

Audit Checklist for Explosives Management Systems

Metalliferous and Extractive Mines and Quarries

November 2008

NSW Department of Primary Industries
516 High Street Maitland NSW
(PO Box 344, Hunter Regional Mail Centre NSW 2310)



**NSW DEPARTMENT OF
PRIMARY INDUSTRIES**

Audit Checklist for Explosives Management Systems

INTRODUCTION

The NSW Department of Primary Industries has the responsibility of promoting high standards of safety within the NSW mining industry and ensuring compliance with legislation. This requires mines to manage their activities in such a manner as to identify and assess risk to the safety and health of persons at their mine and to deal with those risks on a priority basis.

The use, storage, manufacture, security and transport of explosives on mine sites are high-risk activities. NSW DPI audits Explosives Management systems are in place at Metalliferous and Extractive mining and quarrying operations that use explosives. The audits will assist these mines in systematically examining their blasting operations to ensure conformance with legislative requirements while meeting community expectations.

To achieve this outcome the department has developed this *Audit Checklist for Explosives Management Systems*. NSW DPI plans to use the checklist during future explosives management system audits at Metalliferous and Extractive mining and quarrying operations. The audit checklist is also available to industry on the department's web site, www.dpi.nsw.gov.au/minerals/safety as a pro-active step to assist mines and quarries in conducting internal audits of their explosives management systems.

It is envisaged that mines and quarries will audit their blasting operations to identify the extent and effectiveness of their explosives management systems, as well as identify any deficiencies or non-compliance. This should include developing corrective action plans to address any deficiencies or non-compliance identified during the audit process.

ABOUT THE AUDIT CHECKLIST FOR EXPLOSIVES MANAGEMENT SYSTEMS

1. The *Audit Checklist for Explosives Management Systems* has been developed as a tool to assist auditors conducting audits of explosives management systems at Metalliferous and Extractive mining and quarrying operations in NSW.
2. The checklist can be used to identify the current level of performance in explosives management at mines and quarries through:
 - the assessment of compliance with explosives legislative requirements including the *Explosives Act 2003* and *Explosives Regulation 2005*, *Mine Health & Safety Act 2004* and *Mine Health & Safety Regulation 2007* requirements – including compliance with AS 2187.1 Storage, AS 2187.2 Use of Explosives, AS 4326 The storage and handling of oxidizing agents and the Australian Explosives Code;
 - evaluation of the effectiveness of current explosives management system in place at mines and quarries;
 - the identification of strengths and weaknesses;
 - the provision of an opportunity to improve the explosives management system in place at mines and quarries.

Audit Checklist for Explosives Management Systems

3. The checklist is laid out with a number of questions that may be asked by the auditor to determine the extent to which the audit criteria are fulfilled. The notes in italics below each question are areas that the auditor should review and consider to verify the audit evidence provided by the auditee.
4. The three columns headed **Doc, Int and Obs** refer to Documents, Interview and Observations respectively. A tick should be entered in the applicable column that supports the type of evidence supplied during the audit process, i.e, if the evidence is obtained during an interview then the **Int** column should be ticked to show that the evidence obtained was obtained by interview.
5. The column headed **Audit Observations – Comments** is to be used by the auditor to record the audit results and evidence obtained during the audit process and to assist when writing up the audit report. This can include records, statements of fact or other information, which are relevant to the audit criteria and are verifiable. An audit notebook may also be used to record the audit results and evidence.

DISCLAIMER

The compilation of information contained in this document relies upon material and data derived from a number of third party sources and is intended as a guide only in devising risk and safety management systems for the working of mines and is not designed to replace or be used instead of an appropriately designed safety management plan for each individual mine. Users should rely on their own advice, skills and experience in applying risk and safety management systems in individual workplaces.

Use of this document does not relieve the user (or a person on whose behalf it is used) of any obligation or duty that might arise under any legislation (including the Occupational Health & Safety Act 2000, any other Act containing requirements relating to mine safety and any regulations and rules under those Acts) covering the activities to which this document has been or is to be applied.

The information in this document is provided voluntarily and for information purposes only. The New South Wales Government does not guarantee that the information is complete, current or correct and accepts no responsibility for unsuitable or inaccurate material that may be encountered.

Unless otherwise stated, the authorised version of all reports, guides, data and other information should be sourced from official printed versions of the agency directly. Neither the Department of Primary Industries, the New South Wales Government, nor any employee or agent of the Department, nor any author of or contributor to this document produced by the Department shall be responsible or liable for any loss, damage, personal injury or death howsoever caused.

Users should always verify historical material by making and relying upon their own separate inquiries prior to making any important decisions or taking any action on the basis of this information.

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 1. | <p>What systems are in place at the mine to ensure all persons handling explosives and explosive precursors are authorised under a licence under the <i>Explosives Act 2003</i>?</p> <p><i>Consider,</i></p> <ul style="list-style-type: none"> • <i>Shotfirers hold a current BEUL for the type of blasting activity being undertaken</i> • <i>a current UHL held by other persons handling explosives and explosive precursors</i> • <i>unlicensed persons to be directly supervised by a licensed person</i> <p><i>(Note: a BEUL is a Blasting Explosives Users License and a UHL is an Unsupervised Handling Licence– issued under the Explosives Act 2003 by Workcover NSW)</i></p> <p><i>Refer Section 6 Explosives Act 2003 & Clause 55 MH&S Regulation 2007.</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 2. | <p>What systems are in place at the mine to ensure all of the licences required under the <i>Explosives Act 2003</i> and <i>Explosives Regulation 2005</i> are current?</p> <p><i>Examples:</i></p> <ul style="list-style-type: none"> • <i>BEULs</i> • <i>UHLs</i> • <i>Licence to store</i> • <i>Licence to manufacture</i> • <i>Licence to transport (on a public road only)</i> • <i>Licence to use security sensitive dangerous substances (such as ammonium nitrate – AN)</i> <p><i>Notes: Copies of all licences must be available if requested by an inspector or a police officer to be produced. (If not, then a copy of a licence must be produced within 6 hours). Some licenses can be combined to be held as one licence – check conditions on licence</i></p> <p><i>Refer Clause 16 & 63 (1) (b) Explosives Regulation 2005</i></p> | | | | |
| 3. | <p>Are there any conditions or restrictions on any explosives licences? If so, what systems are in place at the mine to ensure all of the licences conditions are being complied with?</p> <p><i>Examples:</i></p> <ul style="list-style-type: none"> • <i>licence holder may not be authorise to purchase explosives</i> • <i>licences may have restrictions that relate to one site or type of blasting activities eg limited to underground or surface operations at a mine</i> <p><i>Refer Section 14 Explosives Act 2003</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 4. | <p>What system is in place to ensure a register is maintained identifying all persons working at the mine who hold a licence under the <i>Explosives Act 2003</i> to handle explosives and explosive precursors?</p> <p><i>Check for the following</i></p> <ul style="list-style-type: none"> • <i>Register includes full name, DOB, licence number & category and any restrictions on the licence</i> • <i>All information in register up to date and accurate.</i> <p><i>Refer Clause 56 MH&S Regulation 2007</i></p> | | | | |
| 5. | <p>How does the operator of the mine ensure that, in assessing risks associated with the handling of explosives at the mine, the OH&S risk assessment for the mine takes into consideration, but is not limited to, the following:</p> <ul style="list-style-type: none"> <i>a) the loading and stemming of blast holes</i> <i>b) the connection of initiation systems</i> <i>c) exclusion zones</i> <i>d) dealing with misfires</i> <i>e) the initiation of explosives or explosive precursors by an electric charge</i> <i>f) the security of explosives and explosive precursors</i> <i>g) the storage and transport of explosives and explosive precursors</i> <i>h) working in and around the edge of quarry benches.</i> <p><i>Refer Clause 41 MH&S Regulation 2007 and AS 2187.2</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|---|-----|-----|-----|-------------------------------|
| 6. | <p>Are blast management plans prepared and authorised by competent persons prior to blasting operations commencing? Has a risk assessment been used in the preparation of blasting plans?</p> <p><i>Check for the following</i></p> <ul style="list-style-type: none"> • <i>competent persons involved in blasting process</i> • <i>life cycle approach – design to initiation & review.</i> <p><i>Consider:</i></p> <ul style="list-style-type: none"> • <i>foreseeable hazards have been identified and assessed</i> • <i>hazards have been eliminated or controlled</i> • <i>blast exclusion zone clearly defined</i> • <i>blasting equipment fit for purpose</i> • <i>no sources of ignition near explosives</i> • <i>eg blast guards, notification of others, assembly area, firing location, etc.</i> <p><i>Refer Section 2 and Appendix A - AS 2187.2</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|---|-----|-----|-----|-------------------------------|
| 7. | <p>What systems are in place at the mine to ensure a risk assessment has been undertaken and safe work method statements (SWMS) have been developed by blasting contractors prior to the contractors commencing blasting operations at the mine?</p> <p><i>Check for the following</i></p> <ul style="list-style-type: none"> • <i>Safe work method statements (SWMS) describe how the blasting operations are to be carried out.</i> • <i>SWMS identify the work activities assessed as having safety and health risks.</i> • <i>SWMS identify those safety and health risks.</i> • <i>Describe the control measures that will be applied to the blasting operations.</i> • <i>Contractors comply with the SWMS.</i> <p><i>Refer Sections 38 & 64 MH&S Act 2004 and Clause 29 MH&S Regulation 2007</i></p> | | | | |
| 8. | <p>What precautions are taken and what procedures have been developed to prevent access to explosives by persons not authorised or lawfully entitled to have access?</p> <p><i>Examples:</i></p> <ul style="list-style-type: none"> • <i>person who do not hold a UHL</i> • <i>persons under the age of 18 years</i> • <i>persons not listed on a mine's security plan.</i> <p><i>Refer Sections 7 & 9 Explosives Act 2003 and Clause 65 Explosives Regulation 2005</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 9. | <p>Is there a written procedure to report a theft, attempted theft, loss or an incident involving explosives or explosive precursors to the correct authorities?</p> <ul style="list-style-type: none"> • <i>If a loss has occurred were the DPI, Workcover NSW and the Police notified immediately?</i> • <i>Is there a written procedure to report a theft of explosives or explosive precursors to the correct authorities?</i> <p><i>Refer Clause 39 Explosives Regulation 2005</i></p> | | | | |
| 10. | <p>What procedures are in place to report the following explosives incidents to the DPI?</p> <ol style="list-style-type: none"> 1. <i>ejection of fly-rock so that it falls outside a blast exclusion zone</i> 2. <i>a significant misfire of explosives</i> 3. <i>a problem or fault in an explosives product or accessory</i> 4. <i>any loss of explosives or explosive precursors.</i> <p><i>Refer Clause 145 (j) & 146 (e) (g) MH&S Regulation 2007 and Clause 6 Explosives Regulation 2005</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|---|-----|-----|-----|-------------------------------|
| 11. | <p>If a security plan is required, does it contain the following minimal requirements?</p> <ul style="list-style-type: none"> • <i>sketch/plan of site</i> • <i>licence information</i> • <i>key security</i> • <i>details of all facilities and boundaries,</i> • <i>details of systems and procedures</i> • <i>list of nominated persons holding UHLs & BEULs</i> • <i>list of vehicles that may carry explosives and/or AN</i> • <i>other security information required by the DPI.</i> <p><i>Refer Workcover NSW Security Plan Guide 2005 – Security Risk Assessment</i></p> | | | | |
| 12. | <p>Are the requirements, activities and procedures specified in the security plan being audited to ensure compliance?</p> <p><i>Examples:</i></p> <ul style="list-style-type: none"> • <i>Magazine records are kept in bound books with numbered pages</i> • <i>Audits conducted of magazine records</i> • <i>Only person listed in the security plan have access to magazine keys</i> • <i>Security arrangements are regularly reviewed</i> • <i>Only authorised persons stated within the plan are handling explosives.</i> <p><i>Refer Clause 64 Explosives Regulation 2005.</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 13. | <p>What system/procedures are in place to ensure AN is stored in a safe and secure manner?</p> <p><i>If AN is stored, then its storage must comply with AS 4326. This includes, but is not limited to:</i></p> <ul style="list-style-type: none"> • <i>separation distances to workplaces</i> • <i>security arrangements</i> • <i>spillage containment</i> • <i>fire protection</i> • <i>signage.</i> <p><i>Refer Clause 22 & 47 Explosives Regulation 2005</i></p> | | | | |
| 14. | <p>Is more than</p> <ol style="list-style-type: none"> a) 500 metres of detonating cord b) 2.5 kg of blasting explosives, including boosters c) 110 detonators, and d) 50 kg of security sensitive ammonium nitrate stored and kept overnight at the mine? <p><i>If so:</i></p> <ul style="list-style-type: none"> • <i>is a licence to store held to do so under the Explosives Act 2003?</i> • <i>are the explosives magazines to AS 2187 requirements?</i> • <i>is an up-to-date site security plan in place?</i> <p><i>Refer Workcover NSW General licensing conditions number 46 and Clauses 22, 64, 66, 80 & 81 Explosives Regulation 2005</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 15. | <p>Is more that 50kg of explosives or 50 tonne of AN being stored at the mine?</p> <p><i>If so, has a written plan dealing with any emergency been:</i></p> <ul style="list-style-type: none"> • <i>developed and maintained</i> • <i>communicated to persons at the site and persons adjacent to the site</i> • <i>provided to the Fire Brigade or the Rural Fire Service</i> • <i>reviewed if circumstances have changed or within 5 years of it previously being submitted.</i> <p><i>Refer Clause 66 Explosives Regulation 2005</i></p> | | | | |
| 16. | <p>Is more than 50kg of explosives manufactured per day at the mine?</p> <p><i>If so:</i></p> <ul style="list-style-type: none"> • <i>is a licence to manufacture held to do so under the Explosives Act 2003?</i> <p><i>Refer Workcover NSW General licensing conditions number 55 & Clauses 17 & 40 Explosives Regulation 2005</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 17. | <p>What system/procedures are in place to ensure that when explosives or explosive precursors are taken for use from a secure store:</p> <ul style="list-style-type: none"> • <i>are they always kept under supervision by authorised persons prior to being used</i> • <i>are they returned by authorised persons if they are unused</i> • <i>are explosives separated from detonators</i> • <i>are accurate magazine records kept?</i> <p><i>Refer Clause 67 Explosives Regulation 2005</i></p> | | | | |
| 18. | <p>What system/procedures are in place to ensure that anything that may generate a fire, (including smoking) is not carried out within 10 metres of where explosives are stored?</p> <p><i>Such as:</i></p> <ul style="list-style-type: none"> • <i>magazine rules</i> • <i>safe work procedures for explosives</i> • <i>site employee, contractor and visitor inductions.</i> <p><i>Refer Clause 71 Explosives Regulation 2005</i></p> | | | | |
| 19. | <p>What system/procedures are in place to ensure the disposal of explosives is carried out safely, by authorised licensed persons and in accordance with AS 2187.2?</p> <p><i>Refer Clauses 91 & 92 Explosives Regulation 2005</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|--|-----|-----|-----|-------------------------------|
| 20. | <p>What procedures are in place to ensure that persons who are not authorised do not enter places where explosives are manufactured or stored?</p> <p><i>Refer Clause 72 Explosives Regulation 2005</i></p> | | | | |
| 21. | <p>When transporting explosives are procedures in place to ensure:</p> <ul style="list-style-type: none"> • they are transported in accordance with the <i>Australian Explosives Code (AEC)</i> • they are not liable to ignite or explode • persons are not smoking within 6 metres of the vehicle transporting explosives. <p><i>When detonators and explosives of divisions 1.1 B and 1.1 D respectively are being transported on the same vehicle are they segregated and being transported in accordance with Chapters 6 & 7 of the AEC?</i></p> <p><i>Refer Clause 46, 82, 83 & 84 Explosives Regulation 2005</i> <i>Refer Australian Explosives Code Sections 6 & 7</i></p> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|---|-----|-----|-----|-------------------------------|
| 22. | <p>Are there copies of legislation, standards and codes available for persons to refer to when necessary?</p> <p><i>These may include:</i></p> <ul style="list-style-type: none"> • <i>Explosives Act 2003</i> • <i>Explosives Regulation 2005</i> • <i>Mine Health & Safety Act 2004</i> • <i>Mine Health & Safety Regulation 2007</i> • <i>AS 2187 (store, transport and use of explosives)</i> • <i>AS 4326 (storage of AN)</i> • <i>Australian Explosives Code (transporting explosives)</i> • <i>Australian Dangerous Goods Code (transporting explosive precursors)</i> • <i>Blast Management Plan</i> • <i>Site security plan.</i> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|---|-----|-----|-----|-------------------------------|
| 23. | <p>What system/procedures are in place to ensure all relevant legislation, standards and codes are being complied with in regard to explosives safety management at the mine?</p> <p><i>Consider but not limited to:</i></p> <ul style="list-style-type: none"> • <i>Mine Safety Management Plan</i> • <i>Contractor Management Plans</i> • <i>Explosives risk assessments and JSAs</i> • <i>Explosives SWMS</i> • <i>Explosives security plan</i> • <i>Blast management plans</i> • <i>Hazard identification</i> • <i>Inductions</i> • <i>Training and competencies</i> • <i>Inspections</i> • <i>Management structures</i> • <i>Responsibilities and accountabilities</i> • <i>Records and documents</i> • <i>Equipment fit for purpose</i> • <i>Maintenance</i> • <i>Emergency procedures</i> • <i>Explosives safety rules.</i> | | | | |

Audit Checklist for Explosives Management Systems

| No. | Evidence to be obtained to validate the implementation of an Explosives Management System | Doc | Int | Obs | Audit Observations - Comments |
|-----|---|-----|-----|-----|-------------------------------|
| 24. | Other Comments / Issues | | | | |

Feedback Sheet

Your comments will be very helpful in reviewing and improving this Audit Checklist for Explosives Management Systems.

Please copy and complete the Feedback Sheet and return it to:

*Senior Mine Safety Officer
Mine Safety Operations
NSW Department of Primary Industries
Locked Bag 21
Orange NSW 2800
Fax: (02) 6360 5363
Phone: (02) 6360 5333*

How did you use, or intend to use, this document?

What do you find most useful about this document?

What do you find least useful?

Do you have any suggested changes to the document?

Thank you for completing and returning this Feedback Sheet.