

Chapter 1 GENERAL REQUIREMENTS

All work with explosives shall be conducted under the direct supervision of a qualified blaster who holds a current *NPS-65* blasters certificate and/or equivalent. The certification shall specify the type of blasting qualifications, such as structural/fireline/avalanche, etc. Transportation, use, and mixing of component explosives, storage, magazine inspection, and disposal shall be done by a certified blaster, with the appropriate endorsements, if required to conduct specialized blasting activities. When two or more blasters are working together, one shall be the blaster-in-charge designated either by the supervisor or the blasters themselves.

The Doctrine of Absolute Liability-"Whoever is assigned, or assumes physical control of an explosive substance is deemed to have assumed ABSOLUTE LIABILITY in any case or accident or loss involving that substance".

FEDERAL REGULATIONS

Comply with all Federal, State and local laws as applicable. Use the most stringent regulation when a difference appears. Federal regulations controlling transportation, storage, and use are listed references.

- Warn residents in or near blasting areas well in advance (at least 24 hours) of actual blasting. Post flaggers or signs or verbally warn others of blasting operations. A seasonal or continuing notice is adequate for recurring work, such as for avalanche control.
- When blasting in the vicinity of oil, gas, electric, fire alarm, telegraph and natural gas utilities, notify representatives of such utilities at least 24 hours in advance of blasting. Specify the location and intended time of such blasting. Confirm verbal notice in writing. For recurring work in a relatively confined area, such as for avalanche control, written notice before the activity may be waived by the regional blasting officer, and/or park chief blaster.
- When blasting in congested areas or near railways, highways, or other structures that may be damaged, take special precautions in loading, delaying, and initiation of explosives. Confine each blast with mats or other methods to control fragments, air blasts, and vibration. If necessary, obtain assistance from the regional blasting officer or other qualified personnel.

- Prohibit smoking, firearms, matches, open-flame lamps, and other fires, flames or heat-producing devices and sparks within 50 feet of explosive magazines or while explosives are being handled, transported or used.
- Allow no one to handle explosives while under the influence of liquor, narcotics or prescription drugs that impair performance.
- Never abandon explosives, ammunition or blasting agents.
- Never fight a fire that is in imminent danger of contacting explosives. Evacuate the area to a safe distance and prevent reentry while danger exists. Guard the fire to prevent inadvertent access, exposing anyone to danger.
- If possible, conduct blasting operations after sunup and before sundown and during periods of clear visibility. If artificial light is necessary, use approved battery-activated lights. Flashlights shall have nonconductive cases and shall not touch explosives.
- Use exploding bridgewire detonators (EBW) or electric blasting caps (EBC) either instant or delay, nonelectric system (NONEL) or detcord cap and cord assemblies for exploding charges. Do not use EBCs near power lines or radio installations in avalanche control work, or near any source of extraneous electricity that may prematurely detonate the EBC.
- Never carry primers or loose detonators in pockets or in the same container with explosives.
- Never store or transport detonating cord in the same container with detonators.
- Use only explosives or explosive materials approved by regional blasting officer and/or stipulated in *NPS-65*.

TRAINING, CONTRACTING, AND OVERVIEW OF TRANSPORTING, STORING, AND HANDLING OF EXPLOSIVES

Personal protective equipment shall meet current Occupational Safety and Health Administration (OSHA) construction industry standards and NPS Safety Management Program requirements, and shall be kept available in sufficient quantity to provide for all blasting crew personnel, including guards.

TRANSPORTATION

All transportation of explosives shall follow Department of Transportation (DOT), Federal Aviation Administration (FAA), Office of Aircraft Services (OAS), U.S. Coast Guard (USCG), state and local regulations, and NPS standards, whichever are applicable and most stringent. Vehicle transport of explosives shall be made by no more than two persons, at least one of whom is a licensed blaster or explosives handler. One shall possess a current CDL with Hazmat endorsement. The person receiving delivered explosives from vendor or other sources shall be a licensed explosives handler or blaster.

STORAGE

Storage of explosives shall be in magazines of the proper BATF class for the particular explosive, detonator, or blasting agent. Magazines shall be constructed in accordance with BATF and OSHA standards, following the most stringent requirements applicable to each magazine feature, and shall be placed in accordance with the American Table of Distances. Each magazine shall have two shrouded, five-tumbler locks meeting BATF requirements, and all magazine keys shall be on a separate lock series from all other locks and shall be kept under locked security. A key shall be assigned to the chief park blaster and/or the licensed explosives handler or blaster designated as the magazine operator; no keys shall be assigned to any other employees.

Magazines shall be visually inspected for any evidence of tampering at least once every seven days. There shall be no overnight storage of explosives other than in appropriate BATF-class storage facilities.

INVENTORY

Inventories shall be kept on all explosives, blasting agents, detonators and primers, including unmixed binaries. Permanent storage inventories shall be maintained by the designated magazine operator, field storage inventories by the blaster-in-charge. Inventories shall be by cartridge count and cap count, not by box or carton count (see Chapter 3). Working inventories shall be maintained on a daily basis. Permanent storage inventories shall be by withdrawal, return, and resupply, with physical magazine inventory checks at least monthly. Permanent storage inventories shall be by a “two-mode” system, with inventory sheets in each magazine or field storage location, and a hard-bound permanent inventory book in the possession of the magazine operator. Magazine and field storage inventories must balance at the start and end of each day; magazine and hard-bound inventories must be reconciled and must balance at any time a physical inventory check is made. Inventory entries shall be made in ink, and shall include: a) date, b) material and quantity removed/returned/resupplied, c) name of person being issued or returning materials, or in case of resupply, name of manufacturer, d) lot number and date of manufacture, e) name of person issuing/receiving materials, and f) purpose and location of materials used. Inventory inconsistencies shall be resolved upon discovery, with full explanation recorded in the hard-bound inventory book.

USE AND HANDLING OF EXPLOSIVES

Only an NPS licensed blaster shall use explosives. The blaster may be assisted only by another trained and licensed blaster. All handling and use of explosives shall follow the practices outlined in the NPS Blaster’s Handbook, Director's Orders, the standards and recommendations of OSHA, BATF, DOT, IME, Bureau of Mines (BOM) and the manufacturer of the product being used shall define standard practices to be followed. Violation of these guidelines shall be sufficient cause for immediate revocation of blaster certification by the regional blasting officer, or appropriate contractual action by the contracting officer as initiated by the Denver Service Center blasting officer or a certified blasting inspector.

BLAST AREA SECURITY

Area security shall be the responsibility of the blaster-in-charge and shall be sufficient to preclude injury to any person, including those not directly involved in blasting operations, and all property. All persons serving as guards shall be thoroughly versed in their role and responsibilities by the blaster-in-charge. Signing and “positive-response” signal systems shall conform to OSHA and Manual of Uniform Traffic Control Devices (MUTCD) requirements, and N.P.S. 65 Handbook.

BLASTING SPECIALTIES

Blasting operations requiring specialized techniques or products, such as delay blasting, pre-splitting, avalanche control, fireline blasting, shaft or tunnel work, and demolition, shall be performed only by a blaster specifically certified for the particular specialty by reason of training and experience.

BLAST RECORDS

All blasts shall be recorded. Repetitive single blasts may be recorded as a group on a cumulative daily basis. Multiple-charge blasts shall be recorded individually, giving the following information: a) date and time, b) location, c) weather, d) material being blasted and estimated volume or amount, e) explosive product and quantity used, f) priming, detonation and initiation system used, g) powder factor, blast design, with sketch if appropriate, h) blast results, and i) any problems encountered.

The chief park blaster shall maintain a file of park blast records, each record being retained for a least three years, and shall submit copies of current blast records to the regional blasting officer upon request. The park blast record file constitutes a body of data by which the suitability and effectiveness of products and techniques may be judged.

DISPOSAL

In most cases, disposal should be done by the explosives supplier in accordance with IME policy. In remote field operations, should disposal of oversupply be preferable to transport for safety reasons, it shall be directly supervised by the blaster-in-charge and done only by persons thoroughly trained in proper disposal methods. Old, deteriorated or otherwise unstable explosives and detonators shall only be disposed of by persons specifically trained and experienced in such disposal; the location of such unstable products shall be immediately secured and guarded as if a blast was about to take place until disposal has occurred. The regional blasting officer shall be notified prior to any explosives disposal being done by National Park Service personnel in other than remote field situations where prior notification is not possible for safety reasons.

ACCIDENTS AND THEFT

Accidents involving explosives shall be reported immediately to the park superintendent, park safety officer, chief park ranger and chief park blaster, who shall promptly notify the regional or DSC blasting officer (as appropriate) and regional safety manager. In any case of theft or loss of explosives, the park superintendent, chief park ranger, and chief park blaster shall be promptly notified; such theft or loss shall also be reported within 24 hours to the local office of BATF, the park safety officer, the regional or DSC blasting officer (as appropriate), the regional safety manager, and law enforcement specialist. A Blasting Review Board meeting shall be held within three working days of any theft of, or accident with explosives.

NON-NPS USERS OF EXPLOSIVES

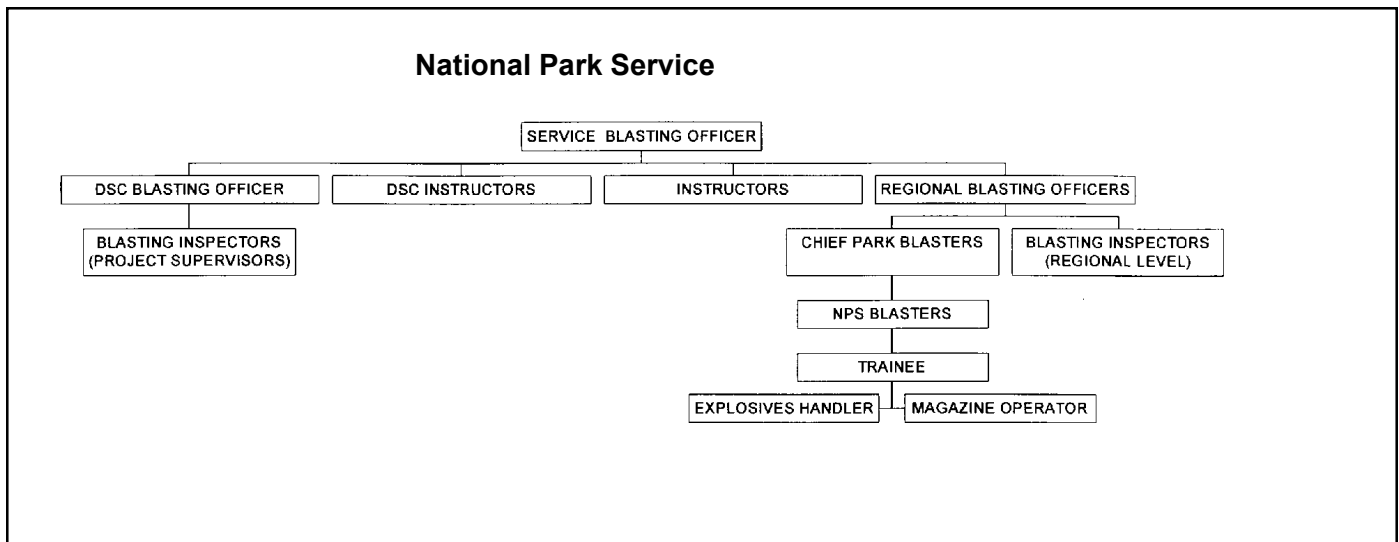
All persons or entities utilizing explosives within the jurisdictional limits of the National Park Service shall conform to the requirements of this policy and applicable federal, state, and local regulations. All NPS promulgated special use permits, cooperative agreements, purchase orders, concession contracts, and construction and maintenance contracts in which the use of explosives may be anticipated shall contain the NPS standard Explosives Specification, implementing the intent of this policy and program.

This standard specification or clause shall specifically address: a) blaster designation and qualification, b) blasting crew qualification, c) transportation, storage, handling, and use of explosives, d) blasting plans and records, e) safety plans, f) disposal of explosives and g) any other subjects related to a specific need. Such blasting operations shall be accomplished only under the inspection of NPS licensed blasting inspectors. The chief park blaster shall be available as a technical consultant to the contracting officer's representative on any contract involving explosives.

EXPLOSIVES USE PROGRAM

NPS PERSONNEL

All persons handling, transporting or using explosives shall be certified (licensed). All certified blasters shall possess a current Standard Red Cross First Aid certification, or equivalent, and a current cardiopulmonary resuscitation (CPR) certification. All personnel shall be in good physical and mental condition and not be addicted to or under the influence of alcohol, drugs, strong medications, or intoxicants of any kind when using, handling or transporting explosives. There shall be no language barrier within any blasting crew. All persons handling, transporting or using explosives are subject to the drug testing program.



(Figure 1-1) NPS Blasting Program organizational chart.

NOTES: (1) All positions within the organization are, or may be, collateral duty in nature.
 (2) Many of the positions shown can, or should be, combined into the duties of one person. For instance, within a small park, the chief blaster, NPS blaster, blasting inspector and magazine operator could easily be the same individual.
 (3) When on a blasting job, the blaster becomes blaster-in-charge and assumes full responsibility and authority for all aspects of the blast and related activities; no one can override that authority without assuming the responsibilities of the blaster-in-charge and relieving the original blaster of all liability.

National Park Service Blasting Officer

Referred to as the Service blasting officer. May be a collateral duty position, not necessarily located in the Washington Office. Shall have at least the 40 hours of Explosives and Blasting Safety Training, and must be familiar with all aspects of NPS blasting operations. The Service blasting officer shall be nominated by the NPS safety manager, approved by the Associate Director, Operations, and appointed by the NPS Director.

Duties:

- Serves as overall coordinator of the NPS Blasting Program, and in a technical advisory capacity for blasting operations, and training in the National Park Service.
- Supervises all Explosives Instructor Training that takes place in the Service, and has the responsibility and authority for issuance, suspension, or revocation of Instructor certifications.
- Stays abreast of and disseminates information on advancements and developments in blasting products and methodology.
- Maintains a library of training materials, aids, and sources for use by NPS explosives instructors.
- Communicates with NPS safety manager, Associate Director of Operations, and regional and DSC blasting officers regarding the NPS Blasting Program, procedures, and regulations.
- Develops an annual synopsis of NPS blasting activities, and the results of Blasting Review Boards, and distributes them to all regional blasting officers and the DSC blasting officer.
- Serves as the officer of final appeal on cases of suspension or revocation of certification, and in cases of requests for policy variance that have been denied by a regional blasting officer.

Regional Blasting Officer

May be a collateral duty position, not necessarily located in the NPS Regional Office. Shall have at least 40 hours of NPS Explosives and Blasting Safety Training, and must be familiar with all aspects of NPS blasting

operations within the region. The regional blasting officer shall be nominated by the regional safety manager, approved by the Associate Regional Director, Operations, and appointed by the Regional Director.

Duties:

- Serves as overall coordinator of the Blasting Program, and in a technical advisory capacity for blasting operations, within the region; reviews contractor blasting plans on regional or park level contracts.
- Stays abreast of, and disseminates information on advancements and developments in blasting products and methodology; disseminates information provided by the Service blasting officer.
- Supervises all explosives training that takes place in the region and has the responsibility and authority for issuance, suspension, or revocation of blaster certifications.
- Reviews and approves or disapproves any requests for variance from the Policy and Blasting Program arising from NPS areas within the region.
- With the regional safety manager, establishes a Blasting Review Board to investigate cases of accident or theft involving explosives.
- Maintains a current roster of Blasting Program participants, certifications and experience, including specialties.
- Communicates with regional safety manager, Associate Regional Director of Operations, DSC, and other regional blasting officers, superintendents, park safety officers, and park personnel involved in the Blasting Program regarding blasting policy, procedures, and regulations.

Chief Park Blaster

Certified NPS blaster who is best qualified by experience, training, and position within the park organization to guide and oversee all park activities involving explosives. The chief park blaster shall be appointed by the superintendent; the regional blasting officer may recommend a candidate for appointment.

Duties:

- Serves in a technical advisory capacity for blasting operations in that park.
- Has the responsibility and authority for supervising the blasting program and activities in that park.
- Stays abreast of and disseminates information on advancements and developments in blasting products and methodology.
- Administers tests and disseminates information provided by the regional and service blasting officers.
- Maintains blast records and technical library; submits copies of blast records to the regional blasting officer upon request.

Blaster-in-Charge

The blaster having the authority and ultimate responsibility for all aspects of the blast and its results. There shall be a designated blaster-in-charge for each blast. The blaster-in-charge shall maintain a written record of blasts and submit it to the chief park blaster. A qualified person in charge of a blasting operation. Also, a person who has passed the test approved by NPS/65, which certifies his or her qualifications to conduct and supervise blasting activities.

Blaster

National Park Service employee who has successfully completed 40 hours of NPS Explosives and Blasting Safety Training, with at least three years prior experience as a licensed blaster-in-training or blaster (3 blast projects a year); recommended by the explosives instructor, approved and licensed by the regional blasting officer with 24 hours of recertification training and successful completion of examination. Capable of effec-

tively designing and safely executing blasting operations necessary to meet most NPS blasting needs. Blasting specialties in which the blaster is qualified will be listed on the back of the NPS blaster's license.

The term *specialty* applies to those blasters who have received advanced training in rock mechanics, explosives product technology and blast design, and demonstrated the capability to design and successfully execute complex multiple-hole delay blast systems. Emphasis at this level is on controlled results of more complex blasting problems. It is recommended not mandatory that each blaster should obtain a valid state blaster's license within one year where applicable, after receiving NPS certification, or upon transfer to a unit in another state which issues a state license. All licensed blasters must possess a current commercial drivers license with appropriate endorsements as well as a current medical examiners certificate.

Upon recommendation of the chief park blaster and approval of the regional safety manager and Service blasting officer, the regional blasting officer may issue a blaster's license for a specific length of time—not to exceed the duration of original certification—to a person whose exceptional or specific experience and training qualifies them to conduct blasting operations. A written examination shall be required, and familiarity with NPS Blasting Policy proven. Note: (Blaster) Included under general/level 3 license authorization.

Trainee

Entry-level program participant. A person who has met the requirements of 40 hours of NPS Explosives and Blasting Safety Training, but lacks the experience to qualify for blaster certification. The blaster-in-training must work directly under the supervision of a licensed NPS Blaster, and be provided qualifying experience within three years. If qualifying experience is not obtained, certification will lapse. The chief park blaster must recommend the trainee for blaster status, and may recommend that additional experience be obtained prior to the issuance of blaster certification.

Explosives Handler

A person who has successfully met the requirements of the explosives handler portion of NPS Explosives and Blasting Safety Training. An explosives handler can transport and/or store explosives and may participate in blasting operations under the direct supervision of a licensed NPS blaster, but in no case shall prime, load, connect, or initiate any blast. Note: (Explosive handler) Include under trainee authorization.

Magazine Operator

A person certified and designated by the chief park blaster to manage and be responsible for permanent explosives storage magazines. A trainee/handler/magazine operator will be carded under the trainee authorized for storage and transportation. Must have a minimum of 8 hours in explosive storage and does not require a C.D.L. Note: (Magazine operator) Include under trainee authorization.

Blasting Inspector

Either park, regional or DSC personnel assigned as inspector or contracting officer's representative (COR) on a NPS contract in which blasting is involved. Blasting inspectors shall have completed a minimum of 40 hours of NPS Explosives Safety or DSC Blasting Inspection Training, and must be certified as a blasting inspector by the DSC or Regional Blasting Officer, as appropriate.

Explosives Instructor

A knowledgeable and experienced NPS Blaster with the proven ability to effectively instruct technical courses and to examine persons for technical competency, recommended by the regional blasting officer and certified by the National Park Service blasting officer. Only an instructor certified for specialty courses may instruct and recommend licensing for those specialties. Instructor ratings are: explosives handler, blaster, and

specific specialties. Explosives instructor will receive a memo format for his/her records. This *instructor* designation will not be issued in a card format, but will be kept on record in the Service blaster's files.

To become instructor-rated, the person desiring the rating should inform their chief park blaster and regional blasting officer; the blasting officer can designate that person as an assistant instructor. Each instructor must serve as an assistant instructor for at least one class of the same level that they wish to instruct. The instructor supervising an assistant instructor shall give a thorough oral and written evaluation of performance, including recommendations for further improvement, and send a copy of the written evaluation to the regional blasting officer.

Blasting Inspection Instructor (Denver Service Center)

Nominated by the DSC blasting officer, appointed by the DSC safety officer with approval of the DSC Manager, and certified by the Service blasting officer, shall have not less than 80 hours of training in blasting safety, materials, methods and techniques (including 40 hours of NPS Explosives and Blasting Safety Training), and extensive field experience on projects which include significant blasting operations.

Assistant Instructor

May be recommended by a chief park blaster or explosives instructor, is appointed by the regional blasting officer, and is currently licensed as a NPS blaster. The assistant instructor shall, prior to assisting in class instruction, author and submit for review to the supervising instructor and regional blasting officer a complete set of class lecture notes appropriate for the level of class for which the instructor rating is sought.

The same procedures shall apply to assistant instructors for blasting inspection classes, with recommendation by a chief, branch of construction, or instructor, appointment by the DSC blasting officer, and current certification as a NPS Blasting Inspector.

TRAINING

GENERAL EXPLOSIVES AND BLASTING SAFETY

Classes shall be no larger than stipulated by the supervising instructor for courses that include field operations, with a minimum of two instructors or one instructor and one assistant instructor. In no case shall an instructor or assistant instructor supervise more than five participants at one time in field operations. Each region in which blasting occurs annually should have at least two instructors. The regional blasting officer shall approve any explosives training conducted in that region. Standardized NPS explosives training courses shall include:

- **Explosives and Blasting Safety** – At a minimum, a 40-hour course, including eight hours of field exercises, thoroughly covering the subjects shown in the following section. For participants lacking prior experience, only ratings of *trainee* may result from course attendance. A minimum of a 24 hr recertification course is required at 3 year intervals for blasters who can demonstrate and document previous explosive training and experience,
- **Blasting Inspection (Denver Service Center)** – At a minimum, a 40-hour course, thoroughly covering the subjects shown in the next section, and designed to give a comprehensive view of materials, systems and methods to be checked in determining compliance with safe blasting practices in contractors' operations.
- **Other Training** – As appropriate, courses or seminars of at least eight hours, covering specific blasting

topics (specialized blasting, problem areas, hazard analysis, and new product or other technology) may be held. The regional blasting officer shall distribute technical bulletins to all park blasters as necessary to stay informed of new technology or information. The Service blasting officer should review and evaluate the content of any proposed non-NPS training courses for relevance to NPS needs.

STANDARD TRAINING COURSES: MINIMUM CONTENTS

Initial Explosives and Blasting Safety Recertification 40 Hours

- a. Terms and Definitions
- b. Rules and Regulations, including NPS Blasting Program
- c. Commercial Explosives - history, properties, uses
- d. Detonators - history, properties, uses
- e. Primers and Boosters
- f. Safety Hazards - impact, heat, propagation, extraneous electricity, radio frequency energy, fumes
- g. Personal Protective Equipment
- h. Explosives Deterioration and Disposal
- i. Transportation - vehicles
- j. Storage and Inventory
- k. Area Security and signal systems
- l. Accident and theft procedures
- m. Methods of initiation - systems, materials, equipment, testing
- n. Loading, tamping, stemming
- o. Safety hazards - flyrock, shot timing, misfires and hangfires, air blast, ground vibration
- p. The Blaster - authority, responsibility, role as a risk factor
- q. Basics of Blast Design, including NPS applications and environmental impacts
- r. Reports and Records

Recertification - A Minimum 24 Hour Course

This course will include at least one full day of field exercises, structured around transport, field storage and inventory, area security, signal systems, blast design, load determination, priming, loading, hookup (electrical and detonating cord), detonation, post-blast check, flyrock prediction and control, and blast result analysis. This training will also cover new techniques and developments in the explosives industry. It will also include quizzes on each major subject and a written final exam in which a minimum score of 85 percent is required for successful course completion. The final exam should be in two parts: Part I to cover items (a) through (l), required for explosives handlers; Part II to cover items (m) through (r), required, along with Part I, for blasters-in-training and blasters.

Blasting Inspection (Denver Service Center)

- a. Terms and Definition
- b. NPS Blasting Program
- c. Commercial Explosives - history, properties, uses, hazards
- d. Detonators - history, properties, uses, hazards
- e. Primers and Boosters - properties, uses, hazards
- f. Detonation and Initiation Systems - theory, layout, testing
- g. Borehole Blasting - theory, loading, testing, blast control

- h. Unconfined Surface Blasting - theory, loading testing, blast control
- i. Transportation of Explosives - DOT, OSHA, and NPS requirements
- j. Storage of Explosives - BATF and OSHA Regulations, magazine construction, location, signing
- k. Required Record Keeping - inventories, blast records
- l. Safety Requirements - OSHA Standards, acceptable practices, guards, signals, signs, blasting mats, blast control, protection of persons and property.

CERTIFICATION

Certification (licensing) can be granted to NPS personnel at least 21 years old, and shall be based on final exam scores and field performance evaluation in required training courses (including an oral examination if deemed necessary by the instructor or certifier), and a written Experience Statement for Blaster Certification detailing previous experience (type, quantity, complexity). Proof of certification shall be a NPS blaster's card, upon which is shown the level of certification (Trainee-Level 1, General Fireline-Level 2, Rocks, Stumps, Ditches, 10 Holes, Clear Misfires = General Level 3, and Avalanche and Fireline Blasting/Wildfire specialties. Certification shall be valid for three years. Recertification shall be by retaking and successfully completing a 24 hour minimum Explosives and Blasting Safety Training. Specialty certifications are continuous providing a blaster certification is maintained. Instructor certification shall be valid for three years, and shall be renewed automatically if at least one class has been taught during that period. Notification of conducted training must be sent to the Service explosives officer upon completion of course taught. Certification may be extended by the appropriate regional or DSC blasting officer in exceptional circumstances, for a period not to exceed one year, if the applicant has been actively involved in blasting operations within the previous 24 months.

Any documented violation of safe practices, regulations or NPS policy shall be sufficient cause for immediate revocation of certification. Recertification shall then be possible only by successful completion of the full certification process, including three years as a blaster-in-training. Any accident with or theft of explosives shall cause certification of the blaster-in-charge to be suspended pending the outcome of the Blasting Review Board. Appeals of revocations or suspensions of certification shall be directed to the Service blasting officer, whose decision shall be final.

The regional or DSC Blasting Officer, as appropriate, is the sole source of NPS certification, except that the Service blasting officer is the sole source of instructor certification. In a case where the regional or DSC blasting officer does not participate in the instruction of required training, certification shall be granted only upon the recommendation of both instructors. Employees must be certified by the regional or DSC blasting officer even though they may have obtained training and/or certification from another government or private source.

APPLICATION FOR EXPLOSIVES AND BLASTING CERTIFICATION - PART I

Date _____

General Information

Applicant's Name _____

Agency/Unit _____

SSN _____ Birth date _____ Height _____ Weight _____

State License # _____

Work Address

Zip _____

Work Electric Mail

Address _____

Work Telephone Number _____ Fax _____

Number _____

1. Describe in detail your experience in blasting operations and activities using explosives and blasting materials. Identify entries by month/day/year.

2. Do you possess the following certificates?

Commercial Drivers License with Hazardous Materials Endorsement

() Yes () No Expires / /

MM DD YY

Medical Examiners Certificate

() Yes () NO Expires / /
MM DD YY

(Figure 1-2) Certification application -part I

APPLICATION FOR EXPLOSIVES AND BLASTING CERTIFICATION - PART 111

Agency _____ Unit _____
Name _____

Position/Title _____
Address _____

Work Authorization Levels

Applying-Renewal-Experience- Do you - RB
For (X) Yes/No (Months) feel

Initials _____ | _____ | _____ | qualified

GENERAL BLASTING

Level 1: Trainee-Store and transport
only

Level 2: Load, wire, test, and shoot 10
holes

Shoot stumps and

ditches Clear misfires

Type Use Delays, EBC, or det cord

Use non-elect firing line and detonators

Use exploding bridgewire

systems

Level 3: Load, wire, test, and shoot 40+ holes

Quarries

Wildlife

Destroy excess explosives/blasting materials

Hazard tree blasting

Seismic

Other

(Specify) Lead

Blaster

FIELINE-PRESCRIBED

Fireline crewmember: Store and transport
only

Line construction/project

fires

Clear

misfires

Destroy excess explosives and blasting
materials

Use exploding bridgewire

systems

Blast hot landing zones

Wire and test

circuits

Fireline Blaster

Examiner

FIRELINE-WILDFIRE (Requires a Step Test score of 45)

Fireline Explosives Crewmember

(FLEC)

Fireline Explosives Blaster-Initial Attack (FLEI)

Fireline Explosives Blaster-in-Charge

(FLEB)

Fireline Explosives Blaster Advisor

(FLEA)

Hazard tree

blasting

ALANCHE/GUNNER OPERATIONS

Avalanche Blaster-in-

Training

75mm

howitzer

105mm

howitzer

75mm recoilless

rifle

105mm recoilless

rifle

106mm recoilless

rifle

Avalauncher

Other

(Specify)

EXPLOSIVES AND BLASTING CERTIFICATION REQUIREMENTS

To Certify or re-certify, possess the following certificates and Licenses, and meet the indicated requirements for each certification level.

	CERTIFICATION LEVELS				
	Blaster- Trainee	General -Blaster	-General -Blaster	Lead -Blaster	Examiner
	Level 1	Level 2	Level 3	Level 4	Level 5
Avalanche Fireline					
Fireline					
Prescribed Wildfire					
3					
Hazard Communication Standard (Employee Right-to-Know)	****	****	****	****	****
****	****	****	****	****	****
First Aid Course	****	****	****	****	****
****	****	****	****	****	****
Commercial Driver's License (CDL)	****	****	****	****	****
****	****	****	****	****	****
Hazardous Materials Endorsement	****	****	****	****	****
****	****	****	****	****	****
Medical Examiners Certificate	****	****	****	****	****
****	****	****	****	****	****
Hazardous Materials Course (49 CFR 172)	****	****	****	****	****
****	****	****	****	****	****
Every three years attend a 16 hour min classroom training on using, storing, and transporting explosives and blasting materials	****	****	****		
Pass 8 hours field practical exercise/ test	****	****	****		
Pass written examination	****	****	****		
Pass oral examination	****	****	****		
Do 1 year min. field work with a min of 3 shots and have the recommendation of lead blaster	****	****	****	****	****
Present shot records since last certification	****	****	****	****	****
****	****	****	****	****	****
Shoot a min of 3 shots per year	****	****	****	****	****
Attend a yearly Lead blaster's workshop				****	
Participate in Blasters' workshops (Certification) Pass avalanche school				****	
Pass avalanche school training					

Pass military weapons					

Pass yearly milweaps 8 hour refresher					

Pass national fireline explosives training					

Pass yearly refresher					

Shoot 3 shots on going wildfire					

Work with and be recommended by master performer/lead blaster for:					
Stumps			****		
Ditches			****		
Misfires			****		
Delays			****		
Non-Electric Systems			****		
Exploding Bridgewire			****		
40+ Holes				****	
Quarries				****	
Wildfire Ponds				****	
Hazard Tree Blasting				****	

Seismic				****	
Other			****	****	

**** Indicates requirements for each

certification level

BLASTING REVIEW BOARD

A Blasting Review Board shall be formed of selected personnel, including the chief park blaster, by the regional or DSC blasting officer and regional or DSC safety officer, to investigate the circumstances (including technical blast analysis) of any explosives accident leading to injury, fatality, or property damage over 100 dollars, or any case of theft or loss of explosives. A written record, including recommendations, shall be maintained and sent to the Service blasting officer and others as appropriate. In the case of an accident, a general case incident record shall be developed and circulated to inform other blasters so that a reoccurrence can be prevented. If the Board's findings indicate that the blaster-in-charge or responsible explosives handler was not in conformance with this policy and its provisions, revocation of certification is mandatory.

The findings of a Blasting Review Board shall be made available to any Board of Inquiry formed by the superintendent to investigate the same incident. The formation of a Board of Inquiry that results from blasting operations not otherwise covered under this section shall result in the formation of a Blasting Review Board.

SPECIFICATION FOR CONTRACTS

GENERAL

Description: The work of this section consists of all activities that relate to explosives, including receiving, handling, transporting, storing, distributing, priming, loading, firing, and disposal.

Quality Assurance

- A. Regulatory Agencies: All operations with explosives shall be conducted in accordance with the NPS Explosives Use and Blasting Program and the rules and regulations established by the Occupational Safety and Health Administration (OSHA) contained in 29 CFR 1910 and 1926, Construction Safety. In addition, the contractor shall comply with Department of Transportation rules and regulations contained in 14 CFR 103, Air Transportation; 46 CFR 146-149, Water Carriers; 49 CFR 390-397, Motor Carriers; and Bureau of Alcohol, Tobacco and Firearms (BATF) regulations contained in 27 CFR 55, Commerce in Explosives.
- B. Legal Requirements: Comply with all applicable Federal, State and local laws pertaining to the purchase, transportation, storage, handling and use of explosives. Obtain all required permits and licenses.

Submittals

Blasting Plan: Submit a blasting plan covering qualifications of blaster-in-charge and blasting crew; transportation; storage and magazines; blast site operations; area security plan, including signal system; handling of misfires; removal and disposal of unused or excess explosives; and blast records.

Note: All submittals will include under product selection, that no cap and fuse and/or nitroglycerin products may be used within National Park Service area boundaries.

Blaster-in-Charge Qualifications

Must possess a valid state blaster's license or other license issued by an equivalent licensing body acceptable to the contracting officer.

Must submit written resume showing not less than three years of active involvement as blaster-in-charge on projects similar in scope to this contract.

Must submit a list of five references who can testify to the known qualifications and reliability of the proposed blaster-in-charge.

Blasting Crew Qualifications

All crew members must have completed explosives and blasting safety training of at least 24 hours and/or have not less than one year of experience acceptable to the contracting officer.

Transportation Plan

Include description and license number of vehicle to be used, route(s) to be traveled, proposed hours of travel, and qualifications of driver.

Storage and Magazines

Show location and construction of magazines and day-boxes, inventory system to be used, and signing installed.

Blast Site Operations

Include type of explosives to be used, initiation system to be utilized, drilling system, loading plan, firing plan, pre-blast and post-blast inspection, handling of misfires, and removal and disposal of excess explosives.

Area Security Plan

Include proposed signing, guard system, signal system, methods of communication, and pre-blast notification of affected agencies or entities.

Permits and Licenses

Submit copies, or other proof acceptable to the contracting officer, of all applicable permits and licenses, including blasting liability insurance.

Contracting Officer's Approval

The contracting officer will indicate approval or disapproval of each submittal and reasons for disapproval. When submittals have been approved, the number of copies the contractor wants for his own use will be returned. No work shall be done before approval is received.

Project Conditions

Protection: The safety of personnel shall be the controlling consideration in decisions involving explosives activities. The contractor shall exercise the utmost care not to endanger life and property. Make proper use of blasting mats and other protective devices, adopting whatever additional precautions are deemed necessary to prevent damage to trees, shrubs, other landscape features, buildings, utilities, monuments, and other structures. Make every effort to prevent damage to the natural and the constructed surroundings. Should damage occur, make restoration as required by the contracting officer at no additional cost to the government.

BLASTING RECORDS

The federal government requires that records are kept of the blasting caps and explosives used.

For insurance purposes, good records of each and every shot should be maintained. Most distributors of explosives will furnish on request "Blasting Logs" that contain guidelines for good record keeping. A form should be made available that includes the following:

1. Job number and location.
2. Date.
3. Time of each shot.

- [illegible]

This is a full-page image of a blank sheet of graph paper. The grid consists of small squares formed by thin black lines. There are approximately 20 columns and 20 rows of squares. A single horizontal line runs across the page about one-third of the way down from the top edge, creating a header section. This line divides the grid into two main areas: a smaller upper section and a larger lower section. The entire page is covered by the grid pattern except for the margins.

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PROPER TOOLS FOR GOOD BLASTING

In order to do a good, safe job of blasting, a blaster must have the right equipment. The following represents a minimum:

- A. Proper Shooting Wire** - A minimum of 500 feet of solid conductor copper wire is recommended. Stranded wire is not acceptable and should not be used. A blasting wire reel, enabling a blaster to level wind his shooting wire, increases the life span of the wire considerably.
- B. Blaster Galvanometer** - A Galvanometer or blasters ohmmeter should be used to check each cap prior to stemming the hole, and to check all wiring used in the blasting circuit, before attempting to detonate.
- C. Blasting Machine** - OSHA requires an approved blasting machine be used as the power source for the initiation of all electric blasting circuits.
 - 1. Rack Bar
 - 2. Capacitor Discharge
 - 3. Generator
 - 4. Radio Remote detonation System
- E. Wire Strippers and Sharp Knife.**
- D. Blasting Mats** - Mats should be used in any instance where flyrock can do damage to life or property.
- F. Tamping Pole** - Preferably marked in feet that will enable blaster to measure depth of each hole, column buildup and depth of stemming material, as well as for tamping.
- G. Blasters tool kit** - Extra batteries, electricians tape, screw drivers, cap crimpers, wire strippers, first-aid kit, knives, and other tools of the trade.

JOB SAFETY ANALYSIS	1. JOB TITLE /LOCATION All Explosives Related Activities	2. DATE:1/06/99	x NEW □ REVISED
INSTRUCTIONS ON REVERSE SIDE	3. TITLE OF PERSON WHO DOES JOB: Blaster in Charge & Trained Personnel	4. NAME OF COMPANY/ORGANIZATION: RMNP	ANALYSIS BY:
5. PLANT/LOCATION Rocky Mountain National Park	6. DEPARTMENT: Maintenance/Roads-Fleet	10. SUPERVISOR J. Leons	REVIEWED BY:
REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT: Hard hat required			APPROVED BY:

7. SEQUENCE OF BASIC JOB STEPS	8. POTENTIAL HAZARDS	9. RECOMMENDED ACTION OR PROCEDURE
PLANNING AND PRE-WORK	Lack of emergency evacuation plans, blast plans and safety briefings.	-Size up the area ahead of time. Develop emergency evacuation plan in case of injury that considers communications, transportation, first aid, and who is responsible for each task. Conduct safety and health sessions, establish personal protective equipment (PPE) needed and have all plans finalized before going to the field. Follow up and modify plans as necessary or needed.
STORAGE AND TRANSPORT OF EXPLOSIVES	Improper storage and transport of explosives could lead to unplanned detonation.	-As a minimum, obtain and reference the following publication, <i>National Park Service Guide for the Storage, Transportation, Training of Explosives Use, and Handling of Explosives</i> . Have all required documents in vehicle when transporting.
DRILLING (NOTE, specially explosive operation will fill out a separate JSA)	Drilling into explosives. Breathing dust fumes. Personal injury from moving parts of the drill or falling rocks. Eye injury from rock chips. Back injury from lifting. Noise exposure.	-NEVER DRILL IN AN EXISTING BOREHOLE WHICH MAY CONTAIN EXPLOSIVES! NEVER DRILL INTO A BOOTLEG! Wear dust mask when drilling. Wear leather field boots that protect the feet from the drill bit. Lift the drill with legs, not your back. Use a back brace if needed. (optional) Wear eye protection, ear protection, leather gloves, and a hard hat. Some drilling locations may require a rope and harness to prevent falls. Use a spotter in areas of loose rock and debris.
BLASTING TEAM EXPOSURE TO ELEMENTS	Exposure to sun, insect bites, snakes, rugged terrain.	-On hot days apply sunscreen. Watch for signs of heat stroke during summer, or hypothermia during adverse weather conditions. Use insect repellent if needed. Wear long sleeves shirts, full-length trousers and leather gloves when appropriate.
HANDLING EXPLOSIVES / MAKING PRIMERS AND MISFIRES.	Misfire, Accidental detonation, Exposure to Elements.	-Handle explosives with extreme care, observing all instructions included in each box of explosives and caps. Don't make up primers next to truck containing explosives. Place hands on ground for 5 seconds before handling electric detonators. No smoking within 50' and no sparking tools allowed. Be aware of potential desensitizing of product from exposure to elements. Hard hat required. Follow NPS-65 on misfire SOP.
LOADING HOLES WITH EXPLOSIVES	Misfire, Accidental detonation	-Do not tamp primer. Follow the "Always and never" instructions contained in each box of explosives and caps. Follow manufacturers instructions. Double check that all holes are tied into shot. Use insensitive explosives. Allow no smoking or mechanized equipment within 50 feet of holes. Hard hat required. Follow NPS-65 on misfire SOP
GUARDING THE SHOT	Inadequate guarding could result in unauthorized people entering blast area.	-Post appropriate signs and guards around the perimeter of each shot. Give loud verbal warning prior to shot. For large construction sites and quarries use signal devices such as air horns to warn those in vicinity. Maintain communications with all guards, "positive-response", using radios if needed. Hard hat required. Follow NPS-65 on misfire SOP.
FIRING THE SHOT	Premature firing, misfires, and partial detonation.	-The "Blaster-in-Charge" controls the blast initiation device. Check for proper resistance in EBC series. Use EBC's or Non-EL blast system when electromagnetic radiation or extraneous electricity is present. (Radio transmitters, radar, high voltage electric lines, blowing dust or snow, etc.) Immediately vacate and guard site if lightning approaches. Hard hat required. Follow NPS-65 on misfire SOP

JSA Instructions	Emergency Evacuation Instructions
<p>The JSA shall identify the location of the work project or activity, the name of employee(s) writing the JSA, the date(s) of development, and the name of the appropriate line officer approving it. The supervisor acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.</p> <p>Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory</p> <p>Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).</p> <p>Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:</p> <ol style="list-style-type: none"> Research past accidents/incidents. Research the Health and Safety Code or other appropriate literature. Discuss the work project/activity with participants Observe the work project/activity A combination of the above <p>Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:</p> <ol style="list-style-type: none"> Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment and furniture. Substitution. For example, switching to high flash point, non-toxic solvents. Administrative Controls. For example, limiting exposure by reducing the work schedule. Personal Protective Equipment (PPE) (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills, portable water pumps) A combination of the above. <p>Block 10: The JSA must be reviewed and approved by a supervisor.</p>	<p>Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the work site.</p> <p>Be prepared to provide the following information:</p> <ol style="list-style-type: none"> Nature of the accident or injury (avoid using victim's name). Type of assistance needed, if any (ground, air or water evacuation). Location of accident or injury, best access route into the work site (road name/number), identifiable ground/air landmarks. Radio frequency(s). Contact person. Local hazards to ground vehicles or aviation. Weather conditions (wind speed & direction, visibility, temp). Topography. Number of person(s) to be transported Estimated weight of passengers for air/water evacuation. <p>The items listed above serve only as guidelines for the development of emergency evacuation procedures.</p> <p>JSA and Emergency Evacuation Procedures Acknowledgement</p> <p>As supervisor I acknowledge that the following employees have participated in the development of this JSA, accompanying evacuation procedures and have also been briefed on the provisions thereof:</p> <p>Supervisor's Signature: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>

