

Standards, Level 1 - Company Wide

CPCC-STD-FP-54136

PRC-STD-FP-54136

Control of Explosives

Revision 1, Change 0

Published: 11/28/2022

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Periodic Review Due Date:

Program: Fire Protection Engineering

Topic: Fire Protection

Technical Authority: Baker, Rachel K

Alternate Technical Authority: Baker, Rachel K

Functional Manager: Kopf, Joshua D

Use Type: Administrative



USQ Facility	USQ Review	Screener
Solid Waste Operations Complex	GCX-7 (Minor Change)	Jacobs, Orvil
Canister Storage Building/Interim Storage Area	(Screening/Determination Performed (no issues)) <i>CSB-22-059</i>	Garrett, Robert
Central Plateau Surveillance and Maintenance	(Screening/Determination Performed (no issues)) <i>S&M-22-104</i>	Griebel, Scott
Waste Encapsulation Storage Facility	(Screening/Determination Performed (no issues)) <i>WESF-22-101</i>	Garrett, Robert
Plutonium Finishing Plant	GCX-8 (Not in Safety Basis Compliance Matrices)	Griebel, Scott
Transportation	Exclusion Reason: <i>N/A per Appendix B, Bulleted List</i>	
Capsule Storage Area	Exclusion Reason: <i>Per App B bulleted list (new safety basis being developed per DOE-STD-1189)</i>	
105 KW Facility	(Screening/Determination Performed (no issues)) <i>0151-2022</i>	Meyer, Matthew
324 Building	(Screening/Determination Performed (no issues)) <i>324-22-130</i>	Garrett, Robert

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Change Summary

Description of Change

Updated to align with other Hanford Site Contractor organizations. Changes include: Section 1.1 – Nuclear Safety is required for explosives storage in the vicinity of nuclear facilities. Added that implementing documents must be created and promulgated by the Explosives Subcontractor under the direction of the CPCCo Project Director. Section 1.4 – implementation of the standard is now upon publication. Section 2.3 – new section stating that the Manager Nuclear Safety “Reviews plans and procedures for all storage and use of explosive and incendiary devices within the defined area of nuclear facilities.” iCAS CPCC-AR-2022-0846: Addressed resolution to issue for canine training aids.

Updated PPS template.

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The purpose of this standard is to implement the applicable requirements from the current Central Plateau Cleanup Contract, CPCC-PRO-PMT-52688, *Landlord Facilities Management*, and the contract requirements regarding compliance with 10 CFR 851, *Worker Safety and Health Program*. Other requirements documents include:

- DOE-STD-1212-2019, *Explosives Safety*
- DOE M 473.1-1, *Physical Protection Program Manual*, Attachment 1, "Contractor Requirements Document" (CRD)
- NFPA 490, *Code for the Storage of Ammonium Nitrate*
- NFPA 495, *Explosive Materials Code*
- NFPA 498, *Standard for Safe Havens and Interchange Lots for Vehicles Transporting Explosives*
- 27 CFR 555, *Commerce in Explosives*
- 29 CFR 1926, *Safety and Health Standards for the Construction Industry*

Approved procedures must be in place for the storage or use of all explosive or incendiary materials in the vicinity of Central Plateau Cleanup Company (CPCCo) nuclear facilities. The concurrence of CPCCo nuclear safety through the Unreviewed Safety Question (USQ) process is also required for issuing and/or changing any and all such procedures.

If explosives will be stored or used in the vicinity of nuclear facilities, facility management shall ensure all reviews, including USQ and review by the Manager, Nuclear Safety, are completed prior to proceeding.

Implementing documents must be created and promulgated by the Explosives Subcontractor under the direction of the CPCCo Project Director. This standard provides requirements for control of explosives.

1.2 Scope

This standard provides information to ensure effective management and oversight of the transportation, storage, and use of explosives, and the discovery of unexploded ordinance, by CPCCo and/or CPCCo subcontractors. This standard does not supplement or replace procedural requirements contained in HNF-IP-1065-POK9, *Hanford Patrol Operational Safety*.

1.3 Applicability

This standard applies to CPCCo-managed facilities, operations, and activities.

1.4 Implementation

This standard becomes effective upon publication. Implementing facility procedures shall be revised within 90 days from this standard's effective date.

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- Prior to issuing a requisition for a subcontract, determines if the scope of work to be conducted requires the use of explosives. If so, notifies CPCCo Safeguards and Security.
- If the scope of work to be conducted requires the use of explosives, ensures contractual requirements applicable to explosives (see Section 1.0) are “flowed down” to the Explosives Subcontractor.
- Requests a Prohibited/Controlled Article Pass per procedure HMIS-PRO-SEC-417, *Controlling Prohibited and Controlled Articles*.
- Submits a written request for the use, detonation, or storage of explosives to the Hanford Fire Marshal.
- Ensures explosive magazines are properly sited and are appropriate for the type/quantity of explosives to be stored.
- Prior to transport of explosives on the Hanford Site, notifies the Hanford Patrol Operations Center.
- Prior to detonation of explosives on the Hanford Site, notifies the Hanford Patrol Operations Center.

2.2 Manager, Safeguards and Security

- Notifies Hanford Mission Integration Solutions, LLC (HMIS) Physical Security and Hanford Patrol of intent to use explosives on site.
- Coordinates the development and approval of a job- specific security plan.
- Coordinates the approval process for Prohibited/Controlled Article Passes.
- Provides approved Prohibited/Controlled Article Passes to designated individuals.
- Notifies U.S. Department of Energy, Richland Operations Office (DOE-RL) Security when explosives or incendiary devices will be brought on site or when unexploded ordinance is discovered during field operations.
- Notifies Energy Northwest if explosives are to be transported/used within an 8.1 km (5 mi) radius of the Columbia Generating Station.

2.3 Manager, Nuclear Safety

- Reviews plans and procedures for all storage and use of explosive and incendiary devices within the defined area of nuclear facilities. This includes canine training aids.

2.4 Fire Protection Program Manager and Director of Industrial Safety

- Designates an Explosives Safety Professional for the project.

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2.5 Designated Explosives Safety Professional

- Oversees the transportation, storage, and use of explosives on CPCCo sites for the contracted project.
- Together with the CPCCo Explosives Technical Authority and the CPCCo Safeguards and Security Manager, reviews Explosives Subcontractor's plans and procedures for the transportation, storage, and use of explosives on CPCCo worksites in order to ensure compliance with the requirements documents and other controlling documents.

3.0 GENERAL SAFETY REQUIREMENTS

NOTE: *Charges for propellant actuated devices/tools are not subject to this requirement.*

1. Explosives Subcontractor is responsible for the preparation, development, and execution of the requirements of this standard.
2. CPCCo Fire Protection Engineering provides review, oversight, and facilitate permitting of Explosives Subcontractor activities.
3. Explosives Subcontractors who transport, store, or use explosives on the Hanford Site shall be appropriately licensed or permitted in accordance with 18 *United States Code*, Chapter 40.
4. Personnel transporting, handling, or detonating explosives on the Hanford Site shall obtain a Prohibited/Controlled Article Pass approved by the Director, DOE-RL Security and Emergency Services. Prohibited/Controlled Article Passes are issued in accordance with HMIS-PRO-SEC-417, *Controlling Prohibited and Controlled Articles*.

NOTE: *In the event a security or safety concern dictates the immediate use of explosives, e.g., destruction of unstable chemicals, suspicious items, etc., the aforementioned written request is not required. Such activities may be initiated upon verbal authorization by the Director, DOE-RL Security and Emergency Services Division, and verbal notification to the CPCCo Hanford Site Deputy Fire Marshal, who shall obtain approval by the Hanford Fire Marshal.*

5. Per HMIS-RD-FP-11227, *Use of Explosives on the Hanford Site*, Section 2.1, item 2., a written request for the use, detonation, or storage of explosives shall be submitted to the Hanford Fire Marshal at least 30 days prior to the actual need date. The request must provide the following information (final approval or denial of the request shall be by the Hanford Fire Marshal:
 - Description and justification for proposed use, including specific location(s) where explosives will be used.
 - Type and quantity of explosives and detonators to be used. Include Safety Data Sheet (SDS) for each type.
 - Maximum quantity of explosives and detonators to be onsite at any one time.
 - Maximum quantity of explosives to be detonated at any one time.
 - Period of time for which approval is requested.

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- Listing of safety codes and standards to be followed.
 - Documentation that each person responsible for explosives handling and use is a Washington state-licensed blaster per Washington Administrative Code (WAC) 296.52, *Safety Standards for Possession, Handling, and Use of Explosives*.
 - Description of storage facilities to be used if explosives/detonators are to be stored on site (magazines must comply with standards for explosives storage with separation/compatibility requirements).
 - Description of method to be used to keep unauthorized personnel from entering any area where explosives are being handled, detonated, or stored, and a description of the method to be used to warn personnel in the blast area of any impending detonation.
 - Type of conveyance to be used for transport of explosives.
 - Procedure for removal of unused explosives and detonators.
 - Name of each person who requires a Prohibited/Controlled Article Pass.
 - Name of each person who is to be authorized access to explosives magazines. Only licensed blasters may have direct access to explosive magazines.
 - Procedure for notification to nearby facility/utility landlords immediately prior to detonation.
 - Procedure for control of radio frequency hazards.
 - Assurance that a current inventory of the contents of each storage magazine will be kept, including each entry and withdrawal.
6. The Hanford Patrol Operations Center (POC) and CPCCo Safeguards and Security shall be notified of any transportation of explosives on the Hanford Site at least 1 hour in advance. The notification shall include the destination and route. The POC shall also be notified at the time the shipment departs and upon its arrival.
7. The POC and CPCCo Safeguards and Security shall be notified at least 4 hours prior to the detonation of any explosives. The size and number of charges to be fired shall be included in this notification.
8. Transportation of explosives on Hanford Site roads during peak traffic periods (0500 to 0800 hours, and 1500 to 1700 hours) (5 am to 8 am, and 3 pm to 5 pm) on normal working days (presently Monday through Thursday) is prohibited and shall be accounted for in project planning.
9. Blasters shall be qualified, by reason of training, knowledge, or experience, in the field of transporting, storing, handling, and use of explosives, and be currently licensed by the state of Washington per WAC 296.52.
10. A pre-job safety orientation shall be provided to all blasting and security personnel prior to start of work. The orientation shall include safety/security requirements, emergency notification and reporting, evacuation, etc.

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- a. The orientation shall include safety/security requirements, emergency notification, and reporting, evacuation, etc.
 - b. Project management shall coordinate with other site contractors to provide information sessions regarding upcoming demolition activities.
11. A CPCCo representative shall be assigned to the job site whenever explosives are present outside of a locked magazine and shall have a method of contacting the POC (as an alternative, the Hanford Patrol may be used to fulfill this requirement).
 12. If explosives will be stored or used in the vicinity of nuclear facilities, the Manager, Nuclear Safety and the facility management must ensure all the required reviews, including review under the USQ process, are completed prior to proceeding with the activity.
 13. The movement of "common" explosives, over 1800 lb., within an 8.1 km (5 mi) radius of the Energy Northwest Columbia Generating Station requires notification of Energy Northwest 7 calendar days in advance of transport.
The point-of-contact for notification is: Energy Northwest Security (509) 377-8065.
 14. Explosives, of any quantity, will be moved over transport routes outside the 8.1 km (5 mi) radius of the Energy Northwest Columbia Generating Station unless the destination requires movement within the 8.1 km (5 mi) radius.
 15. Only authorized and qualified persons shall handle and use explosives.
 16. With the exception of authorized law enforcement, no person shall smoke, carry matches, or any other flame producing device, nor shall firearms or loaded cartridges be carried while in or near a motor vehicle or conveyance transporting explosives.
 17. No person shall be allowed to handle or use explosives while under the influence of intoxicating liquors, narcotics, or other controlled substances.
 18. All explosives shall be accounted for at all times. Explosives not being used shall be kept in a locked magazine, unavailable to persons not authorized to handle them.
 19. No explosives or blasting agents shall be abandoned.
 20. No fire shall be fought where the fire is in imminent danger of contact with explosives. All employees shall be removed to a safe area and the fire area guarded against intruders. Fires may be fought if explosives are not in imminent danger of being contacted by the fire.
 21. Original containers, or Class II magazines, shall be used for taking detonators and other explosives from storage magazines to the blasting area.
 22. When blasting is done in congested areas or in proximity to a structure, railway, or highway, or any other installation that may be damaged, the Blaster-in-Charge shall take special precautions in the loading, delaying, initiating, and confining of each blast with mats or other methods so as to control the throw of fragments, and thus prevent bodily injury to employees.

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23. Employees authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution, including but not limited to, visual and audible warning signals, flags, or barricades, to ensure employee safety.
24. Blasting operations above ground shall be conducted between sunup and sundown.
25. Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lightning, adjacent power lines, dust storms, or other sources of extraneous electricity. These precautions shall include:
 - a. Detonators shall be short-circuited in holes that have been primed and remain shunted until wired into the blasting circuit.
 - b. The posting of signs warning against the use of mobile radio transmitters on all roads within 304.8 m (1000 ft.) of the blasting operations. Signs shall have 10.2 cm (4 in.) white letters on a red background, with the words, "Blasting Area - Radio Transmitting Prohibited."
 - c. Mobile radio transmitters that are less than 30.5 m (100 ft.) away from electric blasting caps, in other than original containers, shall be de-energized and effectively locked.
26. Explosives, blasting agents, and blasting supplies that are obviously deteriorated or damaged shall not be used.
27. Delivery and issue of explosives shall only be made by and to authorized persons and into authorized magazines or approved temporary storage or handling areas.
28. The use of black powder shall be prohibited.
29. Blasts shall be fired electrically with an electric blasting machine or properly designed electric power source.
30. In the event unexploded ordinance (or suspected unexploded ordinance) is discovered during field operations by CPCCo or subcontractor employees, the following steps must be taken:
 - a. Immediately stop work.
 - b. Restrict access to the unexploded ordinance.
 - c. Do not disturb or touch the unexploded ordinance.
 - d. Immediately notify CPCCo Safeguards and Security.

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1. Explosives shipped on common carriers shall be packaged and shipped in accordance with U.S. Department of Transportation (DOT) regulations.
2. Explosives, blasting agents, and blasting supplies shall not be transported with other materials or cargoes. Blasting caps (including electric) shall not be transported in the same vehicle with other explosives, unless in an approved container with rated compartments.
3. The operator of an explosives-transport vehicle shall have proper training in the general safety precautions for explosives handling.
4. No smoking is allowed in or within 7.6 m (25 ft.) of any vehicle containing explosives. Matches, lighters, or other fire-, flame-, or spark-producing devices shall not be in the vehicle or carried by personnel in the vehicle.
5. Transportation of explosives through congested areas should be avoided.
6. Road vehicles transporting explosives shall stop at all railroad crossings.
7. No personnel shall ride in the cargo area. Loose items (e.g., handling gear) in the cargo compartments are prohibited.
8. Other than when opened for inspection, containers of explosives shall not be opened nor repaired on any transportation vehicle.
9. Except for emergency situations, fueling or maintenance of vehicles containing explosives is forbidden.
10. Each facility shall establish traffic rules governing the operation of explosives-transport vehicles and the operation of other onsite vehicles in the vicinity of explosives-transport vehicles.
11. No explosives shall be loaded or unloaded from a motor vehicle while the motor is running unless the motor is required to provide power to vehicle accessories used in loading and unloading operations and is equipped with an exhaust spark arrestor.

4.2 Vehicles

1. Vehicles used for transporting explosives shall be structurally sound and in good mechanical condition. The vehicle shall be subjected to regular maintenance checks.
2. When transferring explosives within facilities, open body vehicles (other than flatbed types) shall have sides and tailgates or rear doors that are strong and securely fastened to safely retain the explosives.
3. When a vehicle with an open body (flatbed type) is used to transport explosives, a Class II magazine, or original manufacturer's container, shall be securely mounted on the bed to contain the cargo.

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4. The cargo on partly or completely loaded vehicles (including flatbed types) shall be blocked, braced, chocked, tied down, or otherwise secured to prevent shifting during transit.
5. All vehicles used for the transportation of explosives shall have tight floors and any exposed spark-producing metal on the inside of the body shall be covered with wood or other non-sparking material to prevent contact with containers or explosives.
6. Precautions shall be taken to prevent the exhausts of motor vehicles from igniting explosive material. When a motor vehicle approaches within 7.6 m (25 ft.) of the doors of a structure through which a shipment is to be moved, the doors shall be kept closed until the motor has been turned off, unless the vehicle is equipped with an exhaust spark arrestor, or there are no explosives exposed.

NOTE: *Explosives packaged in DOT or onsite containers are not considered exposed.*

7. Every motor vehicle or conveyance used for transporting explosives shall be marked or placarded on both sides, the front, and the rear with the word "Explosives" in red letters, not less than 10.2 cm (4 in.) in height, on white background. In addition to such marking or placarding, the motor vehicle or conveyance may display, in such a manner that it will be readily visible from all directions, a red flag 45.7 cm (18 in.) by 76.2 cm (30 in.), with the word "Explosives" painted, stamped, or sewn thereon, in white letters, at least 15.2 cm (6 in.) in height.
8. Each vehicle used for transportation of explosives shall be equipped with a fully charged fire extinguisher, in good condition. An Underwriters Laboratory (UL)-approved extinguisher of not less than 10-ABC rating will meet the minimum requirement. The driver shall be trained in the use of the extinguisher on his vehicle.
9. Motor vehicles or conveyances carrying explosives, blasting agents, or blasting supplies, shall not be taken inside a garage or shop for repairs or servicing.
10. No motor vehicle transporting explosives shall be left unattended.

4.3 Abnormal Transportation Conditions

1. Explosives should not be transported in hazardous conditions (e.g., storms, icy roads, or poor visibility) unless an emergency plan is in effect to provide instruction and guidelines while an explosives-transport vehicle is in transit. The plan should address the following issues:
 - a. Parking the vehicle.
 - b. Safeguarding the vehicle from other traffic.
 - c. Notifying appropriate authorities of the emergency situation.
 - d. Leaving the vehicle unattended.

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2. A plan shall be prepared to address mechanical breakdowns. The plan shall address the following issues:
 - a. Removing the vehicle from the road as far as practical.
 - b. Posting emergency reflectors, signals, etc. (carrying flares on the vehicle is not permitted).
 - c. Reporting the problem.
 - d. Maintaining surveillance of the vehicle.
 - e. If necessary, removing the vehicle load to facilitate repair of the vehicle.
3. If an explosives-carrying vehicle is involved in an accident, the following steps should be taken:
 - a. Inspect the load for evidence of fire.
 - b. If there is a fire, but the explosives material is not presently or imminently involved, attempt to prevent the fire from spreading to the load. The fire may be fought using the vehicle's fire extinguishers. Ensure the security of explosives items removed from the vehicle.
 - c. If a fire presently or imminently involves the explosives load, evacuate all personnel to a pre-established safe distance. Block or divert traffic from the vicinity of the accident. Evacuate potentially affected area residents.
 - d. Unless the explosive cargo is imminently involved in fire, the operator is to stay with the vehicle until the cargo is properly dispositioned.
 - e. Notify the Hanford Fire Department (HFD) of the accident immediately and inform them of the general type and approximate quantity of explosives involved.
 - f. Inform the proper authorities of the accident.

5.0 STORAGE OF EXPLOSIVES AND BLASTING AGENTS**5.1 Storage Magazine Facilities**

1. Explosives and related materials shall be stored in approved facilities required under the applicable provisions in 27 CFR 555 and NFPA 495.
2. Placards shall be posted on or near each magazine door, specifying explosive and personnel limits and general safety precautions that should be observed during work in the magazine.
3. Vegetation around storage magazines should be controlled to minimize potential damage to the magazine.

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4. At least two fire extinguishers, minimum rating 2A:10BC and winterized where necessary, should be provided and maintained for immediate use by personnel working around a magazine. These extinguishers may be located in the area or available on an explosives transportation vehicle. The purpose of these extinguishers is to fight small external fires or magazine fires if the explosive material is not presently or imminently in danger of becoming involved.
5. Suitably rated telephone or other emergency communication equipment should be provided in magazine storage areas. All communication equipment located outdoors should be protected from the weather.

5.2 Storage Magazine Operations

1. Explosives items shall be properly packaged and stored in DOT-approved manufacturers' containers/packages.
2. Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents.
3. Explosives and explosives containers in storage shall be positioned safely and securely. If explosives containers must be stacked, they shall be placed in stable arrays.
4. Stored explosives should be segregated by lot designation. Stacks of explosives should be arranged so that air freely circulates to all parts of the stack. To prevent moisture accumulation, pallets or appropriate dunnage should be used to ensure containers are not stacked directly on the magazine floor.
5. Aisles shall be wide enough to accommodate inspection, inventory, sampling, and materials handling operations of the stored explosives containers.
6. Magazines shall be locked at all times except when permissible operations are in progress.
7. Empty containers, tools, conveyors, lift trucks, skids, etc., should not be stored in a magazine containing explosives.
8. Combustible materials such as excess dunnage, packing material, and boxes shall not be stored in a magazine containing explosives.
9. Flammable liquids shall not be stored or used in explosives magazines.
10. Operations in and around magazines shall be prohibited when an electrical storm is in progress and minimized when it is evident that such a storm is approaching.
11. Explosives-handling operations shall not be performed when magazine entranceways are icy or do not provide adequate footing for any other reason.
12. Smoking and open flames shall not be permitted within 15.2 m (50 ft.) of explosives and detonator storage magazines.
13. Electrical switchgear shall be located at least 7.6 m (25 ft.) from the magazine.

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1. Procedures that permit safe and efficient loading shall be established before loading is started.
2. No more than the amount of explosives or blasting agents needed for a shift's requirements shall be taken to the blast site. After loading is completed, all unused explosives and detonators shall be immediately returned to an authorized storage facility.
3. Holes shall be checked prior to loading for depth and for conditions such as water in the holes.
4. All drill holes shall be sufficiently large to admit freely the insertion of the cartridges of explosives.
5. Tamping shall be done only with wood rods or plastic tamping poles without exposed metal parts; however, non-sparking metal connectors may be used for jointed poles. Violent tamping shall be avoided. The primer shall never be tamped.
6. No holes shall be loaded except those to be fired in the next round of blasting.
7. Drilling shall not be started until all remaining butts of old holes are examined for unexploded charges, and if any are found, they shall be re-fired before work proceeds.
8. No person shall be allowed to deepen drill holes that have contained explosives or blasting agents.
9. Machines and all tools not used for loading explosives into bore holes shall be removed from the immediate location of holes before explosives are delivered. Equipment should not be operated within 15.2 m (50 ft.) of loaded holes.
10. No activity of any nature other than that which is required for loading holes with explosives should be permitted in a blast area.
11. No explosive shall be loaded or used underground in the presence of combustible gases or combustible dusts.
12. All blast holes in open work shall be stemmed to the collar or to a point that will confine the charge.
13. Warning signs, indicating a blast area, shall be maintained at all approaches to the blast area. The warning sign lettering shall not be less than 10.2 cm (4 in.) in height on a contrasting background.

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6.0 BLASTING

1. Electric Blasting

- a. Electric blasting caps shall not be used where sources of extraneous electricity make the use of electric blasting caps dangerous. Blasting cap leg wires shall be kept short-circuited (shunted) until they are connected into the circuit for firing.
- b. In any single blast using electric blasting caps, all caps shall be of the same style of function, and of the same manufacture.
- c. An electric blasting machine recommended by the manufacturer of the electric blasting caps to initiate the blasting circuits should be used. The use of standard 120, 240, or 480 volt-circuits may cause a misfire and is not recommended.
- d. When firing with blasting machines, the connections shall be made as recommended by the manufacturer of the electric blasting caps used.
- e. The blaster shall be in charge of the blasting machines, and no other person shall connect the leading wires to the machines.

2. Use of Detonating Cord

- a. Detonating cord is not used at the Hanford Site.

3. Firing the Blast

- a. A code of blasting signals equivalent to Table 1 shall be posted on one or more conspicuous places at the operation, and all employees shall be required to familiarize themselves with the code and conform to it.

Table 1. Code of Blasting Signals

Warning Signal	A 1-minute series of long blasts, 5 minutes prior to blast signal.
Blast Signal	A series of short blasts 1 minute prior to the shot.
All Clear Signal	A prolonged blast following the inspection of blast area.

- b. Before a blast is fired, the blasting signals shall be given by the Blaster-in-Charge, who has made certain that all surplus explosives are in a safe place and all employees, vehicles, and equipment are at a safe distance or under sufficient cover.
- c. Flagmen shall be safely stationed on highways and roads that pass throughout the danger zone to stop traffic during blasting operations.
- d. It shall be the duty of the blaster to fix the time of blasting.

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- e. Before firing an underground blast, warning shall be given, and all possible entries into the blasting area, and any entrances to any working place where a drift, raise, opening, shall be carefully guarded. The blaster shall make sure all employees are out of the blast area before firing a blast.
- f. Appropriate precautions shall be taken to prevent accidental discharge of electric blasting caps from induced current. These precautions shall include:
 - Short-circuiting detonators in holes that have been primed and shunted until wired into the blasting circuit.
 - Suspending blasting operations and clearing personnel from area upon approach and during electrical storms.
 - Prohibiting mobile radio transmitters within 30.5 m (100 ft.) of electric blasting caps in other than original containers, unless radio is de-energized and locked.
 - Complying with the recommendations of the Institute of the Makers of Explosives with regard to blasting near radio transmitters.

4. Inspection After Blasting

- a. Immediately after the blast has been fired, the firing line shall be disconnected from the blasting machine or, where power switches are used, they shall be locked open or in the off position.
- b. Sufficient time shall be allowed, not less than 15 minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. An inspection of the area and the surrounding rubble shall be made by the blaster to determine if all charges have been exploded before employees are allowed to return to the operation.
- c. If a misfire is found, the blaster shall provide proper safeguards for excluding all employees from the danger zone.
- d. No other work shall be done except that necessary to remove the hazard of the misfire and only those employees necessary to do the work shall remain in the danger zone.
- e. No attempt shall be made to extract explosives from any charged or misfired hole; a new primer shall be put in and the hole re-blasted. If re-firing of the misfired hole presents a hazard, the explosives may be removed by washing out with water or, where the misfire is under water, blown out with air.
- f. If there are any misfires while using cap and fuse, all employees shall remain away from the charge for at least 1 hour. Misfires shall be handled under the direction of the person in charge of the blasting. All wires shall be carefully traced and a search made for unexploded charges.
- g. No drilling, digging, or picking shall be permitted until all missed holes have detonated or the authorized representative has approved that work proceed.

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- h. Drilling a hole next to a misfire hole in an attempt to fire the hole by propagation is not recommended.
- i. If the misfire causes the charge to burn or a burning charge is suspected, the blast area should not be approached for at least 1 hour.

7.0 INVENTORY CONTROL

1. Inventory Records: A perpetual inventory record by the Explosives Subcontractor must be maintained for each magazine or storage facility:
 - a. Daily Inventory/Posting
 - All receipts and issues must be recorded and posted daily. In addition to quantities, the manufacturer's identifying marks (if any) must be recorded.
 - A check should be made to see if the physical inventory agrees with the balances shown on hand by the daily posting. If any discrepancy occurs, it should be checked out and, if it appears that a theft or loss has occurred, it must be reported at once to CPCCo Safeguards and Security. If for any reason, CPCCo Safeguards and Security cannot be contacted, report the occurrence to Hanford Patrol.
2. Permanent Record: A Permanent Record Log must also be maintained, which shall record the following:
 - Manufacturer's mark of identification
 - Quantity and class of explosives acquired daily
 - Date of such acquisition
 - Name and license number of vendor from who obtained
3. Inspection of Storage Facilities: Storage facilities must be opened and inspected at intervals not greater than 3 days to determine whether the explosives therein are intact and whether there has been any unauthorized entry or attempted entry or unauthorized removal of contents. If such evidence of unauthorized entry or removal is found, it must be reported at once to CPCCo Safeguards and Security. If for any reason, CPCCo Safeguards and Security cannot be contacted, report the occurrence to the POC.

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8.0 FORMS

None

9.0 RECORDS

None

10.0 SOURCES**10.1 Requirements***10 CFR 851, Worker Safety and Health Program**27 CFR 555, Commerce in Explosives**29 CFR 1926, Safety and Health Regulations for Construction, Subpart U, Blasting and the Use of Explosives**CPCC-PRO-PMT-52688, Landlord Facilities Management**DOE M 473.1-1, Physical Protection Program Manual, Attachment 1, "Contractor Requirements Document"**DOE-STD-1212-2019, Explosives Safety**NFPA 490, Code for the Storage of Ammonium Nitrate**NFPA 495, Explosive Materials Code**NFPA 498, Standard for Safe Havens and Interchange Lots for Vehicles Transporting Explosives**WAC 296.52, Safety Standards for Possession, Handling, and Use of Explosives***10.2 References***18 USC, Chapter 40**HMIS-PRO-SEC-417, Controlling Prohibited and Controlled Articles**HMIS-RD-FP-11227, Use of Explosives on the Hanford Site**HNF-IP-1065-POK9, Hanford Patrol Operational Safety*