

Mines Division Practice Note No. 3 (MDPN 3)

Mine Blasting Certificates and Use (Individual) Licences to Use Schedule 1 Dangerous Goods (S1DG) in a Licensed Blasting Site

Issue No.: 1	Revision: 9	Date: 1.11.2022	Page: 1 of 12
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1. INTRODUCTION

- 1.1 Under section 44 of the Dangerous Goods (Control) Regulation (DG(C)R) (Cap. 295G), a person must not cause or permit any individual to use any quantity of S1DG at any location unless for S1DG used in a licensed blasting site, the individual is the holder of a mine blasting certificate (MBC) issued or renewed under regulation 22 of the Mines (Safety) Regulations (M(S)R) (Cap. 285B), or is the licensee of a use (individual) licence and is permitted under the licence to use that quantity of S1DG issued or renewed under section 45 of the DG(C)R (Cap. 295G).
- 1.2 This practice note provides information on:
- (a) the requirements to obtain an MBC or a use (individual) licence to use S1DG (explosives) in a licensed blasting site;
 - (b) recognition of overseas qualifications;
 - (c) renewal and endorsement of an existing MBC; and
 - (d) use (individual) licence to undertake special types of blasting work.
- 1.3 There are two routes for a person to obtain an MBC qualification: Structured Training and Apprenticeship (Section 4).
- 1.4 An application may be submitted via the Centralised Explosives Licensing and Management System (CELIMS) (celims.cedd.gov.hk) of Mines Division or by an application form. All forms related to this practice note can be obtained from CEDD web site: <https://www.cedd.gov.hk/eng/public-services-forms/public-forms/explosives-blasting-and-quarries/index.html>
- 1.5 Any feedback on the contents of this practice note should be directed to the Chief Geotechnical Engineer/Mines, GEO, CEDD.

2. RELATED DOCUMENTS

- 2.1 Dangerous Goods Ordinance (DGO), Cap. 295
- 2.2 Dangerous Goods (Control) Regulation (DG(C)R), Cap. 295G
- 2.3 Mines (Safety) Regulations (M(S)R), Cap. 285B
- 2.4 Application for a Use (Individual) Licence to Use Schedule 1 Dangerous Goods (S1DG) / Renewal Application (Form No. MIN f13)
https://www.cedd.gov.hk/filemanager/eng/content_680/authorize.pdf
- 2.5 Personal Data Authorization Form (Form No. MIN SC1)
https://www.cedd.gov.hk/filemanager/eng/content_680/personal_data_authorization_form.pdf
- 2.6 Application for a Mine Blasting Certificate (Form I)

Mines Division Practice Note No. 3 (MDPN 3)

Mine Blasting Certificates and Use (Individual) Licences to Use Schedule 1 Dangerous Goods (S1DG) in a Licensed Blasting Site

Issue No.: 1	Revision: 9	Date: 1.11.2022	Page: 2 of 12
--------------	-------------	-----------------	---------------

https://www.cedd.gov.hk/filemanager/eng/content_680/mbc.pdf

- 2.7 Training and Experience Certification Form – Structured Training (Form No. MIN f14)
https://www.cedd.gov.hk/filemanager/eng/content_680/tec_structuredtraining.pdf
- 2.8 Training and Experience Certification Form – Apprenticeship Training (Form No. MIN f15)
https://www.cedd.gov.hk/filemanager/eng/content_680/tec_apprenticeshiptraining.pdf
- 2.9 Application for Renewal of Mine Blasting Certificate (Form No. MIN f4)
https://www.cedd.gov.hk/filemanager/eng/content_680/mbcren.pdf
- 2.10 Prevention of Bribery Ordinance Confirmation Form (Form No. Min/qa/f17)
https://www.cedd.gov.hk/filemanager/eng/content_680/confirmation.pdf
- 2.11 Trainee Shot Firer Training Log Sheets (Form No. MIN f19)
https://www.cedd.gov.hk/filemanager/eng/content_680/traininglogsheet.pdf

3. GENERAL

3.1 Role of Superintendent of Mines

- 3.1.1 Under the M(S)R, the Superintendent of Mines (SoM), who is also the Chief Geotechnical Engineer/Mines, is responsible for issuing MBCs. The SoM, under delegated authority from the Commissioner of Mines (CoM), is also responsible for issuing use (individual) licences under section 45 of the DG(C)R for an individual to use S1DG. The term “SoM” in this note generally refers to the regulatory authority for issuing an MBC or a use (individual) licence.

3.2 Security Check

- 3.2.1 An applicant applying for an MBC or a use (individual) licence to use S1DG in a licensed blasting site, including renewal of an existing certificate/licence, must complete and submit a Personal Data Authorization Form (Form No. MIN SC1). The SoM may waive this requirement for an overseas shot firer, who does not hold an MBC, applying for a short-term use (individual) licence under Section 7. Mines Division will submit the completed form to the Hong Kong Police Force to check the criminal record of the applicant. The SoM will use the information obtained from the Police to assess the security risk of the applicant in relation to handling and using S1DG.

3.3 Prevention of Bribery

- 3.3.1 An applicant applying for an MBC or a use (individual) licence to use S1DG in a licensed blasting site, including renewal of an existing certificate/licence, must complete and submit a form (Form No. Min/qa/f17) to confirm that he/she understands his/her MBC/use (individual) licence will be revoked if he/she is found guilty of an offence under the Prevention of Bribery Ordinance (Cap. 201).

Mines Division Practice Note No. 3 (MDPN 3)

Mine Blasting Certificates and Use (Individual) Licences to Use Schedule 1 Dangerous Goods (S1DG) in a Licensed Blasting Site

Issue No.: 1	Revision: 9	Date: 1.11.2022	Page: 3 of 12
--------------	-------------	-----------------	---------------

3.4 Definitions

3.4.1 The following are terms mentioned in different sections of this practice note and their definitions.

3.4.2 “*Shot firer training course*” - the shot firer training course must:

- (a) cover the topics listed in the MBC Examination Syllabus in Annex B (normally about 30 hours’ training);
- (b) involve an examination to confirm that the trainee has attained the required standard before a course certificate is awarded; and
- (c) be endorsed by the SoM prior to starting.

3.4.3 “*Trainer*” - the trainer must satisfy one of the following requirements:

- (a) hold a valid MBC with at least 5 years’ working experience as a shot firer on blasting sites; or
- (b) be recognized by a government authority as a competent trainer; or
- (c) be endorsed by an explosives manufacturer as a competent trainer.

The qualifications of the trainer must be accepted by the SoM and must be relevant to the category of blasting and the type of initiation system for which the applicant is being trained.

3.4.4 “*Written Examination*” - the examination paper consists of Part A, multiple-choice questions, and Part B, short questions. The time allowed for the written examination is normally 3 hours. An applicant must pass both parts of the examination in a single sitting. The pass mark for each part is 80%.

3.4.5 “*Interview*” - at the interview, the applicant must demonstrate adequate knowledge of the duties and responsibilities of a shot firer/a trainee shot firer (whichever is applicable), including knowledge of the safety and security of S1DG in storage, transport and use, and the liabilities and offences under the DGO and its subsidiary legislation.

4. APPLICATION FOR A MINE BLASTING CERTIFICATE THROUGH STRUCTURED TRAINING OR BY APPRENTICESHIP

4.1 To obtain an MBC, an applicant (the trainee) is required to:

Through structured training

- (a) complete satisfactorily a *shot firer training course*;
- (b) submit an application for a use (individual) licence to use S1DG;

By apprenticeship

- (a) complete satisfactorily 6 months on site training and have observed at least 28 blasts as an apprentice under the supervision of a *trainer*;
- (b) submit an application for a use (individual) licence to use S1DG;

Mines Division Practice Note No. 3 (MDPN 3)

Mine Blasting Certificates and Use (Individual) Licences to Use Schedule 1 Dangerous Goods (S1DG) in a Licensed Blasting Site

Issue No.: 1	Revision: 9	Date: 1.11.2022	Page: 4 of 12
--------------	-------------	-----------------	---------------

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| (c) pass a security check and an <i>interview</i> with the SoM; | (c) pass a security check, a <i>written examination</i> and an <i>interview</i> with the SoM; |
| (d) obtain the use (individual) licence to undertake 6 months relevant field training and execute at least 12 ‘training’ blasts under the supervision of a <i>trainer</i> ; and | (d) obtain the use (individual) licence to undertake 6 months relevant field training and execute at least 12 ‘training’ blasts under the supervision of a <i>trainer</i> ; and |
| (e) pass a practical field test and an <i>interview</i> with the SoM. | (e) pass a practical field test and an <i>interview</i> with the SoM. |

Details on application for an MBC are provided in Annex A.

5. APPLICATION FOR RENEWAL OF A MINE BLASTING CERTIFICATE / A USE (INDIVIDUAL) LICENCE

5.1 Under regulation 22(5)(b) of the M(S)R, MBC holders may apply to the SoM to renew their MBC for a period of 3 years. An MBC holder should apply for renewal at least 28 days before the current MBC expires and is required to:

- (a) submit a copy of the current MBC as well as the application (Form No. MIN f4);
- (b) submit a Personal Data Authorization Form (Form No. MIN SC1); and
- (c) pass a security check, a *written examination* and an *interview* with the SoM.

If the applicant has satisfactorily completed a *shot firer training course* or a relevant refresher course endorsed by the SoM within 12 months, the written examination can be waived.

Subject to the applicant’s satisfactory performance in the *interview*, the SoM will issue an MBC to the applicant within 1 working day after the *interview*. The MBC will show the specific category for blasting (surface or underground) and the type of initiation system (normally electric and non-electric) that the holder is qualified to use. The MBC is valid for 3 years from the date of issue.

5.2 If an MBC holder fails to make a renewal application within one year from the expiry date of his/her existing MBC, a renewal application will be treated as a new application for an MBC (i.e., through structured training or by apprenticeship). Notwithstanding, the applicant may attend a refresher training course endorsed by the SoM, rather than the full training course for new shot firers, and the period of structured training required may be reduced, subject to agreement with the SoM, to take due account of the applicant’s previous experience. The holder of an expired MBC must not undertake any duties or activities as a shot firer.

5.3 Under section 157 of the DG(C)R, a use (individual) licence granted or renewed under the Regulation is valid for 12 months or a shorter period as may be specified in the licence by the SoM. Any application for renewal of a use (individual) licence to continue undertaking field training, if required, should reach Mines Division not less than 28 days before the expiry date of the licence (Form No.

Mines Division Practice Note No. 3 (MDPN 3)

Mine Blasting Certificates and Use (Individual) Licences to Use Schedule 1 Dangerous Goods (S1DG) in a Licensed Blasting Site

Issue No.: 1	Revision: 9	Date: 1.11.2022	Page: 5 of 12
--------------	-------------	-----------------	---------------

MIN f13). Requirements for renewal of a use (individual) licence are similar to those for a new application.

6. APPLICATION FOR ENDORSEMENT TO A MINE BLASTING CERTIFICATE

6.1 Under regulation 22(6) of M(S)R, an MBC holder can apply to the SoM for an endorsement to an MBC.

6.2 An MBC holder with a surface blasting or underground blasting qualification only, can apply for an endorsement to cover another category of blasting. The applicant is required to:

- (a) submit a letter to the SoM requesting the endorsement;
- (b) complete satisfactorily a *shot firer training course* or sit a *written examination*;
- (c) provide details of the licensed blasting site where field training is to be obtained, including confirmation from the discharge (blasting) permit holder that the applicant will be allowed to work and be trained under the supervision of a *trainer* at that site;
- (d) undertake field training (the training period should normally involve a minimum of 12 blasts);
- (e) submit the relevant training records (Form No. MIN f19); and
- (f) pass an *interview* with the SoM.

6.3 It is a normal practice to include an endorsement for “electrical shot-firing equipment” to cover the use of electric detonators in the initial application for an MBC on the basis that an electric detonator, in combination with non-electric detonators, is commonly used to initiate a blast in Hong Kong.

6.4 Endorsement to use different brands of non-electric detonator, which are essentially the same in the way they are used, is not required. However, the MBC holder is required to provide the SoM with the training documentation or certificate to prove competence in handling the specific brand of non-electric detonator to be used on a site before being accepted to be the registered shot firer, if such information is not already available on the SoM’s record.

6.5 The MBC qualification to use “electrical shot-firing equipment” is deemed not to include the use of electronic detonators unless specified. An endorsement to use a specific electronic detonator system is not required, but the MBC holder is required to provide the SoM with a certificate issued by the manufacturer of the specific system confirming that the MBC holder is competent to use the system. The SoM, once satisfied with the MBC holder’s records of training and experience, will note on the MBC, against the endorsement to use “electrical shot-firing equipment”, that it also covers the specific electronic shot-firing system.

6.6 The holder of a valid MBC does not require a use (individual) licence under section 45 of the DG(C)R to undertake field training to obtain an endorsement to an existing MBC to cover another category of blasting or the use of a different type of detonating system (e.g. electronic detonators).

Mines Division Practice Note No. 3 (MDPN 3)

Mine Blasting Certificates and Use (Individual) Licences to Use Schedule 1 Dangerous Goods (S1DG) in a Licensed Blasting Site

Issue No.: 1	Revision: 9	Date: 1.11.2022	Page: 6 of 12
--------------	-------------	-----------------	---------------

7. USE (INDIVIDUAL) LICENCE FOR SPECIAL TYPE OF BLASTING WORK

7.1 The SoM may issue a use (individual) licence under regulation 45 of the DG(C)R to an individual to carry out a special type of blasting work, for example:

- use of new explosives or initiation systems, e.g. for demonstration or training purposes
- demolition of structures with explosives
- destruction of deteriorated explosives
- submarine blasting.

An applicant for a use (individual) licence must satisfy the SoM by producing documentary proof, e.g., relevant certification by a government authority or an explosives manufacturer, as appropriate, to show that the applicant possesses sufficient relevant knowledge and experience, and is fully competent to perform the special type of blasting work. The SoM will interview the applicant after verifying the applicant's qualifications and experience. If necessary, the applicant will be asked to take a *written examination*.

8. RECOGNITION OF QUALIFICATION FROM ANOTHER JURISDICTION

8.1 If a person holds a valid shot firer certificate/permit issued under another jurisdiction and wants to apply for an MBC, he/she is required to submit to the SoM an application for a Mine Blasting Certificate (Form I), in duplicate and a Personal Data Authorization Form (Form No. MIN SC1) with the following documents:

- (a) copies of documents, such as relevant licences/permits, certifying that the applicant is a qualified shot firer in another jurisdiction; and
- (b) certified statements on past blasting experience.

Provided the SoM is satisfied that the applicant has the relevant experience to practise in Hong Kong, the applicant will need to take a *written examination* on local requirements and practices, before being *interviewed* by the SoM.

9. RE-EXAMINATION OF APPLICANT

9.1 If an applicant fails a *written examination*, *interview* or practical field test, the applicant will be notified in writing the areas of deficiency. The applicant should take appropriate action to address these deficiencies before applying to retake the *written examination/interview/practical field test*.

Mines Division Practice Note No. 3 (MDPN 3)

Mine Blasting Certificates and Use (Individual) Licences to Use Schedule 1 Dangerous Goods (S1DG) in a Licensed Blasting Site

Issue No.: 1	Revision: 9	Date: 1.11.2022	Page: 7 of 12
--------------	-------------	-----------------	---------------





10. ENQUIRIES ON ISSUE OF AN MBC OR A USE (INDIVIDUAL) LICENCE TO USE S1DG

	Telephone No.
Chief Explosives Officer	3842 7241
Emergency Contact (outside office hours)	8103 0722
CELIMS (Hotline)	3842 7210

(Jessie KWONG Shun-man)
for Commissioner of Mines



Details on application for an MBC

<u>Through structured training</u>	<u>By apprenticeship training</u>
<p style="text-align: center;"><i>Shot firer training course</i></p> <p>To be completed within 12 months prior to starting field training, otherwise, sitting a <i>written examination</i> is required.</p>	<p style="text-align: center;">Training as an apprentice under the supervision of a <i>trainer</i></p> <ol style="list-style-type: none"> i. Before training, the trainee must notify the SoM in writing of the commencement date of training under the supervision of a <i>trainer</i> on a licensed blasting site. The <i>trainer</i> must be a registered shot firer at that site. ii. Provide an outline of the training schedule, which has been agreed with the supervising registered shot firer and the discharge (blasting) permit holder of the licensed blasting site. During the training period, Mines officers may conduct random checks on the adequacy and progress of training. iii. A trainee must complete <u>6 months</u> on site training and have <u>observed</u> at least <u>28 blasts</u> before making an application to the SoM for a use (individual) licence to use S1DG. The required period of training can be accumulated over a period of not more than 3 years.
	
<p style="text-align: center;">Apply for a use (individual) licence under section 45 of the DG(C)R (Form No. MIN f13)</p> <ol style="list-style-type: none"> i. Provide details of the licensed blasting site where field training is to be obtained, including confirmation from the discharge (blasting) permit holder that the trainee will be allowed to <u>work and be trained</u> under the supervision of a <i>trainer</i> at that site. ii. Provide an outline of the training schedule, which has been agreed with the <i>trainer</i> and the discharge (blasting) permit holder of the licensed blasting site. iii. Submit a Personal Data Authorization Form (Form No. MIN SC1). 	<p style="text-align: center;">Apply for a use (individual) licence under section 45 of the DG(C)R (Form No. MIN f13)</p> <ol style="list-style-type: none"> i. Provide detailed personal notes on relevant topics of the Mine Blasting Certificate Examination Syllabus (Annex B) prepared during the training period and the training log sheets (Form No. MIN f19) for each blast that the trainee participated in and observed during the training period. The detailed notes and training log sheets must include key elements of the training, e.g. blast design, preparation and loading of charges, connecting charges to delay sequence, protective measures, site clearance before firing, handling of misfires and contingency measures, checking the blasting location and observing the blast results after firing. The training log sheets must be completed immediately after the relevant blast and be available for inspection upon request by a Mines officer. ii. Provide a Training and Experience Certification Form – Apprenticeship Training (Form No. MIN f15). iii. Provide details of the licensed blasting site where field training is to be obtained, including confirmation from the discharge (blasting) permit holder that the trainee will be allowed to <u>work and be trained</u> under the supervision of a <i>trainer</i> at that site. iv. Submit a Personal Data Authorization Form (Form No. MIN SC1)
	

Pass a security check	Pass a security check and a <i>written examination</i>
↓	↓
<p style="text-align: center;">Pass an <i>interview</i> with the SoM</p> <p>If the applicant cannot demonstrate adequate knowledge to the satisfaction of the SoM during the <i>interview</i>, the trainee may be asked to take a <i>written examination</i> before attending another <i>interview</i> again.</p>	Pass an <i>interview</i> with the SoM
↓	↓
<p style="text-align: center;">Obtain a use (individual) licence to undertake field training under the supervision of a trainer</p> <p>i. A trainee is expected to complete <u>6 months</u> relevant field training and provide evidence to demonstrate significant direct involvement in preparing, reviewing, checking and <u>executing</u> at least <u>12 ‘training’ blasts</u> before making an application to the SoM for a practical field test. The SoM may take appropriate consideration of a trainee’s prior relevant working experience in handling explosives and blasting operations when assessing the duration of field training.</p> <p>ii. For each ‘training’ blast, the applicant must complete a training log sheet (Form No. MIN f19). The log sheets must be completed immediately after the relevant blast and be available for inspection upon request by a Mines officer.</p> <p>iii. When ready for the practical field test, the trainee must submit to the SoM an application for a Mine Blasting Certificate (form: Form I), in duplicate, and a Training and Experience Certification Form – Structured Training (Form No. MIN f14) or a Training and Experience Certification Form – Apprenticeship Training (Form No. MIN f15).</p>	
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Pass a practical field test	
<p>i. The trainee must make arrangements with the discharge (blasting) permit holder of a licensed blasting site for a practical field test, and agree with the SoM a date when a Mines officer can assess the test.</p> <p>ii. During the practical field test, the trainee must demonstrate competence in discharging the duties and responsibilities of a shot firer, including preparing charges, loading and connection of charges, complying with discharge (blasting) permit conditions, implementing precautionary and protective measures, firing the charges, and checking the blast area after firing.</p> <p>iii. A checklist showing the items to be assessed during the practical field test is given in Annex C. The trainee must achieve a pass in all aspects of the test.</p>	
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Pass an <i>interview</i> with the SoM	
<p>i. Upon satisfactory completion of the practical field test, the trainee will be requested to attend an <i>interview</i> with the SoM.</p> <p>ii. Subject to the trainee proving to the satisfaction of the SoM that they are competent to take charge of the blasting operations, the SoM will issue an MBC to an applicant within 1 working day after the <i>interview</i>.</p> <p>iii. The MBC will show the specific category for blasting (surface or underground) and the type of initiation system (normally electric and non-electric) that the holder is qualified to use. The MBC is valid for 3 years from the date of issue.</p>	



Mine Blasting Certificate (MBC)
Examination Syllabus

The written examination covers the following topics:

1. Explosives, detonators and initiation systems
 - types and properties of explosives
 - types of detonators
 - connection and testing of firing circuits
2. Basic rock blasting principles and theory
 - nature of detonation
 - shock wave propagation
 - principles of rock breakage by explosives
3. Drilling operation and site inspection
 - inspection of the blast face
 - setting up and alignment of drill holes
 - checking and measuring of drill holes
 - recognition and recording of relevant information from drill holes (e.g. faults, weathering zone, change of strata, etc.)
4. Blast design and charge calculation
 - (i) For MBC covering surface blasting
 - blasting parameters (e.g. bench height, blast hole angle, depth and diameter, burden, spacing, sub-drill, charging length, stemming, drilling patterns, delay firing sequence, etc.)
 - charge calculation (e.g. charge weight per delay, powder factor, etc.)
 - controlled blasting (e.g. pre-splitting, smooth blasting, etc.)
 - (ii) For MBC covering underground blasting
 - blasting parameters (e.g. blast hole diameter, depth, spacing, charging length, stemming, tunnel face area, drilling patterns, delay firing sequence, etc.)
 - charge calculation (e.g. charge weight per delay, powder factor, etc.)
5. Identification and prevention of risks of flyrock, excessive vibration and air-overpressure
 - flyrock, ground vibration and air-overpressure, causes and effects, compliance monitoring
 - precautionary and protective measures for protection of public against such risks
6. Preparation, loading, firing of charges and destruction of surplus explosives
 - safe handling, loading and firing working practices and procedures
 - examination of blast area after firing
 - documentation of the blast
 - safe disposal of unused or surplus explosives

7. Contingency plan
 - misfire handling and handling of unexploded explosives after a blast
 - charges loaded in blast holes but cannot be discharged on the same day
 - other possible situations (e.g. thunderstorm, heavy rainstorm, etc.)

8. Ordinance and Regulations
 - requirements of DGO and its subsidiary regulations for the manufacture, storage, conveyance and use of explosives, and penalties for offences, and duties and responsibilities of a shot firer and other related site personnel
 - the United Nations classification system of explosives
 - requirements for packing, marking, labelling, and placarding
 - safe transport of explosives and requirements for approved vehicles
 - Mode A Store for storage of SIDG (blasting explosives), its safety and security

- End -



Checklist for
Key Items to be Assessed in Practical Field Test for an MBC

1. Examination of free face and area of the blast
2. Checking of drilling pattern against blasting design
3. Marking up of holes/delay pattern
4. Measuring of blastholes (checking of hole size, spacing, depths and burden)
5. Preparing of a primer
6. Loading of explosives
(in particular front row burden control for surface blasting, and stemming control)
7. Hook-up of detonators
8. Implementation of evacuation procedure, precautionary and protective measures
9. Firing of charges and checking to be carried out before firing
10. Checking the blast area after firing and handling of misfires and unexploded explosives
11. Destruction of spare detonators (if any)
12. Verification of explosives delivered to a site

- End -