

**FISH AND WILDLIFE SERVICE
OCCUPATIONAL SAFETY AND HEALTH**

Occupational Safety and Health

Part 244 Explosives

Chapter 2 Blasting

244 FW 2

2.1 What is the purpose of this chapter? This chapter describes our policy and procedures for training, planning, and using explosives for blasting operations.

2.2 What are the authorities, responsibilities, and terms you need to know to understand this chapter? See 244 FW 1 for all the authorities, responsibilities, and definitions of terms for the chapters in Part 244.

2.3 Why does the Service use blasting? We use blasting to efficiently and cost-effectively perform projects related to our mission (e.g., to clear beaver dams, remove rock for construction projects, etc.).

2.4 What are the minimum requirements for becoming an authorized blaster?

A. A blaster is a person who has fulfilled the requirements of this chapter and is authorized to use explosives for blasting.

B. Your supervisor may authorize you to become a blaster if you:

(1) Are 21 years of age or older;

(2) Have current Cardiopulmonary Resuscitation (CPR) and first aid training as required by a recognized certification program such as those sponsored by the American Red Cross, American Heart Association, National Safety Council, etc.;

(3) Successfully complete and maintain blaster authorization requirements (see section 2.5); and

(4) Adhere to the current Federal, State, and local laws and regulations applicable to blasting operations.

2.5 What are the authorization requirements for a blaster-in-training and an authorized blaster?

A. Blaster-in-training requirements. To become a blaster-in-training, you must attend and successfully complete a blaster's training course acceptable to your Regional Safety Office (e.g., Federal, State, local, explosives manufacturer, explosives distributor, or other authorized blasting course). Course content must:

(1) Include classroom training covering the use, storage, and transportation of explosives and blasting materials;

(2) Include a practical field exercise with a live, hands-on test of proficiency; and

(3) Address blasting techniques relevant to the specific blasting needs at your duty station.

B. Authorized blaster requirements. To become an authorized blaster and maintain authorization, a blaster-in-training must, within 2 years of successfully completing the blasting training described in section 2.5A:

(1) Work under the direct supervision of an authorized blaster for a minimum of 1 year to develop the necessary knowledge, skills, and experience required to perform specific blasting operations safely and effectively. Employees may work with other Federal or State agencies to gain experience, if necessary, provided the blaster-in-charge has attended formal blaster training.

(2) Provide current blast/shot records (see FWS Form 3-2410) to your supervisor that show proficiency at performing specific blast projects. To be proficient, you must perform a minimum of three blasts/shots per year.

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C. Existing authorized blasters: Employees who have current CPR/first aid training and have attended blasting training within the 4 years before this policy is signed, may become an authorized blaster with the approval of the Project Leader/supervisor/facility manager and the Regional Safety Manager.

D. No one may perform blasting operations without attending required training.

2.6 What documentation must an authorized blaster maintain?

A. You must maintain records of:

(1) Completion of the following training courses:

(a) Current CPR and first aid training, and

(b) Blaster authorization and reauthorization courses;

(2) Proof of working under the supervision of an authorized blaster for at least 1 year (e.g., copies of the initial year of blasting records or a letter from a authorized blaster stating you worked under their supervision); and

(3) Blast/shot records documenting a minimum of three blasts/shots per year.

B. Your Project Leader/supervisor/facility manager must enter your training information into the Department's Learning Management System (e.g., DOI Learn).

2.7 Who issues the blasting authorizations and for how long are they valid?

A. Issuing authorization. Project Leaders/supervisors/facility managers issue Blasting Authorizations (see FWS Form 3-2402) and renewals to employees who successfully complete the requirements.

(1) Blaster-in-training. Authorizations for blasters-in-training expire 2 years from the date of issue, unless temporarily suspended or revoked (see section 2.7B). No one may be authorized as a blaster-in-training for longer than 2 years. If the 2 year time-frame expires, the employee must request permission from the Project Leader/supervisor/facility manager to continue training. The employee must then:

(a) Re-attend the required initial blasting authorization course, and

(b) Meet all requirements of a blaster-in-training before becoming an authorized blaster.

(2) Authorized blaster. Authorizations of blaster qualification expire 4 years from the date of issue, unless temporarily suspended or revoked. The Project Leader/supervisor/facility manager may issue a new authorization after verifying that the blaster:

(a) Has completed an authorized blasting course or authorized blasting refresher course within the 4-year authorization period, and

(b) Has current blast/shot records that meet the requirements in section 2.6A(3) and do not indicate activity inconsistent with this policy.

B. Authorization revocation. A Project Leader/supervisor/facility manager may suspend or revoke blasting authorization for any of, but not limited to, the following reasons:

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- (1) Conviction for violating any law or regulation relating to explosives and blasting materials;
- (2) Demonstrating lax security or using unsafe practices relating to explosives and blasting materials; and
- (3) Lack of proficiency, as demonstrated by the following:
 - (a) Involvement in an accident related to explosives or blasting materials. The Project Leader/supervisor/facility manager may reinstate the blaster's authorization after the Regional Safety Manager investigates the accident and the Project Leader/supervisor/facility manager believes reinstatement is warranted;
 - (b) Unsatisfactory performance relating to the handling, storage, use, or recordkeeping relative to explosives or blasting; or
 - (c) Fewer than three blasts/shots per year for two consecutive years.

2.8 What type of planning tools does the Service require for blasting operations? Before each blasting operation, the authorized blaster, in coordination with the Project Leader/supervisor/facility manager, must develop a blast plan (see Exhibit 1 for a sample). They must keep a copy of the blast plan at the station office and at the blast site. The blast plan must be site-specific and, at minimum, include the following:

A. A blaster-in-charge that the Project Leader/supervisor/facility manager designates. This person must be an authorized blaster. He/she has authority over all actions and operations related to the particular blasting operation. The blaster-in-charge is responsible for reporting unsafe conditions or hazards encountered at the blast site to his/her supervisor and the proper authorities.

B. The names, qualifications (authorizations), and responsibilities for all personnel involved with the blasting or who are responsible for transporting, handling, or storing the explosives. Also list the names of other personnel authorized to be within the blast area during operations.

(1) In addition to the blaster-in-charge, at least one other member of the blasting team should have a current certificate in CPR and first aid and be identified on the blasting plan.

(2) No one is allowed in the blast area, or onto the blast site, unless they are listed in the blast plan and are approved for entry by the blaster-in-charge.

(3) All people must receive a safety briefing by the blaster-in-charge before entering the blast area.

(4) The blaster-in-charge must maintain a roster of all personnel within the blast area.

C. Dates and location of blasting.

D. Type and quantity of explosives and detonating or initiating devices that will be used for the operation. The blaster-in-charge must maintain an inventory of explosives that are transported to and from the blasting site.

E. Means of transporting explosives and provisions for storing and securing explosives on site.

F. A statement that the Project Leader/supervisor/facility manager has obtained applicable permits and licenses.

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G. Minimum acceptable weather and static conditions and considerations for stray radio frequency energy and electrical currents where electrical initiation will be used.

H. Standard procedures for handling, setting, wiring, and firing explosive charges.

I. Required personal protective equipment, including but not limited to hearing, head, and eye protection. The blasting Job Hazard Assessment should also describe personal protective equipment and when and how personnel will use it.

J. Minimum standoff distances, and the means for clearing and controlling access to blast danger areas.

K. Procedures for handling misfires and other unusual occurrences.

L. Emergency action plan, including the following:

(1) Phone numbers of local emergency response organizations (rescue, ambulance, fire department, police);

(2) Location and phone number of nearest medical services facility;

(3) Actions to take if someone is injured; and

(4) A Material Safety Data Sheet (MSDS) for each explosive or other hazardous material that may be used.

2.9. What are the Service requirements for using explosives during blasting operations?

A. Transporting explosives by motorized means: When transporting explosives by motor vehicles, you must meet the requirements in 244 FW 1.11A.

B. Transporting or carrying explosives by non-motorized means: When transporting explosives by non-motorized means, you must meet the requirements in 244 FW 1.11B.

C. Transporting explosives by watercraft: When transporting explosives by watercraft, you must meet the requirements of 244 FW 1.11C.

D. Blasting operations:

(1) When handling explosives, you must wear cotton clothing to reduce the build-up of static electricity and subsequent sparking.

(2) Never perform blasting operations alone.

(3) Conduct blasting operations only during daylight hours.

(4) If you are a blaster-in-training, always conduct blasting operations under the supervision of an authorized blaster.

(5) Do not use nitroglycerin materials, safety fuses, and fuse caps.

(6) Station flagmen on roads that pass through the blast area so they can stop traffic during blasting operations.

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(7) Before blasting, ensure that surplus explosives are in a safe place and that people, vehicles, and equipment are at a safe distance from the charge or are under sufficient cover.

(8) During blasting operations, give a loud signal before firing a blasting charge.

(9) For misfires:

(a) The blaster-in charge:

(i) Must be prepared to handle misfires, and

(ii) Ensures personnel stay safely away from the charge for at least 30 minutes.

(b) Only authorized blasters who are trained and experienced in the properties of explosive materials and their uses in blasting operations may handle misfires.

E. Electric blasting. Our policy is to use exploding bridgewire detonators or non-electric detonators for all blasting activities unless the blasting conditions prohibit their use. When you must use electric blasting:

(1) Conduct a thorough survey to determine if there are sources of dangerous extraneous electricity in the blasting area. Eliminate or sufficiently minimize dangerous currents before setting a charge. Consider the following electrical hazards:

(a) Cellular telephones,

(b) Radio transmitters,

(c) Power lines,

(d) Radar,

(e) Lightning,

(f) Dust storms, and

(g) Other suspected sources of electricity.

(2) In any single blast, all blasting caps must be the same style or function and made by the same manufacturer.

(3) Use only connecting wires and lead wires that are insulated single solid wires and have sufficient current carrying capacity.

(4) Keep electric blasting cap leg wires short-circuited (shunted) until you connect them into the circuit.

(5) Make the connections from the charge to the blasting machine and keep the leading wires shunted until you fire the charge. Only authorized blasters may make the leading wire connection.

(6) Check electrical continuity with a blasting galvanometer after hook-up is complete. Recheck electrical continuity before each blasting attempt.

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F. Detonating cord.

- (1) Do not bring trunk line detonators to the loading area or attach them to the detonating cord until everything else is ready for the blast.
- (2) The end of the cap containing the explosive charge must be pointed in the direction where you want the detonation to proceed. When connecting a blasting cap to the detonating cord, tape the cap securely along the side or the end of the cord.

G. Underwater blasting.

- (1) Whenever you use explosive materials in underwater blasting operations, you must display a blasting flag (international code "Bravo," a solid red flag).
- (2) To avoid creating electric currents, do not use loading tubes and casings of dissimilar metals.
- (3) Only use water resistant blasting caps and detonating cord for underwater blasting.
- (4) Do not detonate a charge if any watercraft is closer than 457.2 meters (1,500 feet) to the blast area. Before you can fire the charge, you must verbally notify people with watercraft moored or anchored within 457.2 meters (1,500 feet) that:
 - (a) You are planning to detonate a charge, and
 - (b) They must move their watercraft outside of the 457.2 meter range.
- (5) Do not detonate a charge if any people are swimming or diving within 914.4 meters (3,000 feet) of the blast area.
- (6) To identify underwater misfires when placing more than one charge, attach a float device to an element of each charge so the float device is released when the charge fires. The blaster-in-charge must:
 - (a) Account for each float device after the blast, and
 - (b) Direct personnel about how to handle misfires.

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ACTING DIRECTOR

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