire pump stations at PH50 and PH53 that led to severe reduction of water supply.

Resourcing of personnel during an ongoing incident response should also be reviewed and take into account both power station and mine requirements.

Hazelwood Response/Action

The roles and responsibilities are outlined within the Emergency Response Plan Hazelwood Mine, Paradigm Doc. I/D 2895, section 6, although there does not appear to be a check list for the individual roles and responsibilities. All roles and responsibilities have been reviewed with copies issued to the relevant personnel. Personnel are instructed and mock exercises are conducted to familiarize them in their roles and responsibilities.

The titles of personnel responsible need to be updated to reflect the current organisational structure.

Recommendation 8

In a significant fire, each coal level should be treated as a fire zone and a Zone leader allocated after consultation with the CFA.

Hazelwood Response/Action

As defined in the Emergency Response Plan Hazelwood Mine, Paradigm Doc. I/D 2895, section 6.8

Recommendation 9

Once it has been determined that there is a significant fire, all supervisors should return to the ICP for a briefing and to undertake a role of co-ordinating the fire teams. A co-ordinated approach to fighting fires is more effective than just large numbers of fire fighters.

Hazelwood Response/Action

No reference for this requirement has been found.

Recommendation 10
The ICP should continue to be established as a special facility separate from normal operations or mine activities. The ICP should have available all essential equipment required for an emergency response, that is easily and quickly accessible; and able to be transported to any onsite facility. This equipment may be available as a mobile 'kit'.
There was inadequate preparation and establishment of the ICP including lack of communications, access to equipment and documentation required in the incident. Establishing this special facility with easily and quickly accessible essential equipment would assist in managing these problems for future incidents.

Hazelwood Response/Action
Hazelwood has established a dedicated incident control centre in the mine training centre.

Recommendation 11
IPRH should consider notifying the CFA immediately once a spot fire has been reported and verified on site. The CFA remains on alert for a nominated amount of time (eg. 15 minutes). Within this time frame they must receive further notification from the site that the fire has been extinguished otherwise they will send out an initial response crew in anticipation that the fire has escalated and requires their assistance. This practice is undertaken at other mines in Latrobe Valley.
The initial spot fires on the 12th of October '06 escalated to out of control fires within a small time interval primarily with the assistance of adverse weather conditions and lack of resources to control the amount of spot fires.
The Emergency Response Plan (Issued 5/09/05) notes:
`A coal fire or series of spot fires that do not spread beyond their initial point of ignition, do not constitute an emergency notifiable to CFA. Mine Fire Alerts are not notifiable.'
In this incident, CFA notification could have assisted with initiating an earlier initial response to the escalating fires.

Hazelwood Response/Action
The action required to notify the CFA is defined in the paradigm document 36547, Fire Instruction – Mine, Section 7.1. This procedure has been developed with endorsement from the CFA

Recommendation 12
The IPRH Significant Issue Corporate Response Plan and the IP Corporate Serious Incident Procedure should be reviewed and updated to ensure there are no discrepancies; and the IPRH Emergency Response Plan should be consistent with the IPRH Significant Issue Corporate Response Plan.
There was confusion between IPRH Significant Issue Corporate Response Plan and the IP Corporate Serious Incident Procedure since there were discrepancies between the two documents. Once these documents are reviewed they should also be consistent with the IPRH Emergency Response Plan to avoid further confusion.

Hazelwood Response/Action
These documents have been revised into the SIMRP document (Ref Paradigm document 6841)

Recommendation 13
Work procedures and practices within the 'Mine Fire Service Policy and Code of Practice' and the 'Fire Instructions' should be systematically reviewed and updated.
The 'Mine Fire Service Policy and Code of Practice' (Rev: Sept 1995) is an existing document at the IPRH site. The purpose of this document as stated 'is to achieve the Fire Protection Policy requirements by providing acceptable operating procedures for fire protection services for Mining Operations'.
The main aspects of this document that require specific review and updating are listed below:

- Resources for Protection including 'The 'Pre Summer & Fire Season Works' program and 'High Fire Risk Days (Declaration of Fire Alert)';
- Plant and Equipment; and
- Fire Service Audits and Documentation.

The 'Fire Instructions- Hazelwood Power Mine' (Issued: 30 Oct '96) is another existing document at the IPRH mine site. As stated, the instructions apply to all personnel working in the Hazelwood Power Mine and they should be aware of their responsibilities in relation to the prevention, reporting and fighting of fires in or near the mine. Currently, the 'Mine Fire Service Policy and Code of Practice' states that the `Fire Instructions' are maintained for each open cut and reissued to Supervisory staff and key operating personnel by the beginning of October each year.
The key aspects within this document that require specific review and updating are listed below:

- Organisational responsibilities in relation to Fire Prevention;
- Fire Prevention;
- Declaration of a Fire Alert; and
- Procedures on plant during fire.

Hazelwood Response/Action
The Fire Instructions procedure Paradigm I.D 2758 has been revised on the 26th November 2008, 7th August 2009, 22nd March 2010, 27th July 2010 and 27th July 2011.
The 'Mine Fire Service Policy and Code of Practice' has been revised on the 20th November 2008, 4th August 2009, 22nd March 2010, 1st April 2011 27th July 2011 and 28th November 2011. and the following documents are all reviewed annually at the start of the declared fire season

1. Hazelwood Mine Fire Service Policy and Code of Practice 2589
2. Hazelwood Mine Emergency Response Plan 2895
3. Hazelwood Mine Fire Instructions 2758
4. Hazelwood Mine Fire Training Manual
5. Hazelwood Mine Guidelines for Season & Period Specific Fire Preparedness and Mitigation Planning 36546
6. Hazelwood Mine Guidelines for Season Specific Fire Preparedness and Mitigation Planning 36547
7. Hazelwood Mine Check List for Fire Fighting Equipment

Annual Audit and Inspection 36548
8. Hazelwood Mine Check List for Season Specific Fire Preparedness and Mitigation Planning 36549

Recommendation 14
Whilst it should be recognised that the priority is to ensure that sufficient water is used to control the spread of fires, particularly to ensure no burning coal is transferred to the power station, mine operations should be trained to understand the effects of excessive water being transferred to the power station.
The IPRH mine continued to provide coal to the power station throughout the incident. As a result, coal exposed to large quantities of water at the mine, particularly on the conveyors, was transported to the power station. This caused significant issues to operations at the power station.
It should be recognised that the priority is to ensure that sufficient water is used to control the spread of fires, particularly to ensure no burning coal is transferred to the power station. However, operations should understand the effects of excessive water being transferred to the power station.

Hazelwood Response/Action
This is noted however people will always be conservative when ensuring coal will not burn by application of water. In addition sprays will be operating along all conveyors and at each transfer point, to prevent the spread of fire, which will send large amounts of water to the power station.

Recommendation 15
The use of thermal imaging cameras and other technology in the detection of faulty idlers should be investigated for their application and used where appropriate.
The likely ignition of the spot fires at the M620 conveyor was due to a collapsed bearing smouldering in the coal at the M620 conveyer and detection currently relies upon visual inspection from mine personnel.

Hazelwood Response/Action
The equipment has been purchased and weekly routines are scheduled for thermal imaging of conveyors. On days of high fire risk additional thermal imaging of face conveyors is conducted.
This equipment is not routinely being utilised on machines.

Recommendation 16
The use of thermal imaging cameras was effective during the fire fighting and should be considered as well as other technology for wider use in spotting fires within the mine.

Hazelwood Response/Action
Specialised Infrared cameras have been purchased for use in fire fighting. These are used for checking for hot spots after fires have been wet down.

Recommendation 17
A procedure for dealing with Carbon Monoxide (CO) during fire fighting, including the use of CO monitors, should be developed since personnel safety is a major responsibility and concern in fighting coal fires.
Mine personnel reported headaches from exposure to carbon monoxide whilst fire fighting. The use of CO monitors would ensure that personnel exposure to CO would be kept within the 'safe' exposure levels.

Hazelwood Response/Action
The Fire Instructions procedure Paradigim I.D 2758 includes precaution and exposure limit for CO in section 9.8.

Recommendation 18
Whilst the efforts of all mine, contractor and CFA personnel are highly commended in their assistance with the fire fighting, it should be emphasised and reinforced to all personnel that no job is so important that they should take excessive risks.

Hazelwood Response/Action
IPR-GDF Suez H&S Policy on site requires that people do not put themselves at risk.
The Fire Instructions procedure Paradigim I.D 2758 section 9.8 includes direction to seek medical assistance immediately they are feeling unwell.

Recommendation 19
Allocating IPRH operations staff to CFA strike teams during a fire should be included within IPRH procedures (eg. Emergency Response Plan and/or Fire Instructions) and reinforced so that it becomes normal practice.
Some CFA non Morwell personnel were inexperienced in fighting coal fires. The allocation of IPRH personnel to CFA strike teams became an efficient and effective method of assisting the inexperienced CFA personnel in fighting coal fires. This method should be reviewed and included within IPRH procedures (eg. Emergency Response Plan and/or Fire Instructions) so that it becomes normal practice in response to all fires.

Hazelwood Response/Action
Emergency Response Plan Hazelwood Mine, Paradigm Doc. I/D 2895, section 6.8 specifies that the Zone Leaders may be allocated to the CFA Strike Teams,

Recommendation 20
To ensure that the ongoing efficient operations of the mine are not compromised over the long term as a result of the fire incident, a detailed risk analysis should be carried out to assess the life cycle impact of the fire on maintenance costs and longevity of the mine infrastructure assets.

Hazelwood Response/Action
The cost of additional annual fire preparations are incorporated in the annual operational budget.

Hazelwood Slot Bunker Coal Fire - 3rd April 2005

Location of Report: Paradigm Document

Recommendations

Improve Emergency Response Procedures

1 Emergency commanders to ensure zone leader representatives are clearly identified on site defining zone leader area representation for the Mine and Station when combating fire at the bunker.

2 Emergency response instigation procedures to be updated and clearly identified in all control rooms. - Notification of an emergency is to include the Diamond Protection and Department Of Primary Industries(Mines Inspector).

3 Mine Control Centre / Control Points and Emergency Response trailers to include simplified log of event sheet documents.

4 Investigate the possibility of having automatic recording of all incoming and outgoing calls whilst emergency is in progress at control point locations.

5 Annual refresher courses for all Emergency Commanders/Zone Leaders reviewing the Emergency Response Procedures including water management traffic management and general protocol.

6 Existing Command/Zone leader vests to be checked and updated if necessary. Vest to be located at all Control Points , Fire/service , Emergency Response Trailers and with Station Shift Managers.

7 The Emergency response procedure detailing use of the bunker lift in the case of emergencies to be more clearly defined. It should be isolated and not used.

Improve Fire Fighting Ability

8 Alternative water supply to be established at the base of the bunker West Side consisting of a manifold and 4 hydrants at ground level.

9 Review of existing water supplies to the bunker and clearly identify all valve/hydrant points within the bunker and surrounding ground level.

10 Current wash down procedure for the bunker to have greater emphasis on cleaning of the spill conveyors located at the West Wall entry of the bunker with a more concentrated effort in the removal of accumulated pulverised fuel deposits. (this includes operations and fire service)

11 Liase with CFA officials to discuss issues associated with fighting a Pulverised Fuel Fires and bunker fires and the possibility of further training for CFA members.

12 As a precaution against possible asbestos dust when fighting bunker fires, all personnel are to wear the appropriate face mask and or Breathing apparatus until directed otherwise by the CFA incident controller.

Fire Fuel Reduction

13 Ensure M170 's spill belts are always operational — Or remove the spill belts and eliminate the build up of coal in this critical area. An engineering solution is required to achieve this.

14 Review existing requirement for the tin flashing covering the steel structures preventing coal build up. (flashing harbours fire, making it difficult to extinguish or find)

Improve Safety in and Around Bunker

15 Replace timber walkways on roof with steel replace the burnt translucent sheets on the roof with steel sheets. An assessment will be made as to the need for additional artificial lighting in the bunker.

16 Bunker Lift — Access to a key for the control door cubicle to be made easily accessible if isolations of the lift are required. Lift is to be isolated and not used when there is a bunker fire.

17 Install illuminated emergency exit signs in the bunker and an emergency light on the outside of the bunker to indicate a emergency or fire alert is in progress.

18 Breathing Apparatus units to be installed in the Emergency Response Trailers. This eliminates the need for B/A units to be located at the bunker