

**Mines Division Practice Note No. 3 (MDPN 3)
Application for Mine Blasting Certificate or Authorization to Use Explosives**

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1. INTRODUCTION

- 1.1 Under Regulation 47 of the Dangerous Goods (General) Regulations Cap. 295B, no person shall prepare any charge for blasting or fire any charge unless he is in possession of a valid Mine Blasting Certificate (MBC) issued under Regulation 22 of the Mines (Safety) Regulations Cap. 285B, or is otherwise authorized by the Authority.
- 1.2 This Practice Note is intended primarily to provide information to persons who wish to apply for an MBC or an authorization to use explosives.
- 1.3 Any feedback on the contents of this Practice Note should be directed to the Chief Geotechnical Engineer/Mines of the Geotechnical Engineering Office, Civil Engineering and Development Department.

2. RELATED DOCUMENTS

- 2.1 Dangerous Goods (General) Regulations Cap. 295B
- 2.2 Mines (Safety) Regulations Cap. 285B

3. APPLICATION FOR MINE BLASTING CERTIFICATE THROUGH STRUCTURED TRAINING

- 3.1 Structured training leading to MBC qualification consists of two components:
- (1) Shotfirer training course
The course should cover the topics listed in the MBC Examination Syllabus in Annex A and shall have obtained an endorsement from the SoM. The duration of the course should be about 30 hours. An examination should be held at the end of the course to test the knowledge of the attendees having attained to the required standard before a certificate is awarded.
 - (2) Field training.
The field training is to allow the applicant to practise the knowledge learned from the course and to obtain hands-on experience on blasting under the

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supervision of a registered shotfirer (i.e. a shotfirer registered in the blasting Permit) in a licensed blasting site.

- 3.2 On satisfactory completion of an endorsed shotfirer training course, the applicant should submit an application to the SoM for an authorization under Regulation 47 of the Dangerous Goods (General) Regulations to proceed to field training after the completion of the shotfirer training course. The application form may be obtained from the CEDD website: <http://www.cedd.gov.hk/eng/forms/doc/authorize.pdf>
- 3.3 In applying for the authorization, the applicant has to confirm which blasting site that he will be engaged in to obtain practical hands-on experience on blasting. He also has to demonstrate that an agreement has been obtained from the licensed blasting site to allow him to work under the supervision of the registered shotfirer in that site. The applicant will be interviewed by the SoM. At the interview, the applicant has to show that he has adequate knowledge in assisting the work of a shotfirer, including the safety and security of explosives in storage, transport and use, and the liabilities and offences under the Dangerous Goods Ordinance and its subsidiary legislations. The authorization, once given, will allow the applicant to prepare any charge for blasting or fire any charge under the supervision of the registered shotfirer in that licensed blasting site.
- 3.4 As a general guidance, the applicant is expected to have 6 months relevant site working experience and have attended at least 12 training blasts before he makes an application to the SoM for a practical field test to demonstrate his competence for an MBC. Prior relevant working experience before attending the field training will also be given due consideration. On obtaining sufficient experience and being ready for the practical field test, the applicant may submit to the SoM an application form “Application for a Mine Blasting Certificate” completed in duplicate. The application form may be downloaded from the CEDD website: <http://www.cedd.gov.hk/eng/forms/doc/mbc.pdf>. The application should also include a Training and Experience Certification Form (Annex B) properly completed and certified by the Contractor’s Representative and the supervising registered shotfirer.

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3.5 The applicant has to make arrangement with the blasting permit holder of the licensed blasting site for the practical field test, and notify the SoM of the date so that staff of Mines Division could attend the blast. During the practical field test, the applicant must show that he is competent in discharging the duties and responsibilities of a shotfirer, including preparing charges, loading and connection of charges, complying with blasting permit conditions, implementing precautionary and protective measures, firing the charges, and checking the blast area after firing. A checklist showing the key items to be assessed during the practical field test can be found in Annex C.

3.6 On satisfactory assessment of the practical field test, the SoM will issue an MBC to the applicant within 3 working days. The MBC will show the category of blasting operation (surface or underground) and the type of initiation system (normally electric and non-electric) that the holder is qualified to handle, and it shall be valid for a period of 3 years from the date of issue.

4. APPLICATION FOR MINE BLASTING CERTIFICATE BY APPRENTICESHIP

4.1 Before the commencement of training by apprenticeship, a person who intends to apply for an MBC should notify the Superintendent of Mines (SoM) in writing the commencement date of his training by a Trainer on a blasting site. During the training period, Mines Division would conduct random check on the progress of his training.

4.2 The Trainer must satisfy one of the following requirements:

- (i) A valid MBC holder with at least 5 years' working experience as a shotfirer on blasting sites, or
- (ii) A trainer recognized by a government authority, or
- (iii) A trainer endorsed by an explosives manufacturer.

The qualifications of the Trainer should be relevant to the category of blasting and the type of initiation system for which the person is being trained.

4.3 A person is expected to have completed a training period of 12 months on site and

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to have observed at least 40 blasts before he can apply to the SoM for an MBC. The required period of training could be accumulated over 3 years' time.

4.4 On completion of the period of training, a person may apply to sit for a written examination by submitting to the SoM an application form "Application for a Mine Blasting Certificate" completed in duplicate, together with the following documents. The application form may be downloaded from the CEDD website: <http://www.cedd.gov.hk/eng/forms/doc/mbc.pdf>.

- (i) Detailed notes prepared personally by the applicant on relevant topics of the Mine Blasting Certificate Examination Syllabus (Annex A) during the training period.
- (ii) Training log-sheets for each blast that the applicant had participated in and observed during the training period.
- (iii) A Training and Experience Certification Form (Annex D) properly completed and certified by the Contractor's (Blasting Permit holder's) Representative and the Trainer.

The detailed notes and training log-sheets should 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 misfire and contingency measures, checking the blast area and observing the blast results after firing.

4.5 The time allowed for the written examination is 3 hours, and it consists of Part A on multiple choice questions and Part B on short questions. An applicant must pass both parts of the examination in a single sitting, and the passing mark for each part is 80%. Part A contains mandatory questions, which are marked with an asterisk (*). A wrong answer to any one of the mandatory questions will result in failure of the written examination.

4.6 On passing the written examination, the applicant will be invited to attend an interview with the SoM. At the interview, the applicant must demonstrate that he has adequate knowledge on the duties and responsibilities of a shotfirer, including the safety and security of explosives in storage, transport and use, and the liabilities and offences under the Dangerous Goods Ordinance and its subsidiary legislations.

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4.7 After the applicant has successfully passed the interview, the SoM will issue an authorization to him for conducting a practical field test under the supervision of the Trainer at a licensed blasting site.

4.8 The procedures for arranging a practical field test, assessment and the issue MBC certificate are same as Section 3.5 and Section 3.6.

5. APPLICATION FOR RENEWAL OF MINE BLASTING CERTIFICATE

5.1 Under Regulation 22 (5) (b) of the Mines (Safety) Regulations Cap. 285B, an MBC holder may apply to the SoM to renew his MBC for another period of 3 years.

5.2 The applicant should apply for renewal at least one month before his MBC expires. The applicant must comply with the following requirements:

(a) Submit, together with a copy of his MBC, a completed application form “Application for Renewal of Mine Blasting Certificate”, which may be obtained from the CEDD website:

<http://www.cedd.gov.hk/eng/forms/doc/mbcren.pdf>.

(b) Pass a written examination and attend an interview to the satisfaction of the SoM. The scope of the written examination and the interview will be the same as that for fresh applicants in Section 4.5 to Section 4.6. If the applicant has satisfactorily completed a shotfirer training course or a relevant refresher course endorsed by the Mines Division, the written examination can be waived.

5.3 If an applicant fails to make a renewal application within one year from the expiry date, any renewal application made after that date shall be treated as a fresh application for a new MBC by following the procedures as detailed in Section 3 or Section 4 above. A holder of an expired MBC shall not undertake any duties or activities as a shotfirer.

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6. APPLICATION FOR ENDORSEMENT ON MINE BLASTING CERTIFICATE

6.1 Under Regulation 22 (6) of Mines (Safety) Regulations Cap. 285B, an MBC holder may apply to the SoM in writing to vary his certificate by an endorsement on his MBC.

6.2 Endorsement to cover an additional category of blasting (surface blasting or underground blasting)

6.2.1 An MBC holder with only surface blasting or underground blasting qualification can apply for endorsement to cover another category of blasting by following the procedures below:

- (a) Apply for authorisation to undergo practical field training under the supervision of a registered shotfirer in a licensed blasting site in accordance with Section 3.3. For an MBC holder who has not attended an endorsed shotfirer training course relevant to the category of blasting that he is applying for, he will be required to attend a written examination similar to Section 4.5 before he is interviewed by the SoM and obtains the authorisation.
- (b) Obtain working experience in the practical field training. Proceed to arrange with the SoM for conducting a practical site test when sufficient working experience is obtained, following the same procedures as Section 3.4 and Section 3.5.
- (c) On satisfactory assessment of the practical field test, the SoM will issue an endorsement to the applicant to cover the additional category of blasting.

6.3 Endorsement to cover an additional type of initiation system

6.3.1 MBC holders are normally trained to be capable of handling the electric and non-electric detonator initiation systems. The types of initiation system that an MBC holder is qualified to handle are shown on his MBC. If an MBC holder wants to vary his MBC to include an additional type of initiation system, such as electronic detonator initiation system, the MBC holder must comply with the

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following requirements:

- (a) Provide documentation to prove that he has satisfactorily completed a training programme endorsed by an explosives manufacturer on the use of the additional type of initiation system being applied for
- (b) Apply in writing and sit for a written examination.
- (c) Attend an interview with the SoM and conduct a practical field test as described in Section 3.5 above.

On satisfactory completion of the above processes, the SoM will issue an endorsement on the MBC for the additional type of initiation system.

6.3.2 Endorsement of 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 SoM with the training documentation or certificate to prove that he is competent in handling that brand of detonator before he is allowed to be nominated as a Registered Shotfirer for using that brand of non-electric detonator to conduct blasting operation on site, if such information is not yet available in SoM's record.

7. **AUTHORIZATION FOR SPECIAL TYPE OF BLASTING WORK**

The Commissioner of Mines may issue an authorization under Regulation 47 of the Dangerous Goods (General) Regulations Cap. 295B, to a person to carry out a special type of blasting work, e.g.

- Demonstration or use of new explosives or initiation system,
- Demolition of structures with explosives,
- Destruction of deteriorated explosives, and
- Submarine blasting.

The applicant for the authorization must satisfy the Commissioner of Mines by producing documentary proof, e.g. relevant certification by a government authority or explosives manufacturer, as appropriate, to show that he possesses sufficient relevant knowledge and experience, and is competent to perform that special type of blasting work. He must pass a written examination and attend an interview to the satisfaction of the SoM similar to that described in Section 4.5 and Section 4.6 above.

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8. RECOGNITION OF QUALIFICATION FROM OTHER JURISDICTION

If a person holds a valid Shotfirer Certificate/Permit issued by another jurisdiction, he may apply in writing directly to the SoM for an MBC. He has to submit (a) copies of documents such as relevant licence/permit certifying that he is a qualified shotfirer in another country or jurisdiction; and (b) certified statements on past blasting experience. Provided the SoM is satisfied that the applicant has the relevant experience to practice in Hong Kong, a written examination and an interview will be arranged for the applicant as detailed in Section 4.5 and Section 4.6 above.

9. RE-EXAMINATION OF APPLICANT

If the applicant fails in the examination (written examination, interview or practical field test), he will be notified in writing the areas in which he has failed. The applicant should take appropriate actions to address the areas of deficiency before re-taking the examination.

10. ENQUIRY

Any enquiry on matters related to the issue of MBC or authorization to use explosives may be directed to the following officer:

Chief Explosives Officer

Tel. No. 2716 8680

Original Signed

(J B Massey)
for Commissioner of Mines



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
 - 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 Dangerous Goods Ordinance (Cap. 295) and its subsidiary regulations for the manufacture, storage, conveyance and use of explosives, and penalties for offences
 - 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 explosives, its safety and security



**Mine Blasting Certificate (MBC) Application
Training and Experience Certification Form
for Structured Training Applicant**

Part I – Details of Applicant

Name of Applicant: _____ Sex : _____ Age : _____

HK ID Card No. / Passport No.

				*	*	*	*	*	*
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 (Please provide the first four alphabets/numerals)

Part II – Field Training Certified by Supervising Registered Shotfirer

Field Training of Applicant named in Part I				Supervising Registered Shotfirer			Shotfirer's Signature with date [see Notes (1) & (2)]
Period (month / year)		Details of blasting works e.g. type of blasting, type(s) of initiation system involved during the field training	No. of training blasts worked by Applicant	Name	MBC No.	Telephone No.	
From	To						

Part III – Relevant Site Working Experience Certified by Contractor

Project Name or Blast Site Location, and Name of Contractor	Position and Responsibility ⁽³⁾ of Applicant	Period (month / year)		Contractor's Representative (e.g. Project Director or Manager, Site Agent)			Contractor's Signature with date [see Notes (1) & (2)]
		From	To	Name	Title	Telephone No.	

Signature of Applicant: _____

Date: _____

Notes:

- (1) By signing the form, the Supervising Registered Shotfirer or the Contractor's Representative, certifies that to the best of his/her knowledge, the information given in the corresponding row in the above table is true and correct.
- (2) It is an offence in law to make any false certification of an applicant's training period and experience. This will also result in disqualification of the application.
- (3) For relevant site working experience prior to field training, the description of the responsibility should elaborate how the working experience is related to the work of a shotfirer.



Checklist for
Key Items to be Assessed in Practical Field Test for 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
- (10) Checking the blast area after firing



**Mine Blasting Certificate (MBC) Application
Training and Experience Certification Form
for Apprenticeship Applicant**

Part I – To Be Completed By Applicant

Name of Applicant: _____ Sex : _____ Age : _____

HK ID Card No. / Passport No.

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 (Please provide the first four alphabets/numerals)

Part II – To Be Completed By the Contractor (Blasting Permit Holder)

Project Name or Blast Site Location, and Name of Contractor	Name of Trainer (Experienced Shotfirer)	Training Period		Contractor's Representative (e.g. Project Director or Manager, Site Agent)			Contractor's Signature with date [see Notes (1) & (2)]
		Period (month / year)		Name	Title	Telephone No.	
		From	To				

Part III – To Be Completed By the Trainer (Experienced Shotfirer)

Training given to Applicant named in Part I				Trainer (Experienced Shotfirer)			Trainer's Signature with date [see Notes (1) & (2)]
Period (month / year)		Details of blasting works e.g. type of blasting, type(s) of initiation system	No. of blasts observed by Applicant	Name	MBC No.	Telephone No.	
From	To						

Applicant's signature: _____ **Date:** _____

Notes:

- (1) By signing the form, the Contractor's Representative or Trainer, certifies that to the best of his/her knowledge, the information given in the corresponding row in the above table is true and correct.
- (2) It is an offence in law to make any false certification of an applicant's training period and experience. This will also result in disqualification of the application.