

**Forest Service Manual
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Washington, DC**

**Forest Service Manual 7100 – Engineering Operations
Chapter 7190 - Explosives and Blasting Materials**

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Digest: Following is an explanation of the changes throughout the directive by section.

7190: Establishes code, caption, and sets forth direction on “Explosives and Blasting Materials”.

7191: Establishes code, caption, and sets forth direction on “Blasting Operations, Transportation, and Storage”.

7192: Establishes code, caption, and sets forth direction on “Records”.

7193: Establishes code, caption, and describes the role and membership of the “National Explosives and Blasting Technical Advisory Group (NEBTAG)”.

7194: Establishes code and caption for References.

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7190 - Explosives and Blasting Materials

This direction applies to internal Forest Service programs involving the transportation, storage, and use and disposal of explosives and blasting materials for construction, maintenance, fire suppression, and other work. Related direction is found in FSM 2160, Hazardous Materials Management; FSM 7103.5, Engineering Operations; and FSH 6709.11, Health and Safety Code Handbook. Supporting technical information is located in the *Forest Service Guide for Using, Storing, and Transporting Explosives and Blasting Materials* (publication number 0867-2826-MTDC Latest Edition, see section 7194).

7190.1 - Authority

Regulations governing the use of explosives and blasting materials include:

1. Title 29, Code of Federal Regulations, Part 1910.109. These regulations promulgated by the Occupational Safety and Health Administration, Department of Labor, govern occupational safety and health standards for hazardous materials as it relates to the use of explosives and blasting agents.
2. Title 29, Code of Federal Regulations, Part 1926, Subpart U. These regulations promulgated by the Occupational Safety and Health Administration, Department of Labor, govern safety and health regulations for blasting and the use of explosives in construction (29 CFR Part 1926, Subpart U).
3. Title 30, Code of Federal Regulations, Part 56, Subpart E. These regulations promulgated by the Mine Safety and Health Administration, Department of Labor, govern safety and health standards in the use of explosives for surface metal and nonmetal mines.
4. Title 30, Code of Federal Regulations, Part 57, Subpart E. These regulations promulgated by the Mine Safety and Health Administration, Department of Labor govern the safety and health standards in the use of explosives for underground metal and nonmetal mines.

Regulations governing the storage of explosives and blasting materials include:

Title 27, Code of Federal Regulations, Part 555, Subpart K. These regulations promulgated by the Bureau of Alcohol, Tobacco, Firearms and Explosives, Department of Justice, govern the storage of explosives.

Regulations governing the transportation of explosives and blasting materials include:

1. Title 33, Code of Federal Regulations, Part 125. These regulations promulgated by the Coast Guard, Department of Homeland Security, govern identification credentials for persons requiring access to waterfront facilities or vessels.

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2. Title 33, Code of Federal Regulations, Part 126. These regulations promulgated by the Coast Guard, Department of Homeland Security, govern handling of dangerous cargo at waterfront facilities.
3. Title 49, Code of Federal Regulations, Part 172. These regulations promulgated by the Pipeline and Hazardous Materials Safety Administration, Department of Transportation, govern hazardous materials table, special provisions, hazardous materials communications, emergency response information, training requirements, and security plans.
4. Title 49, Code of Federal Regulations, Part 173. These regulations promulgated by the Pipeline and Hazardous Materials Safety Administration, Department of Transportation, govern general requirements for shipments and packaging of hazardous materials.
5. Title 49, Code of Federal Regulations, Part 174. These regulations promulgated by the Pipeline and Hazardous Materials Safety Administration, Department of Transportation, govern carriage of hazardous materials by rail.
6. Title 49, Code of Federal Regulations, Part 175. These regulations promulgated by the Pipeline and Hazardous Materials Safety Administration, Department of Transportation, govern carriage of hazardous materials by aircraft.
7. Title 49, Code of Federal Regulations, Part 176. These regulations promulgated by the Pipeline and Hazardous Materials Safety Administration, Department of Transportation, govern carriage of hazardous materials by vessel.
8. Title 49, Code of Federal Regulations, Part 177. These regulations promulgated by the Pipeline and Hazardous Materials Safety Administration, Department of Transportation, govern carriage of hazardous materials by public highway.
9. Title 49, Code of Federal Regulations, Part 383. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern commercial driver's license standards, requirements, and penalties.
10. Title 49, Code of Federal Regulations, Part 390. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern general Federal motor carrier safety.
11. Title 49, Code of Federal Regulations, Part 391. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern qualifications of drivers and longer combination vehicles (LCV) driver instructors.
12. Title 49, Code of Federal Regulations, Part 392. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern the driving of commercial motor vehicles.

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13. Title 49, Code of Federal Regulations, Part 393. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern parts and accessories necessary for safe operation of motor carriers (49 CFR Part 393).

14. Title 49, Code of Federal Regulations, Part 395. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern hours of service of motor carrier drivers.

15. Title 49, Code of Federal Regulations, Part 396. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern inspection, repair, and maintenance of motor carriers.

16. Title 49, Code of Federal Regulations, Part 397. These regulations promulgated by the Federal Motor Carrier Safety Administration, Department of Transportation, govern transportation of hazardous materials by motor carrier.

Regulations governing the disposal of explosives and blasting materials include:

1. Title 40, Code of Federal Regulations, Part 264. These regulations promulgated by the Environmental Protection Agency govern the owners and operators of hazardous waste treatment, storage, and disposal facilities.
2. Title 41, Code of Federal Regulations, Part 101-42. These regulations promulgated by the General Services Administration, govern the disposition of personal property with special handling requirements.

U.S. Department of Transportation (DOT), Research and Special Programs Administration, Exemption Number DOT-E 9198, authorizes the U.S. Department of the Interior and the Forest Service to transport hazardous materials in aircraft under their exclusive direction and control (FSM 5714.2, Aviation Management, Department of Transportation Grant of Exemption–Hazardous Materials).

7190.2 - Objectives

1. Provide for employee and public safety by directing the safe and secure storage, transportation, use, and disposal of explosives and blasting materials.
2. Use explosives and blasting materials as a cost-effective tool for accomplishment of forest management objectives.

7190.3 - Policy

1. The Forest Service shall consider the use of contractors, military uniformed services, Forest Service employees, and other qualified personnel in order to best achieve the Agency's mission and reduce exposure and risks for all blasting operations.

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2. The Forest Service shall follow the requirements for the use, disposal, storage, and transportation of explosives and blasting materials as outlined in this manual.
3. All Forest Service blasters shall be subjected to an Office of Personnel Management (OPM) background investigation (Code 5, Moderate Risk). Forest Service employees awaiting an initial background clearance for blaster certification shall not have access to explosives or magazines unless accompanied by a blaster with an active clearance. A blaster with an expired clearance may continue to perform all blasting duties as long as a formal request for a security renewal has been submitted through the Forest Service Human Resources Personnel Security Office.
4. Upon discovery of any theft or loss of any explosive materials, Forest Service employees shall immediately contact the nearest Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) office and follow their direction as well as notify their Regional Blasting Coordinator.
5. Follow the applicable State protocol when abandoned explosives and blasting materials are discovered on National Forest System lands. If a State does not have a protocol or it is insufficient, Regions may implement their own with approval through their unit's Law Enforcement Officer.

7190.4 - Responsibility

7190.41 - Deputy Chief for the National Forest System

The Deputy Chief for the National Forest System is the Agency's Senior Lead responsible for the overall Explosives and Blasting program requirements.

7190.41a - Washington Office Director of Engineering, Technology and Geospatial Services

The Washington Office Director of Engineering, Technology and Geospatial Services (ETG) shall appoint a Program Manager responsible for providing the oversight and guidance to regional officials for the blasting program. This position is required to have an Office of Personnel Management (OPM) background investigation (Code 5, Moderate Risk).

7190.41b - National Blasting Program Manager

The National Blasting Program Manager shall:

1. Provide the necessary oversight and policy guidance to Regional Officials to ensure the Explosives and Blasting Program requirements are followed.
2. Consider recommendations of the NEBTAG and other officials for explosives and blasting materials that affect the safe, effective, and efficient use of explosives.
3. Maintain a secure database for compliance documentation as outlined in this manual.

7190.42 - Washington Office Director of Law Enforcement and Investigations

The Washington Office Director of Law Enforcement and Investigations shall provide security recommendations regarding use of explosives and blasting materials to the National Blasting Program Manager.

7190.43 - Regional Foresters

The Regional Foresters shall:

1. Appoint a Regional Blaster Coordinator and a Regional Blaster Examiner and provide the necessary resources to support blasting operations in their region.
2. Provide for the following:
 - a. Training necessary to certify blasters and to keep certifications current for blasters.
 - b. Explosives awareness training for Forest Service employees who administer contracts, special use, and mining authorizations on which the contractors or authorized holders use explosives and blasting materials in their operations.
3. Ensure the storage of explosives and blasting materials in their region are in compliance with 27 CFR Part 555.
4. Verify annually that all certifications, background checks, inventory records, condition survey assessments, and other compliance documents have been reviewed and any discrepancies have been addressed.
5. Deny or approve in writing, requests to reduce the distance between blaster and charge for seismic operations.

7190.44 - Regional Directors of Engineering

Regional Directors of Engineering shall:

1. Upload delegation letters for Regional Blasting Coordinator and the Regional Blaster Examiner in the secure database.
2. Upload the Regional Foresters' verification of compliance letter annually in the secure database.

7190.45 - Regional Blaster Coordinators

Regional Blaster Coordinators shall:

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1. Coordinate the development and approval of manual supplements to FSM 7190, FSH 6709.11, and other direction related to explosives and blasting for their region through the Washington Office National Blasting Program Manager.
2. Coordinate with benefitting staffs to secure sufficient funding and support for the administration of the blasting program in their region.
3. When notified of magazine break-ins, discrepancies, or anomalies, notify the Regional Forester and the National Blasting Program Manager, and assure that appropriate law enforcement authorities have been notified.
4. In the absence of or inefficiencies in State-specific guidance and in collaboration with Law Enforcement, develop and maintain the Region's Approach Protocol for abandoned explosives and blasting materials found on National Forest System lands.

7190.46 - Regional Blaster Examiners

Regional Blaster Examiners shall:

1. Determine the training needs and coordinate and monitor training programs in their region for use of explosives and blasting materials by the Forest Service.
2. Coordinate the blasters in their region.
3. Develop and conduct training for blasters, including any written and oral examinations and field exercises.
4. Upload compliance information annually into the Forest Service secure database for each Forest Service blaster (including themselves) that contains their name; address; telephone numbers; e-mail address; and dates of training, certification and recertification, blasting skill levels, types of certification and 'Closed Date' of Office of Personnel Management (OPM) background investigation (Code 5, Moderate Risk), and documentation of the last blasting certification class attended. Provide verification annually to the Regional Forester, that all active blasters' certifications and OPM background investigations are current or have been submitted for renewal and are in agreement with the Forest Service Human Resources Personnel Security eQIP database.
5. Review annually blasters' records and data from the Forest Service Human Resources Personnel Security eQIP database to ensure their certifications and background checks are current (or requests for renewal have been submitted), reconcile any errors, and upload specific information into the Forest Service secure database.
6. Review shot records, periodically.
7. Develop and conduct explosives awareness training for Forest Service employees who administer contracts.

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8. Upload annually into the secure database (or more often if events dictate) compliance information on Forest Service owned magazines including the name and location of the magazine, the custodian's name, telephone numbers, e-mail address, list of inventory with inventory age, and justification for retaining inventory over one year, documentation that the seven-day inspections were completed, the annual condition surveys, and verify the date magazine keys were replaced.
9. Develop and maintain the Regional Explosives Transportation and Security Plan, when necessary.
10. Recommend personnel for blaster-in-training and blaster status to the Forest Supervisors and issue blasting and explosives certificates to those in their region who meet blaster-in-training and blaster certification requirements.
11. Recommend suspension and revocation for blasters certification to the Forest Supervisors when justified. Within five days of a blaster being suspended or certification revoked, notify in writing the following; the National Blasting Program Manager, the Regional Forester, the Regional Blasting Coordinator, and the Regional Engineer.
12. Visit administrative units periodically, in their region to monitor and provide assistance to blasting programs.
13. Cooperate and assist in the investigation of accidents and infractions of security and safety requirements related to blasting operations and other uses involving explosive materials in their region.
14. Assist Forest Supervisors regarding the storage of explosives and blasting materials in their region to ensure compliance with 27 CFR Part 555, and risks identified during condition survey assessments.
15. Assist as possible with large or complex blasting projects in their region.
16. Provide the Human Resources Management Personnel Security Branch the names of all Forest Service employees in the region who have successfully completed the Forest Service's Blaster Training Program so that they may be subjected to an appropriate background investigation.
17. Coordinate with the Position Management and Classification staff and the immediate supervisor of Forest Service employees in the region who have successfully completed the Forest Service's blaster training program to ensure that the appropriate position sensitivity code reflecting responsibilities associated with the use of explosives is added to their position description.
18. Advise the Human Resources Management Personnel Security Branch of termination of any Forest Service employees in their region from the blasting program to ensure that their personnel files are accurately updated.

7190.47 - Forest Supervisors

Forest Supervisors shall:

1. Evaluate the risks, exposure, vulnerabilities and costs of other appropriate measures to accomplish the Agency's mission, before utilizing explosives. If explosives are determined to be utilized, consider the use of contractors, military uniformed services, Forest Service employees, and other qualified personnel.
2. Issue blasting and explosives certificates to Forest Service employees in their administrative unit based on recommendations from the Regional Blaster-Examiner.
3. Designate Lead Blasters in their administrative unit.
4. Suspend or revoke blasting and explosives certificates issued to Forest Service employees in their administrative unit when justified. Notify the Regional Blaster Examiner in writing within five days of occurrence.
5. Implement recommendations from the Regional Blaster Examiner regarding compliance of magazines in their administrative unit in accordance with 27 CFR Part 555, as appropriate.
6. Provide for and approve annual condition survey assessments of magazines in their administrative unit and take corrective actions to mitigate identified risks.
7. Ensure a blaster reviews proposed contract blasting operating plans and blasting operations in their administrative unit to address safety and resource protection concerns.
8. Ensure that any magazine break-ins, discrepancies, or anomalies are immediately reported to appropriate law enforcement authorities, the Regional Blaster Examiner and the Regional Blaster Coordinator.
9. Ensure changes in the status of magazines and emergency contacts for magazines are communicated to the Regional Blaster Examiner in a timely manner for updating in the secure database.
10. Ensure there is a magazine key control plan, that it is being followed, and that the keys to explosive magazines on their unit are secure and accounted for.
11. Identify candidates for the Blaster Training Program based on current and expected future needs.
12. Review key register inventories, magazine inventories, and verifications annually; and address any discrepancies that have been identified.

7190.48 - Lead Blasters

Lead Blasters shall:

1. Direct or provide on-the-job training for Forest Service blasters.
2. Review qualifications of blasters and make recommendations to the Regional Blaster Examiner on certification, re-certification, and de-certification of blasters; and determine the personnel, training, and certification needs for blasting operations.
3. Ensure Forest Service magazine inventories, annual condition surveys, and documentation that the seven-day inspections were completed and are submitted to the Regional Blaster Examiner to be uploaded into the secure database.
4. Monitor the performance of Forest Service blasters within their administrative unit.
5. Assist in or conduct training to qualify Forest Service blasters.
6. Review plans for or conduct blasting projects that are large in scope or technically challenging.
7. When requested cooperate with and/or assist in the investigation of blasting accidents and incidents or infractions of safety and security requirements for blasting operations.

7190.49 - Blaster

Blasters shall:

1. Maintain all certifications and requirements necessary to maintain their Blasting Certification as current.
2. Maintain records of all shots performed to include purpose, plan, detonation method, explosives used, and results.
3. Assist in all training necessary to blasters-in-training.
4. Maintain all necessary records of magazines under their direct control.
5. Request Supervisor begin process to have Position Description updated to include blasting duties.

7190.5 - Definitions

Blaster. A Forest Service employee certified to perform blasting operations and possessing a current OPM Background Check, and an updated position description. (A blaster with an expired clearance may continue to perform all blasting duties as long as a

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formal request for a security renewal has been submitted through the Forest Service Human Resources Personnel Security Office.)

Blasting Helper. A Federal employee at least 21 years of age who assists with a blasting operation under the direct supervision of a blaster. A blasting helper is not certified, does not have an OPM Background Check, and does not have independent access to explosives.

Blaster-in-Training. An entry level blaster who does not yet possess an OPM background clearance and who must work under the direct supervision of a blaster. A blaster-in-training is at least 21 years of age and has attended at least 1 blaster training session. A blaster-in-training may not access magazines unless they are escorted by a blaster. A blaster-in-training may transport explosives if he/she possesses a current Commercial Driver's License with a Hazardous Materials endorsement, a current OPM Background Investigation, and an updated position description.

Explosives and Blasting Materials. Chemical compounds or mixtures that are initiated by heat, shock, impact, friction, or a combination of these which release heat and large quantities of high-pressure gases so rapidly that the force of the explosion overcomes confining forces.

Fireline Blasters. See FSH 5109.17 Fire and Aviation Management Qualification Handbook.

Magazine. Any building or structure on National Forest System lands used for storage of explosives and blasting materials that conforms to 27 CFR sections 555.201 through 555.220.

Magazine Custodian. A blaster designated as the primary person responsible for the day-to-day operations of a Forest Service controlled magazine.

Regional Blaster Coordinator. The person designated to coordinate the administrative aspects of the blasting program for the Region. The Blaster Coordinator does not need to be a blaster, is not required to have a current OPM Background Check, and does not have independent access to explosives.

Regional Blaster Examiner. The person responsible for managing the blasting program for the Region. The Regional Blaster Examiner develops and conducts training, and provides recommendations to Forest Supervisors for Certification. The Regional Blaster Examiner is a blaster, has a current OPM Background Check, an updated position description, and has independent access to explosives.

Shot. A detonation of explosives conducted by a blaster.

7191 - Blasting Operations, Transportation and Storage

7191.1 - Blasting Operations Conducted by the Forest Service

All blasting and explosives operations conducted by the Forest Service must be done in accordance with the *Forest Service Guide for Using, Storing, and Transporting Explosives and Blasting Materials* and this manual.

7191.2 - Blasting Operations Conducted by Contractors

All contract blasting operations must be conducted in accordance with the Bureau of Alcohol, Tobacco, Firearms and Explosives requirements and applicable State laws and regulations.

7191.3 - Transportation of Explosives and Blasting Materials

Transportation of explosives must be conducted in accordance with all U.S. Department of Transportation, State, and local regulations. See section 7190.1 of this manual.

7191.4 - Storage of Explosives and Blasting Materials

Explosives must be stored in accordance with the requirements of all ATF regulations. See section 7190.1 of this manual.

7191.41 - Security of Explosive Magazines

1. All Forest Service Magazines must be under the direct control of a Forest Service blaster.
2. Magazines will be inspected in accordance with Bureau of Alcohol, Tobacco, Firearms and Explosive requirements. All inspections, will be documented to include seven-day inspections.
3. The condition survey assessment and inventory of each magazine will be verified annually by an official not associated with the blasting program, such as a Forest Law Enforcement Officer, Forest Safety Officer, Forest Supervisor, District Ranger, or other Forest-level official as designated by the Forest Supervisor.
4. Magazine security shall meet ATF regulatory requirements at 27 CFR part 555. Locks and keys will be replaced at an interval not to exceed 10 years. In the case of deterioration or a potential breach in security, such as lost keys, affected keys and/or locks must be replaced immediately.
5. The keys to access magazines must be strictly controlled at all times. Establish a lock and key control system by performing an initial physical count of all locks and keys by serial number. Maintain a lock and key control register and inventory for the issuance of keys and for signing keys in and out. Conduct an inventory of keys that have been issued

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and stored twice a year. The signed inventory and key register forms will be scanned and uploaded to the secure database annually.

6. A regional official such as the Regional Director of Engineering, Regional Blasting Coordinator, or Regional Blaster Examiner will review each unit's blasting program annually and physically inspect each Forest Service-owned magazine on a three year basis. The Regional Foresters will verify in writing the accuracy of this information, annually. Items to be reviewed include, but are not limited to:

- a. Seven-day inspection records.
- b. Annual condition surveys and any corrective actions.
- c. Inventory verification records.
- d. Personnel certification, training, background checks, and position descriptions records.
- e. Date, locations, participants and results of the Regional Official's physical inspection of all owned Forest Service magazines on a three year basis.

7192 - Records

The National Blasting Program Manager shall maintain the following records in the Forest Service secure database, as verified annually by the Regional Forester:

1. Personnel. Maintain records on all blasters and blasters-in-training, including name, dates of training, dates of certification and recertification, 'Closed Date' of Office of Personnel Management (OPM) background investigation (Code 5, Moderate Risk).
2. Shot Records. Maintain an annual report of blasting activity for the Region, including number and types of projects and amount of explosives used.
3. Magazines. Maintain records on all magazines, including the name and location of the magazine, the custodian's name, telephone numbers and e-mail address, lock/key replacement, and other information as determined.
4. Inventory and Inspections. Maintain records of the annual explosive inventory verifications and inspections.
5. Condition Survey Assessments. Maintain a copy of completed assessment and risk mitigation plans.
6. Regional Forester's Records Verification. Maintain a copy of the Regional Forester's verification of records.

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7. Key register and Inventory Forms. Maintain key register and inventory forms to include key replacement schedule.
8. Date, locations, participants and results of the regional official's physical inspection of all Forest Service-owned magazines on a three year basis.

The unit lead blaster shall maintain the following records, as verified by the Regional Forester:

1. Seven-day Inspection Records. Maintain documentation that these occurred at the unit level.
2. Explosive Purchases. A copy of all explosive purchase invoices must be kept on file in accordance with Forest Service record retention timelines and maintained at the unit level.
3. Transportation Bill of Lading. A copy of the transportation bill of lading must be kept on file in accordance with Forest Service record retention guidelines and maintained at the unit level.

7193 - National Explosive Blasters Technical Advisory Group (NEBTAG)

7193.1 - Membership

NEBTAG is composed of the National Blasting Program Manager and all Regional Blaster Examiners and Regional Blaster Coordinators. NEBTAG will be chaired by the National Blasting Program Manager. Ancillary membership is comprised of the Washington Office Directors of Engineering, Homeland Security, Law Enforcement and Investigations, and Occupational Health and Safety; the National Winter Sports Program Manager; the Regional Engineers; the National Technology and Development Program; and other Federal Agencies as appropriate.

7193.2 - Duties

1. Provides technical guidance and ensures the development of standardized national training programs for blasting operations and other uses involving explosives.
2. Provides technical guidance and ensures the development of certification criteria for different categories of blasters.
3. Establishes accepted practices and procedures for the safe use, handling, storage, and transportation of explosives and blasting materials in compliance with Federal, State, and local laws and regulations.
4. Sponsors the annual Blasting Workshop.
5. Provides information on newly developed explosives and blasting materials and associated technology.

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6. Makes recommendations for changes to the Forest Service Guide for Using, Storing, and Transporting Explosives and Blasting Material.
7. Consults with the National Avalanche Center on any issues related to the Forest Service Military Artillery for Avalanche Mitigation Program.

7194 - References

The *Forest Service Guide for Using, Storing, and Transporting Explosives and Blasting Materials* (the Guide) (publication 0867-2826-MTDC, latest edition), developed by the Forest Service National Technology and Development Program, contains guidelines on the training of blasters, the properties of explosives and blasting materials, the use of detonators and blasting equipment, information on the use of explosives and blasting materials, and summarizes Federal Regulations as they pertain to the storage and transportation of explosives and blasting materials. The Guide is developed with input from NEBTAG and provides technical tips about Forest Service blasting operations and other uses involving explosives. Copies of the Guide are available from Blaster Examiners in each Region and from the National Technology and Development Program. The Guide is updated as appropriate.