

**SUPPORTING STATEMENT FOR THE  
INFORMATION COLLECTION REQUIREMENTS  
IN THE STANDARD ON BLASTING AND THE USE  
OF EXPLOSIVES (29 CFR PART 1926, SUBPART  
U)<sup>1</sup>  
OMB CONTROL NO. 1218-0217 (October 2024)**

The agency is seeking an extension of a currently approved data collection.

**A. JUSTIFICATION**

**1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.**

The main purpose of the Occupational Safety and Health Act (“OSH Act” or “Act”) is to “assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources” (29 U.S.C. 651). To achieve this objective, the OSH Act specifically authorizes “the development and promulgation of occupational safety and health standards” (29 U.S.C. 651). The Act states further that “[t]he Secretary . . . shall prescribe such rules and regulations as [he/she] may deem necessary to carry out [his/her] responsibilities under this Act, including rules and regulations dealing with the inspection of an employer’s establishment” (29 U.S.C. 651).

To protect employee health, the OSH Act authorizes the Occupational Safety and Health Administration (“OSHA” or “agency”) to develop standards that provide for “monitoring or measuring employee exposure” to occupational hazards and “prescribe the type and frequency of medical examinations and other tests which shall be made available [by the employer] to employees exposed to such hazards . . . to most effectively determine whether the health of such employees is adversely affected by such exposure” (29 U.S.C. 655). Moreover, the Act directs OSHA to “issue regulations requiring employers to maintain accurate records of employee exposures to potentially toxic materials or other harmful physical agents which are required to be monitored and measured . . . ” (29 U.S.C. 657). In addition, the OSH Act mandates that “[e]ach employer shall make, keep and preserve, and make available to the Secretary [of Labor] . . . such records regarding [the employer’s] activities relating to this Act as the Secretary . . . may prescribe by regulation as necessary or appropriate for the enforcement of this Act . . . ” (29 U.S.C. 657). The Act authorizes the agency to issue standards that “prescribe use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant

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<sup>1</sup>The purpose of this Supporting Statement is to analyze and describe the burden hours and costs associated with provisions of this Subpart that contain paperwork requirements; this Supporting Statement does not provide information or guidance on how to comply with, or how to enforce, these provisions.

symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure” (29 U.S.C. 655). Additionally, the OSH Act mandates that “[e]ach employer shall make, keep and preserve, and make available to the Secretary . . . such records . . . as the Secretary . . . may prescribe by regulation as necessary or appropriate for the enforcement of this Act . . .” (29 U.S.C. 657).

**2. Indicate how, by whom, and for what purpose the information is to be used. Except for new collection, indicate the actual use the agency has made of the information received from the current collection.**

Subpart U contains several information collection requirements. Each of the following paragraphs lists and describes the information collection requirements contained in Subpart U, Blasting Operations.

**§ 1926.900(d)**

The employer must ensure that explosives not in use are kept in a locked magazine and are unavailable to persons not authorized to handle the explosives. The employer must maintain an inventory and use record of all explosives; in use and not in use. The employer must contact the appropriate authorities in the event of loss, theft, or unauthorized entry into a magazine.

This requirement ensures that all explosives are accounted for and that they are being kept in a safe and secure place, away from unauthorized users. This level of control is necessary to prevent unintended or unlawful withdrawal and detonation of explosives, as well as any resultant injuries to and fatalities of working men and women.

The language was adopted from ANSI M28.1 – 1969, paragraph 7.1.5 (modified) and reflects the national consensus as well as the usual and customary industry practices in existence since before OSHA’s creation and continuing through today. Storage and inventory requirements are also found under the Treasury Department, Bureau of Alcohol, Tobacco and Firearms in 27 CFR 555.

**§ 1926.900(i)**

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.

OSHA does not believe this imposes a burden since employers may use physical means such as barricades, which is not a collection of information, to ensure worker safety. In addition, this language was adopted from ANSI A10.7-1970, paragraph 6.1.8 and reflects the national consensus as well as the usual and customary industry practices in existence since before OSHA’s creation and continuing through today.

**§1926.900(k)(3)(i)**

Employers must prominently display adequate signs warning against the use of mobile radio transmitters on all roads within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a competent person shall be consulted to evaluate the particular situation, and alternative provisions may be made which are adequately designed to prevent any premature firing of electric blasting caps. A description of any such alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection by representatives of the Secretary of Labor.

This information is needed to protect the working men and women from exposure to premature detonation of blasting agents on roadside construction projects. The language was adopted from ANSI A10.7-1970, paragraph 6.1.13 (2 & 3) (modified) and reflects the national consensus standards. In addition, the U.S. Department of Transportation's Manual of Uniform Traffic Control Devices-2012, including errata (MUTCD) at chapter 6F paragraph 6F. 41, 42 and 43, requires signs specifying "Blasting Zone Ahead," "End of Blasting Zone," and "Turn Off 2-way Radio and Phone." For the most part, the usual and customary industry practice described above includes reliance on competent experts to do the radio frequency energy propagation hazard analysis. However, in cases involving alternative methods, OSHA requires the methods be certified in writing and, therefore, the agency takes a burden hour charge for those few occasions.

**§ 1926.900(o)**

Employers must notify the operators and/or owners when blasting operations are in the proximity of overhead power lines, communication lines, utility lines, or other services and structures in order to protect working men and women from the unintended damage and collapse of, as well as contact with, such things. Blasting operations shall not be carried on until measures for safe control have been taken.

This provision is necessary to protect working men and women from the hazards associated with the unintended destruction of power, communication, and utility lines, as well as other related services and structures.

OSHA believes that this requirement does not create an additional burden on employers. The language was adopted from ANSI A10.7 (1970), paragraph 6.1.10 (modified) and reflects the national consensus as well as the usual and customary industry practices in existence since before the time of OSHA's creation and continuing through today. Similar language is also found in the U.S. Army Corps of Engineers' regulation, EM 385-1-1, section 25.A.6 of 03/1967.

**§ 1926.901(d)**

Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and performing, in a safe manner, the type of blasting that will be required. This requirement is of primary importance for protecting working men and women including the blasters themselves when construction work involves the use of explosives and blasting agents.

OSHA believes that this requirement creates no additional burden on employers. It is usual and customary for employers to obtain the assurances discussed in this section from blasters as a condition of employment. This language came from ANSI A10.7 (1970), paragraph 6.2.5 and reflects the national consensus as well as the usual and customary industry practices in existence since before the time of OSHA's creation and continuing through today.

### **§ 1926.902(h)**

Employers must ensure that every 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. The lettering shall be placed on a white background and be not less than 4 inches in height. In addition to the marking or placarding, the motor vehicle or conveyance may display a red flag, readily visible in all directions, 18 inches by 30 inches, with the word "explosives" painted, stamped, or sewed thereon, in white letters, at least 6 inches in height.

These markings and placards serve to warn workers, who may otherwise not know, that they are entering an area where explosives are present or working next to a vehicle used to transport explosives on their construction site. OSHA does not believe this is a collection of information since the Standard provides specific information to the employer to disclose to the public (5 CFR 1320.3(c)(1)).

This language was adopted from ANSI A10.7-1970, paragraph 4.1.4 and reflects the national consensus as well as the usual and customary industry practices in existence since before the time of OSHA's creation and continuing through today. This language is also found in the U.S. Army Corps of Engineers regulation, EM 385-1-1 section 25.D.02 of 03/1967 (modified).

### **§ 1926.903(d)**

The employer must notify the hoist operator prior to transporting explosives or blasting agents in a shaft conveyance. Notification ensures that the hoist operator uses all necessary precautions when transporting explosives and blasting agents thus preventing accidental explosions and injuries.

This requirement is necessary to protect working men and women, including hoist operators, from the hazards associated with moving explosives on hoists. This requirement was adopted from ANSI A10.7-1970, paragraph 4.2.4 and reflects the national consensus, as well as the usual and customary industry practices, in existence since before the time of OSHA's creation and continuing through today. The agency has received no information describing the

frequency of this occurrence other than it was extremely limited.

Additionally, OSHA’s underground construction standard, **§ 1926.800(e) Notification**, facilitates the notice required in § 1926.903(d). The underground construction standard states that: “Oncoming shifts shall be informed of any hazardous occurrences or conditions that have affected or might affect employee safety [...]” (§ 1926.800(e)) and “the employer shall establish and maintain direct communications for coordination of activities with other employers whose operations at the jobsite affect or may affect the safety of employees underground (§1926.800(e)(2)).”

### **§1926.903(e)**

Employers must perform weekly inspections on the electrical system of trucks used for underground transportation of explosives. The weekly inspection is to detect any failure in the system which would constitute an electrical hazard. The most recent certification of inspection must be maintained and must include the date of inspection, a serial number or other identifier of the truck inspected, and the signature of the person performing the inspection.

This requirement is necessary to protect workers underground from electrical system hazards associated with underground transportation of explosives in trucks.

This language was adopted from the U.S. Army Corps of Engineers regulation EM 385-1-1 section 25.D.03 of 03/1967. Additionally, similar requirements date to ANSI A10.7-1970, section Chapter 4. Transportation of Explosives, which reflects the national consensus as well as the usual and customary industry practices in existence since before OSHA’s creation and for the most part continuing through today. Paragraph 4.1.6 (1) reads “[A motor vehicle used for transporting explosives shall meet the following requirements: (1) All electrical wiring shall be completely protected and securely fastened to prevent short-circuiting. [...]” The agency has received no information, anecdotal or otherwise, suggesting its estimate of only one project a year using trucks to transport explosives underground is erroneous. It has received anecdotal suggestions that the industry has not used trucks widely for explosives’ Transportation for decades and rarely use trucks in this manner underground today.

### **§ 1926.903(m)**

Each powder car or conveyance built for the purpose of transporting explosives and blasting agents shall bear a reflectorized sign on each side with the word “Explosives” in letters, not less than 4 inches in height; upon a background of sharply contrasting color.

These signs serve to warn workers, who may otherwise not know, that explosives and blasting agents are present.

OSHA does not believe that this paragraph falls in the range of a collection of information since the Standard provides specific information to the employer (5 CFR 1320.3(c)(1)) for protecting working men and women on the site.

In addition, this language was adopted from ANSI A10.1–1970, paragraph 4.2.11 and reflects the national consensus as well as the usual and customary industry practice in existence since before OSHA’s creation and continuing through today.

**§ 1926.905(a)**

Procedures that permit safe and efficient loading shall be established before loading is started.

This requirement ensures the protection of men and women working on construction sites where blasting operations are conducted.

OSHA believes that this requirement is essential to worker protection and safe blasting operations while imposing no Paperwork Reduction Act of 1995 (PRA) burden. It is usual and customary for blasting employers to have the required procedures in place as part of their knowledge, practice, and experience. This language was adopted from ANSI A10.7 (1970), paragraph 6.3.1 and reflects the national consensus as well as the usual and customary industry practices in existence since before the time of OSHA’s creation and continuing through today.

**§ 1926.905(p)**

Paragraph (p) requires the employer to post warning signs indicating a blast area. These signs must be maintained at all approaches to the blast area. The warning sign lettering shall not be less than 4 inches in height on a contrasting background.

OSHA does not believe this is a collection of information since the Standard provides sufficient information to the employer (5 CFR 1320.3(c)(1)) for protecting working men and women on the site.

This requirement ensures the protection of men and women working on construction sites where blasting operations are conducted. The language was adopted from ANSI A10.7–1970, paragraph 6.3.16 and reflects the national consensus as well as the usual and customary industry practices in existence since before the time of OSHA’s creation and continuing through today.

**§ 1926.905(t)**

Under § 1926.905(t), the employer’s blaster must maintain an accurate and up-to-date record of explosives, blasting agents, and blasting supplies used in a blast. In addition, the blaster must also maintain a running inventory of all explosives and blasting agents stored on the operation. These records will ensure that all explosives, blasting agents, and blasting supplies are accounted for. This requirement is necessary to protect working men and women in the proximity of blasting operations from hazards of misplaced explosives, the unintended detonation of duds, and the hazards of temporary storage of explosives; however, it imposes

no burden.

This requirement was adopted from language in ANSI A10.7 (1970), paragraph 6.3.20 and reflects the national consensus as well as the usual and customary industry practices in existence since before the time of OSHA's creation and continuing through today. In addition, the Department of the Treasury and Bureau of Alcohol, Tobacco, and Firearms require inventory and recordkeeping at 27 CFR 555. Section 107 requires that a licensee or permittee keep records of explosive materials as required by subpart G, *Records and Reports* of this part, and section 127 requires them to maintain a daily summary of magazine transactions (27 CFR 555.107 & 127).

### **§ 1926.909(a)**

Employers must post a code of blasting signals, similar to Table U-1 below, on one or more conspicuous places at the operation. Additionally, all workers shall familiarize themselves with the code and conform to it at all times. Danger signs shall also be placed at suitable locations.

TABLE U-1

WARNING SIGNAL – A 1-minute series of long blasts 5 minutes prior to blast signal.

BLASTING SIGNAL – A series of short blasts 1 minute prior to the shot.

ALL CLEAR SIGNAL – A prolonged blast following the inspection of blast area.

OSHA does not believe this is a collection of information since the Standard provides specific information to the employer for disclosure (5 CFR 1320.3(c)(1)) to workers in proximity to blasting operations.

Further, the posting of blasting signals and dangers signs are adopted from ANSI A10.7–1970, paragraph 7.1 and reflects the national consensus as well as the usual and customary industry practices in existence since before the time of OSHA's creation and continuing through today. Therefore, the agency is not taking burden hours or costs for these provisions.

### **§ 1926.912 Underwater blasting (d)**

No blast shall be fired while any vessel under way is closer than 1,500 feet to the blasting area. Those on board vessels or craft moored or anchored within 1,500 feet shall be notified before a blast is fired.

**3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also, describe any**

**consideration of using information technology to reduce burden.**

Employers may use any available technology to establish and maintain the documents specified by the Subpart. The agency wrote the paperwork requirements in performance-oriented language, i.e., in terms of what data to collect and how to record the data.

**4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Item A.2. above.**

OSHA has examined related information collection requirements of other agencies involved in the regulation of explosives and has determined that OSHA's information collection requirements in this Subpart do not require the employer to duplicate information requested by other agencies. The information collection requirements of the Subpart U are specific to each employer involved, and the required information is available only from the parties designated in the Subpart U

**5. If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.**

The information collection requirements specified by the Subpart U are relatively minor to many small entities.

**6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, and any technical or legal obstacles to reducing the burden.**

The agency believes that the information collection frequencies required by the Subpart U are the minimum frequencies necessary to fulfill its mandate "to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" as specified in the OSH Act at 29 U.S.C. 651. Accordingly, if employers do not perform the information collection required by 29 CFR part 1926, Subpart U, or delay in providing this information, workers are at risk of serious injuries or death while performing construction work with explosives or around blasting operations.

**7. Explain any special circumstances that would cause an information collection to be conducted in a manner:**

- **requiring respondents to report information to the agency more often than quarterly;**
- **requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;**



- **requiring respondents to submit more than an original and two copies of any document;**
- **requiring respondents to retain records, other than health, medical, government contract, grant-in-aid, or tax records for more than three years;**
- **in connection with a statistical survey, that is not designed to produce valid and reliable results that can be generalized to the universe of study;**
- **requiring the use of a statistical data classification that has not been reviewed and approved by OMB;**
- **that includes a pledge of confidentiality that is not supported by authority established in statute or regulation, that is not supported by disclosure and data security policies that are consistent with the pledge, or which unnecessarily impedes sharing of data with other agencies for compatible confidential use; or**
- **requiring respondents to submit proprietary trade secret, or other confidential information unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.**

No special circumstances exist that require employers to collect information in the manner or using the procedures specified by this item; the paperwork requirements in the Subpart conform to the guidelines set forth in 5 CFR 1320.5.

**8. If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8(d), soliciting comments on the information collection before submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to those comments. Specifically address comments received on cost and hour burdens.**

- **Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format (if any), and on the data elements to be recorded, revealed, or reported.**
- **Consultation with representatives of those from whom information is to be obtained or those who must compile records should occur at least once every three years -- even if the collection of information activity is the same as in prior periods. There may be circumstances that may preclude consultation in a specific situation. These circumstances should be explained.**

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3506(c)(2)(A)), OSHA published a notice in the Federal Register on October 25, 2024 (89 FR 85242) requesting public comments on its proposed extension of the information collection requirements specified by the standard on Blasting and the Use of Explosives (29 CFR part 1926, subpart U) under docket number OSHA 2011-0747. This notice is part of a preclearance consultation program intended to provide those interested parties the opportunity to comment on OSHA's request for an extension by OMB of previous approval of the information collection requirements found in the above Standard. The agency will respond to any public comments received in response to this notice.

**9. Explain any decision to provide any payment of gift to respondents, other than remuneration of contractors or grantees.**

The agency will not provide payments or gifts to the respondents.

**10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.**

The paperwork requirements specified by the Subpart U do not involve confidential information.

**11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons from whom the information is requested, and any steps to be taken to obtain their consent.**

The paperwork requirements specified by the Subpart do not involve sensitive information.

**12. Provide estimates of the hour burden of the collection of information. The statement should:**

- **Indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. Unless directed to do so, agencies should not conduct special surveys to obtain information on which to base hour burden estimates.**
- **Consultation with a sample (fewer than 10) of potential respondents is desirable. If the hour burden on respondents is expected to vary widely because of differences in activity, size, or complexity, show the range of estimated hour burden, and explain the reasons for the variance. Generally, estimates should not include burden hours for customary and usual business practices.**

- **If this request for approval covers more than one form, provide separate hour burden estimates for each form.**
- **Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage rate categories. The cost of contracting out or paying outside parties for information collection activities should not be included here. Instead, this cost should be included in Item 13.**

### **Respondent Burden Hour and Cost Burden Determinations**

The agency determined the wage rate from mean hourly wage earnings to represent the cost of employee time. For the relevant standard occupational classification category, OSHA used the wage rates reported in the Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Wage Statistics (OEWS)*, May 2023 National Occupational Employment and Wage Estimates (OEWS data is available at [https://www.bls.gov/oes/current/oes\\_nat.htm](https://www.bls.gov/oes/current/oes_nat.htm). (accessed: September 11, 2024) . To access a wage rate, select the year, “Occupation profiles,” and the Standard Occupational Classification (SOC) code.)

To account for fringe benefits, the agency used the [Employer Costs for Employee Compensation – September 2024 \(bls.gov\)](#) *Occupational Employment Wage Statistics (OEWS) (Current Year 2024)*. Fringe markup is from the following BLS release: *Employer Costs for Employee Compensation* news release text; For release, June 2024 at <https://www.bls.gov/news.release/pdf/ecec.pdf>. BLS reported that fringe benefits accounted for 29.7 percent of total compensation for civilian workers, and wages accounted for the remaining 70.3 percent.

**Table 1 – Wage Rate Estimates with Fringe Benefits**

| <b>WAGE-HOUR ESTIMATES</b>                              |                 |                                  |                            |   |
|---|-----------------|----------------------------------|----------------------------|---|
| <b>Occupational Title</b>                               | <b>SOC Code</b> | <b>Mean Hourly Wage Rate (A)</b> | <b>Fringe Benefits (B)</b> | <b>Loaded Hourly Wage Rate C= (A/1-B)</b> |
| 1 <sup>st</sup> Line Supervisor/Construction Supervisor | 47-1011         | \$39.11                          | 29.7%                      | \$55.63                                   |
| Construction worker/laborer                             | 47-2061         | \$23.69                          | 29.7%                      | \$33.70                                   |
| Clerical  | 43-6014         | \$21.87                          | 29.7%                      | \$31.11                                   |

### **§ 1926.900(k)(3)(i)**

This section requires a prominent roadside display of adequate warning signs against the use

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of mobile transmitters. If the signs are infeasible, a certified alternative method must be developed to prevent premature detonation. OSHA staff familiar with this industry has estimated that there would be 3,000 construction employers with sites where blasting operations are covered by the Standard.

Also, the agency had received informal, oral reports or anecdotal estimates from experienced industry representatives that the number of construction sites involving blasting operations fluctuates between 10,000 and 50,000 sites annually. In response to the 2012 Preclearance Federal Register notice and subsequent notices requesting public comment on the Blasting and Use of Explosive paperwork analysis, OSHA received no comments confirming or challenging these figures. Recent industry anecdotal estimates put the number of jobs involving explosives at or below 5,000 a year. More recently, industry representatives estimated that, because of the nature of construction projects, the improved power of equipment, and construction methods, only 1,000–1,200 projects a year involve blasting or using explosives.

No matter the magnitude of the number of sites using explosives, the subset of that number where signage would create an operational handicap and require the employer to consult a competent person who creates and certifies an alternative remains extremely small. Technology has evolved since the time this requirement was first promulgated. The agency continues to receive informal industry appraisals indicating that most blasting operations involve blasting methods for which mobile transmitters would generally not be a hazard.

For purposes of this ICR, OSHA is adjusting the number of affected sites based on the general increase in construction over the past three years. The estimated increase in construction is based on the percentage increase in construction new start spending published by McGraw Hill Construction in its Dodge Construction Outlook. According to this source, construction increased by an estimated 20.6% over the past three years.

By applying this percentage increase to the 160 sites a year used previously, OSHA estimates that 193 projects per year would require a competent person to develop and certify alternative procedures to alleviate the operational handicap.

The estimated increase in construction is based on the percentage increase in construction new start spending published by McGraw Hill Construction in its Dodge Construction Outlook 2014, Executive Summary page 2, table “The Pattern of U.S. Construction Starts.”<sup>2</sup> The table indicated that new start spending increased from 2021 to 2022 by 8%, from 2022 to 2023 by -1%, and from 2023 to 2024 by -19%. As with the review this year in 2021, the review in 2024

By applying the percentage increases to 160 sites a year, OSHA conservatively estimates that 201 projects rounded up per year would require a competent person to develop and certify alternative procedures to alleviate the operational handicap.  $(160 \times 8\% = 173) + (173 \times -1\% = 171)$ .

OSHA estimates that developing and certifying an alternative plan takes eight hours. Filing the plan and maintaining it on site (clerical functions taking a minimum amount of time) would require two minutes.

- a. Construction 1<sup>st</sup> line Supervisor:

**Burden hours to create and certify:** 171 sites x 8 hours = 1,368 hours

**Cost:** 1,368 hours x \$55.63 = \$76,102

- b. Clerical Worker:

**Burden hours to file and maintain:** 171 sites x 2/60 hours = 6 hours rounded

**Cost:** 6 hours x \$31.11 = \$187

**Total Burden hours:** 1,368 hours (create/certify) + 6 hours (maintain) = 1,374 hours

**Total Costs:** \$76,102 (create/certify) + \$187 (maintain) = \$76,289

### §1926.903(e)

Paragraph (e) requires the employer to perform weekly inspections of the electrical systems of trucks used for underground transportation of explosives and maintain the most recent certification record.

The agency estimates that there are only a few instances of using a truck to transport explosives underground. Modern technology (for example, tunnel boring machines) replaced an increasing percentage of underground construction where drill and blast methods were once used. As with tunnel construction haulage (small gauge rail trains), these machines have rails behind them for material haulage rail cars or conveyors. OSHA estimates that four jobs might use trucks to haul explosives underground. The agency estimates a truck mechanic takes 10 minutes a week to have the truck's electrical system checked and to prepare the certification records. Upon inspection, filing and maintaining the most recent certified inspection record takes five minutes per week. Therefore, the employer spends 15 minutes weekly to check the electrical system and to prepare, file, and maintain the necessary certification.

- a. Construction Worker:

**Burden hours:** 4 jobs x 52 weeks x 10/60 hours = 35 hours (rounded)  
(check and certify fitness)

**Cost:** 35 hours x \$33.70 = \$1,180 (check and certify electrical fitness)

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b. Clerical Worker:

**Burden hours:** 4 jobs x 52 weeks x 5/60 hours = 17 hours (rounded) (file and maintain most recent electrical check record)

**Cost:** 17 hours x \$31.11 = \$529 (file and maintain records)

**Total Burden hours:** 35 hours (check/certify) + 17 hours (maintain) = 52 hours

**Total Costs:** \$1,180 (check/verify) + \$529 (file/maintain) =  
1,709

Below is a summary of the annual burden hour and cost estimates for the subpart's two paragraphs containing paperwork requirements described under Item 2 above.

OSHA is not listing those collections of information that are usual and customary under Item 12 since these provisions do not create an additional burden on employers.<sup>3</sup>

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<sup>3</sup>Rules implementing the Paperwork Reduction Act are found at 5 CFR Part 1320. 5 CFR 1320.3(b)(2) states, "The time, effort and financial recourse necessary to comply with a collection of information that would be incurred by a person in the normal course of their activities will be excluded from the definition of "burden" if the Agency demonstrates that the reporting, recordkeeping, or disclosure activities needed to comply are usual and customary."

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| <b>Table 2 Estimated Annualized Respondent Hour and Cost Burden</b> |                           |                    |                                 |                        |                          |                     |                           |                    |
|---|---------------------------|--------------------|---------------------------------|------------------------|--------------------------|---------------------|---------------------------|--------------------|
| <b>Information Collection Requirement</b>                           | <b>Type of Respondent</b> | <b>Respondents</b> | <b>Responses per Respondent</b> | <b>Total Responses</b> | <b>Time per Response</b> | <b>Burden Hours</b> | <b>Loaded Hourly Wage</b> | <b>Burden Cost</b> |
| <b>§1926.900(k)(3)(i)</b><br>Written Alternative method             | Construction Supervisor   | 171                | 1                               | 171                    | 8                        | 1,368               | \$55.63                   | \$76,102           |
|   | Clerical worker           | 171                | 1                               | 171                    | 2/60                     | 6                   | \$31.11                   | \$187              |
| <b>§1926.903(e)</b><br>Weekly Inspection Records                    | Construction worker       | 4                  | 52                              | 208                    | 10/60                    | 35                  | \$33.70                   | \$1,180            |
|   | Clerical worker           | 4                  | 52                              | 208                    | 5/60                     | 17                  | \$31.11                   | \$529              |
| <b>Totals</b>   |                           | <b>171</b>         | <b>--</b>                       | <b>758</b>             |                          | <b>1,426</b>        | <b>--</b>                 | <b>\$77,998</b>    |

**13. Provide an estimate of the total annual cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden shown in Items 12 and 14).**

- **The cost estimate should be split into two components: (a) a total capital and start-up cost component (annualized over its expected useful life); and (b) a total operation and maintenance and purchase of services component. The estimates should take into account costs associated with generating, maintaining, and disclosing or providing the information. Include descriptions of methods used to estimate major cost factors including system and technology acquisition, expected useful life of capital equipment, the discount rate(s), and the time period over which costs will be incurred. Capital and start-up costs include, among other items, preparations for collecting information such as purchasing computers and software; monitoring, sampling, drilling and testing equipment; and record storage facilities.**
- **If cost estimates are expected to vary widely, agencies should present ranges of cost burdens and explain the reasons for the variance. The cost of purchasing or contracting out information collection services should be a part of this cost burden estimate. In developing cost burden estimates, agencies may consult with a sample of respondents (fewer than 10), utilize the 60-day pre-OMB submission public comment process and use existing economic or regulatory impact analysis associated with the rulemaking containing the information collection, as appropriate.**
- **Generally, estimates should not include purchases of equipment or services, or portions thereof, made: (1) prior to October 1, 1995, (2) to achieve regulatory compliance with requirements not associated with the information collection, (3) for reasons other than to provide information or keep records for the government or (4) as part of customary and usual business or private practices.**
- **If cost estimates are expected to vary widely, agencies should present ranges of cost burdens and explain the reasons for the variance. The cost of purchasing or contracting out information collection services should be a part of this cost burden estimate. In developing cost burden estimates, agencies may consult with a sample of respondents (fewer than 10), use the 60-day pre-OMB submission public comment process and use existing economic or regulatory impact analysis associated with the rulemaking containing the information collection, as appropriate.**



- **Generally, estimates should not include purchases of equipment or services, or portions thereof, made: (1) prior to October 1, 1995, (2) to achieve regulatory compliance with requirements not associated with the information collection, (3) for reasons other than to provide information or keep records for the government or (4) as part of customary and usual business or private practices.**

Costs under this item for complying with the information collection requirements of the Standard are set forth under Item 12.

- 14. Provide estimates of annualized cost to the Federal Government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information. Agencies also may aggregate cost estimates from Items 12, 13, and 14 in a single table.**

There is no cost to the Federal Government associated with this information collection request. The disclosure of records during an inspection is not subject to the PRA under 5 CFR 1320.4(a)(2). OSHA would only review records in the context of an open investigation of a particular employer to determine compliance with the Standard. Therefore, OSHA takes no burden or cost in this Supporting Statement for disclosing information during an inspection.

- 15. Explain the reasons for any program changes or adjustments.**

The agency is requesting an adjustment decrease in the burden hours amount from 1,602 hours to 1,426 hours, a difference of 176 hours. This decrease is due to a decrease in the number of affected sites due to general economic conditions. (The available data for this ICR was derived from 2022 and 2023 fiscal year.)

- 16. For collections of information whose results will be published, outline plans for tabulation, and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection information, completion of report, publication dates, and other actions.**

OSHA will not publish the information collected under the Standard.

- 17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be appropriate.**

OSHA lists current valid control numbers in §§1910.8, 1915.8, 1917.4, 1918.4, and 1926.5 and publishes the expiration date in the Federal Register notice announcing OMB approval of the Information collection requirement (see 5 CFR 1320.3(f)(3)). OSHA believes that this is the most appropriate and accurate mechanism to inform interested parties of these expiration dates.

**18. Explain each exception to the certification statement.**

OSHA is not seeking an exception to the certification statement.

**B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS.**

This supporting statement does not contain any collection of information requirements that employ statistical methods.

**SEC. 2. Congressional Findings and Purpose**

(a) The Congress finds that personal injuries and illnesses arising out of work situations impose a substantial burden upon, and are a hindrance to, interstate commerce in terms of lost production, wage loss, medical expenses, and disability compensation payments. (b) The Congress declares it to be its purpose and policy, through the exercise of its powers to regulate commerce among the several States and with foreign nations and to provide for the general welfare, to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources --

29 USC 651

(1) by encouraging employers and employees in their efforts to reduce the number of occupational safety and health hazards at their places of employment, and to stimulate employers and employees to institute new and to perfect existing programs for providing safe and healthful working conditions; (2) by providing that employers and employees have separate but dependent responsibilities and rights with respect to achieving safe and healthful working conditions; (3) by authorizing the Secretary of Labor to set mandatory occupational safety and health standards applicable to businesses affecting interstate commerce, and by creating an Occupational Safety and Health Review Commission for carrying out adjudicatory functions under the Act; (4) by building upon advances already made through employer and employee initiative for providing safe and healthful working conditions; (5) by providing for research in the field of occupational safety and health, including the psychological factors involved, and by developing innovative methods, techniques, and approaches for dealing with occupational safety and health problems; (6) by exploring ways to discover latent diseases, establishing causal connections between diseases and work in environmental conditions, and conducting other research relating to health problems, in recognition of the fact that occupational health standards present problems often different from those involved in occupational safety; (7) by providing medical criteria which will assure insofar as practicable that no employee will suffer diminished health, functional capacity, or life expectancy as a result of his work experience; (8) by providing for training programs to increase the number and competence of personnel engaged in the field of occupational safety and health; affecting the OSH Act since its passage in 1970 through January 1, 2004. (9) by providing for the development and promulgation of occupational safety and health standards; (10) by providing an effective enforcement program which shall include a prohibition against giving advance notice of any inspection and sanctions for any individual violating this prohibition;

(11) by encouraging the States to assume the fullest responsibility for the administration and enforcement of their occupational safety and health laws by providing grants to the States to assist in identifying their needs and responsibilities in the area of occupational safety and health, to develop

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plans in accordance with the provisions of this Act, to improve the administration and enforcement of State occupational safety and health laws, and to conduct experimental and demonstration projects in connection therewith; (12) by providing for appropriate reporting procedures with respect to occupational safety and health which procedures will help achieve the objectives of this Act and accurately describe the nature of the occupational safety and health problem; (13) by encouraging joint labor-management efforts to reduce injuries and disease arising out of employment.

#### **6. Occupational Safety and Health Standards**

29 USC 655:

(a) Without regard to chapter 5 of title 5, United States Code, or to the other subsections of this section, the Secretary shall, as soon as practicable during the period beginning with the effective date of this Act and ending two years after such date, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard, unless he determines that the promulgation of such a standard would not result in improved safety or health for specifically designated employees. In the event of conflict among any such standards, the Secretary shall promulgate the standard which assures the greatest protection of the safety or health of the affected employees. (b) The Secretary may by rule promulgate, modify, or revoke any occupational safety or health standard in the following manner:

(1) Whenever the Secretary, upon the basis of information submitted to him in writing by an interested person, a representative of any organization of employers or employees, a nationally recognized standards-producing organization, the Secretary of Health and Human Services, the National Institute for Occupational Safety and Health, or a State or political subdivision, or on the basis of information developed by the Secretary or otherwise available to him, determines that a rule should be promulgated in order to serve the objectives of this Act, the Secretary may request the recommendations of an advisory committee appointed under section 7 of this Act. The Secretary shall provide such an advisory committee with any proposals of his own or of the Secretary of Health and Human Services, together with all pertinent factual information developed by the Secretary or the Secretary of Health and Human Services, or otherwise available, including the results of research, demonstrations, and experiments. An advisory committee shall submit to the Secretary its recommendations regarding the rule to be promulgated within ninety days from the date of its appointment or within such longer or shorter period as may be prescribed by the Secretary, but in no event for a period which is longer than two hundred and seventy days. (2) The Secretary shall publish a proposed rule promulgating, modifying, or revoking an occupational safety or health standard in the Federal Register and shall afford interested persons a period of thirty days after publication to submit written data or comments. Where an advisory committee is appointed and the Secretary determines that a rule should be issued, he shall publish the proposed rule within sixty days after the submission of the advisory committee's recommendations or the expiration of the period prescribed by the Secretary for such submission. (3) On or before the last day of the period provided for the submission of written data or comments under paragraph (2), any interested person may file with the Secretary written objections to the proposed rule, stating the grounds therefore and requesting a public hearing on such objections. Within thirty days after the last day for filing such objections, the Secretary shall publish in the Federal Register a notice specifying the occupational safety or health standard to which objections have been filed and a hearing requested, and specifying a time and place for such hearing.

**SEC. 8. Inspections, Investigations, and Recordkeeping**

(a) In order to carry out the purposes of this Act, the Secretary, upon presenting appropriate credentials to the owner, operator, or agent in charge, is authorized --

29 USC 657

(1) to enter without delay and at reasonable times any factory, plant, establishment, construction site, or other area, workplace or environment where work is performed by an employee of an employer;

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and

(2) to inspect and investigate during regular working hours and at other reasonable times, and within reasonable limits and in a reasonable manner, any such place of employment and all pertinent conditions, structures, machines, apparatus, devices, equipment, and materials therein, and to question privately any such employer, owner, operator, agent or employee.

(b) In making his inspections and investigations under this Act the Secretary may require the attendance and testimony of witnesses and the production of evidence under oath. Witnesses shall be paid the same fees and mileage that are paid witnesses in the courts of the United States. In case of a contumacy, failure, or refusal of any person to obey such an order, any district court of the United States or the United States courts of any territory or possession, within the jurisdiction of which such person is found, or resides or transacts business, upon the application by the Secretary, shall have jurisdiction to issue to such person an order requiring such person to appear to produce evidence if, as, and when so ordered, and to give testimony relating to the matter under investigation or in question, and any failure to obey such order of the court may be punished by said court as a contempt thereof.

(c) (1) Each employer shall make, keep and preserve, and make available to the Secretary or the Secretary of Health and Human Services, such records regarding his activities relating to this Act as the Secretary, in cooperation with the Secretary of Health and Human Services, may prescribe by regulation as necessary or appropriate for the enforcement of this Act or for developing information regarding the causes and prevention of occupational accidents and illnesses. In order to carry out the provisions of this paragraph such regulations may include provisions requiring employers to conduct periodic inspections. The Secretary shall also issue regulations requiring that employers, through posting of notices or other appropriate means, keep their employees informed of their protections and obligations under this Act, including the provisions of applicable standards.

(2) The Secretary, in cooperation with the Secretary of Health and Human Services, shall prescribe regulations requiring employers to maintain accurate records of, and to make periodic reports on, work-related deaths, injuries and illnesses other than minor injuries requiring only first aid treatment and which do not involve medical treatment, loss of consciousness, restriction of work or motion, or transfer to another job.

(3) The Secretary, in cooperation with the Secretary of Health and Human Services, shall issue regulations requiring employers to maintain accurate records of employee exposures to potentially toxic materials or harmful

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physical agents which are required to be monitored or measured under section 6. Such regulations shall provide employees or their representatives with an opportunity to observe such monitoring or measuring, and to have access to the records thereof. Such regulations shall also make appropriate provision for each employee or former employee to have access to such records as will indicate his own exposure to toxic materials or harmful physical agents. Each employer shall promptly notify any employee who has been or is being exposed to toxic materials or harmful physical agents in concentrations or at levels which exceed those prescribed by an applicable occupational safety and health standard promulgated under section 6, and shall inform any employee who is being thus exposed of the corrective action being taken.

(d) Any information obtained by the Secretary, the Secretary of Health and Human Services, or a State agency under this Act shall be obtained with a minimum burden upon employers, especially those operating small businesses. Unnecessary duplication of efforts in obtaining information shall be reduced to the maximum extent feasible.

(e) Subject to regulations issued by the Secretary, a representative of the employer and a representative authorized by his employees shall be given an opportunity to accompany the Secretary or his authorized representative during the physical inspection of any workplace under subsection (a) for the purpose of aiding such inspection. Where there is no authorized employee representative, the Secretary or his authorized representative shall consult with a reasonable number of employees concerning matters of health and safety in the workplace.

(f) (1) Any employees or representative of employees who believe that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, may request an inspection by giving notice to the Secretary or his authorized representative of such violation or danger. Any such notice shall be reduced to writing, shall set forth with reasonable particularity the grounds for the notice, and shall be signed by the employees or representative of employees, and a copy shall be provided the employer or his agent no later than at the time of inspection, except that, upon the request of the person giving such notice, his name and the names of individual employees referred to therein shall not appear in such copy or on any record published, released, or made available pursuant to subsection (g) of this section. If upon receipt of such notification the Secretary determines there are reasonable grounds to believe that such violation or danger exists, he shall make a special inspection in accordance with the provisions of this section as soon as practicable, to determine if such violation or danger exists. If the Secretary determines there are no reasonable grounds to believe that a violation or danger exists he shall notify the employees or representative of

the employees in writing of such determination.

(2) Prior to or during any inspection of a workplace, any employees or representative of employees employed in such workplace may notify the Secretary or any representative of the Secretary responsible for conducting the inspection, in writing, of any violation of this Act which they have reason to believe exists in such workplace. The Secretary shall, by regulation, establish procedures for informal review of any refusal by a representative of the Secretary to issue a citation with respect to any such alleged violation and shall furnish the employees or representative of employees requesting such review a written statement of the reasons for the Secretary's final disposition of the case.

(g) (1) The Secretary and Secretary of Health and Human Services are authorized to compile, analyze, and publish, either in summary or detailed form, all reports or information obtained under this section.

(2) The Secretary and the Secretary of Health and Human Services shall each prescribe such rules and regulations as he may deem necessary to carry out their responsibilities under this Act, including rules and regulations dealing with the inspection of an employer's establishment.

(h) The Secretary shall not use the results of enforcement activities, such as the number of citations issued or penalties assessed, to evaluate employees directly involved in enforcement activities under this Act or to impose quotas or goals with regard to the results of such activities. Pub. L. 105-198 added subsection (h).

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## Subpart U—Blasting and the Use of Explosives

**Authority:**Sec. 107, Contract Work Hours and Safety Standards Act ([40 U.S.C. 333](#)); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 ([29 U.S.C. 653](#), [655](#), [657](#)); Secretary of Labor's Order No. 12-71 ([36 FR 8754](#)), 8-76 ([41 FR 25059](#)), 9-83 ([48 FR 35736](#)), or 6-96 ([62 FR 111](#)), as applicable; and [29 CFR part 1911](#).

### § 1926.900 General provisions.

(a) The employer shall permit only authorized and qualified persons to handle and use explosives.

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- (b) Smoking, firearms, matches, open flame lamps, and other fires, flame or heat producing devices and sparks shall be prohibited in or near explosive magazines or while explosives are being handled, transported or used.
- (c) No person shall be allowed to handle or use explosives while under the influence of intoxicating liquors, narcotics, or other dangerous drugs.
- (d) 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. The employer shall maintain an inventory and use record of all explosives. Appropriate authorities shall be notified of any loss, theft, or unauthorized entry into a magazine.
- (e) No explosives or blasting agents shall be abandoned.
- (f) 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.
- (g) Original containers, or Class II magazines, shall be used for taking detonators and other explosives from storage magazines to the blasting area.
- (h) 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 shall take special precautions in the loading, delaying, initiation, and confinement of each blast with mats or other methods so as to control the throw of fragments, and thus prevent bodily injury to employees.
- (i) 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.
- (j) Insofar as possible, blasting operations above ground shall be conducted between sunup and sundown.
- (k) Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lightning, adjacent powerlines, dust storms, or other sources of extraneous electricity. These precautions shall include:
  - (1) Detonators shall be short-circuited in holes which have been primed and shunted until wired into the blasting circuit.
  - (2) The suspension of all blasting operations and removal of persons from the blasting area during the approach and progress of an electric storm;
  - (3)



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(i) The prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a competent person shall be consulted to evaluate the particular situation, and alternative provisions may be made which are adequately designed to prevent any premature firing of electric blasting caps. A description of any such alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection by representatives of the Secretary of Labor.

(ii) Specimens of signs which would meet the requirements of [paragraph \(k\)\(3\)](#) of this section are the following:



About 48" x 48"



About 42" x 36"

(4) Ensuring that mobile radio transmitters which are less than 100 feet away from electric blasting caps, in other than original containers, shall be deenergized and effectively locked;

(5) Compliance with the recommendations of The Institute of the Makers of Explosives with regard to blasting in the vicinity of radio transmitters as stipulated in Radio Frequency Energy—A Potential Hazard in the Use of Electric Blasting Caps, IME Publication No. 20, March 1971.

(l) Empty boxes and paper and fiber packing materials, which have previously contained high explosives, shall not be used again for any purpose, but shall be destroyed by burning at an approved location.

(m) Explosives, blasting agents, and blasting supplies that are obviously deteriorated or damaged shall not be used.

(n) 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.

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(o) Blasting operations in the proximity of overhead power lines, communication lines, utility services, or other services and structures shall not be carried on until the operators and/or owners have been notified and measures for safe control have been taken.

(p) The use of black powder shall be prohibited.

(q) All loading and firing shall be directed and supervised by competent persons thoroughly experienced in this field.

(r) All blasts shall be fired electrically with an electric blasting machine or properly designed electric power source, except as provided in [§ 1926.906 \(a\)](#) and [\(r\)](#).

(s) Buildings used for the mixing of blasting agents shall conform to the requirements of this section.

(1) Buildings shall be of noncombustible construction or sheet metal on wood studs.

(2) Floors in a mixing plant shall be of concrete or of other nonabsorbent materials.

(3) All fuel oil storage facilities shall be separated from the mixing plant and located in such a manner that in case of tank rupture, the oil will drain away from the mixing plant building.

(4) The building shall be well ventilated.

(5) Heating units which do not depend on combustion processes, when properly designed and located, may be used in the building. All direct sources of heat shall be provided exclusively from units located outside the mixing building.

(6) All internal-combustion engines used for electric power generation shall be located outside the mixing plant building, or shall be properly ventilated and isolated by a firewall. The exhaust systems on all such engines shall be located so any spark emission cannot be a hazard to any materials in or adjacent to the plant.

(t) Buildings used for the mixing of water gels shall conform to the requirements of this subdivision.

(1) Buildings shall be of noncombustible construction or sheet metal on wood studs.

(2) Floors in a mixing plant shall be of concrete or of other nonabsorbent materials.

(3) Where fuel oil is used all fuel oil storage facilities shall be separated from the mixing plant and located in such a manner that in case of tank rupture, the oil will drain away from the mixing plant building.

(4) The building shall be well ventilated.

(5) Heating units that do not depend on combustion processes, when properly designed and located, may be used in the building. All direct sources of heat shall be provided exclusively from units located outside of the mixing building.

(6) All internal-combustion engines used for electric power generation shall be located outside the mixing plant building, or shall be properly ventilated and isolated by a firewall. The exhaust systems on all such engines shall be located so any spark emission cannot be a hazard to any materials in or adjacent to the plant.

[[44 FR 8577](#), Feb. 9, 1979; [44 FR 20940](#), Apr. 6, 1979, as amended at [58 FR 35183](#), June 30, 1993]

## **§ 1926.901 Blaster qualifications.**

- (a) A blaster shall be able to understand and give written and oral orders.
- (b) A blaster shall be in good physical condition and not be addicted to narcotics, intoxicants, or similar types of drugs.
- (c) A blaster shall be qualified, by reason of training, knowledge, or experience, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of State and local laws and regulations which pertain to explosives.
- (d) Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.
- (e) The blaster shall be knowledgeable and competent in the use of each type of blasting method used.

## **§ 1926.902 Surface transportation of explosives.**

- (a) Transportation of explosives shall meet the provisions of Department of Transportation regulations contained in [46 CFR parts 146-149](#), Water Carriers; [49 CFR parts 171-179](#), Highways and Railways; [49 CFR part 195](#), Pipelines; and [49 CFR parts 390-397](#), Motor Carriers.
- (b) Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a licensed driver who is physically fit. He shall be familiar with the local, State, and Federal regulation governing the transportation of explosives.
- (c) No person shall smoke, or 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.

- (d) 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.
- (e) Vehicles used for transporting explosives shall be strong enough to carry the load without difficulty, and shall be in good mechanical condition.
- (f) When explosives are transported by a vehicle with an open body, a Class II magazine or original manufacturer's container shall be securely mounted on the bed to contain the cargo.
- (g) 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 nonsparking material, to prevent contact with containers of explosives.
- (h) 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 4 inches 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 18 inches by 30 inches, with the word "Explosives" painted, stamped, or sewed thereon, in white letters, at least 6 inches in height.
- (i) Each vehicle used for transportation of explosives shall be equipped with a fully charged fire extinguisher, in good condition. An Underwriters Laboratory-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.
- (j) Motor vehicles or conveyances carrying explosives, blasting agents, or blasting supplies, shall not be taken inside a garage or shop for repairs or servicing.
- (k) No motor vehicle transporting explosives shall be left unattended.

[[44 FR 8577](#), Feb. 9, 1979; [44 FR 20940](#), Apr. 6, 1979, as amended at [58 FR 35311](#), June 30, 1993]

## **§ 1926.903 Underground transportation of explosives.**

- (a) All explosives or blasting agents in transit underground shall be taken to the place of use or storage without delay.
- (b) The quantity of explosives or blasting agents taken to an underground loading area shall not exceed the amount estimated to be necessary for the blast.
- (c) Explosives in transit shall not be left unattended.

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- (d) The hoist operator shall be notified before explosives or blasting agents are transported in a shaft conveyance.
- (e) Trucks used for the transportation of explosives underground shall have the electrical system checked weekly to detect any failures which may constitute an electrical hazard. A certification record which includes the date of the inspection; the signature of the person who performed the inspection; and a serial number, or other identifier, of the truck inspected shall be prepared and the most recent certification record shall be maintained on file.
- (f) The installation of auxiliary lights on truck beds, which are powered by the truck's electrical system, shall be prohibited.
- (g) Explosives and blasting agents shall be hoisted, lowered, or conveyed in a powder car. No other materials, supplies, or equipment shall be transported in the same conveyance at the same time.
- (h) No one, except the operator, his helper, and the powderman, shall be permitted to ride on a conveyance transporting explosives and blasting agents.
- (i) No person shall ride in any shaft conveyance transporting explosives and blasting agents.
- (j) No explosives or blasting agents shall be transported on any locomotive. At least two car lengths shall separate the locomotive from the powder car.
- (k) No explosives or blasting agents shall be transported on a man haul trip.
- (l) The car or conveyance containing explosives or blasting agents shall be pulled, not pushed, whenever possible.
- (m) The powder car or conveyance especially built for the purpose of transporting explosives or blasting agents shall bear a reflectorized sign on each side with the word "Explosives" in letters, not less than 4 inches in height; upon a background of sharply contrasting color.
- (n) Compartments for transporting detonators and explosives in the same car or conveyance shall be physically separated by a distance of 24 inches or by a solid partition at least 6 inches thick.
- (o) Detonators and other explosives shall not be transported at the same time in any shaft conveyance.
- (p) Explosives, blasting agents, or blasting supplies shall not be transported with other materials.
- (q) Explosives or blasting agents, not in original containers, shall be placed in a suitable container when transported manually.

(r) Detonators, primers, and other explosives shall be carried in separate containers when transported manually.

[[44 FR 8577](#), Feb. 9, 1979; [44 FR 20940](#), Apr. 6, 1979, as amended at [52 FR 36382](#), Sept. 28, 1987]

## **§ 1926.904 Storage of explosives and blasting agents.**

(a) Explosives and related materials shall be stored in approved facilities required under the applicable provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in [27 CFR part 55](#), Commerce in Explosives.

(b) Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents.

(c) Smoking and open flames shall not be permitted within 50 feet of explosives and detonator storage magazine.

(d) No explosives or blasting agents shall be permanently stored in any underground operation until the operation has been developed to the point where at least two modes of exit have been provided.

(e) Permanent underground storage magazines shall be at least 300 feet from any shaft, adit, or active underground working area.

(f) Permanent underground magazines containing detonators shall not be located closer than 50 feet to any magazine containing other explosives or blasting agents.

[[44 FR 8577](#), Feb. 9, 1979; [44 FR 20940](#), Apr. 6, 1979, as amended at [58 FR 35311](#), June 30, 1993]

## **§ 1926.905 Loading of explosives or blasting agents.**

(a) Procedures that permit safe and efficient loading shall be established before loading is started.

(b) All drill holes shall be sufficiently large to admit freely the insertion of the cartridges of explosives.

(c) Tamping shall be done only with wood rods or plastic tamping poles without exposed metal parts, but nonsparking metal connectors may be used for jointed poles. Violent tamping shall be avoided. The primer shall never be tamped.

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- (d) No holes shall be loaded except those to be fired in the next round of blasting. After loading, all remaining explosives and detonators shall be immediately returned to an authorized magazine.
- (e) 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 refired before work proceeds.
- (f) No person shall be allowed to deepen drill holes which have contained explosives or blasting agents.
- (g) No explosives or blasting agents shall be left unattended at the blast site.
- (h) 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 shall not be operated within 50 feet of loaded holes.
- (i) No activity of any nature other than that which is required for loading holes with explosives shall be permitted in a blast area.
- (j) Powerlines and portable electric cables for equipment being used shall be kept a safe distance from explosives or blasting agents being loaded into drill holes. Cables in the proximity of the blast area shall be deenergized and locked out by the blaster.
- (k) Holes shall be checked prior to loading to determine depth and conditions. Where a hole has been loaded with explosives but the explosives have failed to detonate, there shall be no drilling within 50 feet of the hole.
- (l) When loading a long line of holes with more than one loading crew, the crews shall be separated by practical distance consistent with efficient operation and supervision of crews.
- (m) No explosive shall be loaded or used underground in the presence of combustible gases or combustible dusts.
- (n) No explosives other than those in Fume Class 1, as set forth by the Institute of Makers of Explosives, shall be used; however, explosives complying with the requirements of Fume Class 2 and Fume Class 3 may be used if adequate ventilation has been provided.
- (o) All blast holes in open work shall be stemmed to the collar or to a point which will confine the charge.
- (p) 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 4 inches in height on a contrasting background.

- (q) A bore hole shall never be sprung when it is adjacent to or near a hole that is loaded. Flashlight batteries shall not be used for springing holes.
- (r) Drill holes which have been sprung or chambered, and which are not water-filled, shall be allowed to cool before explosives are loaded.
- (s) No loaded holes shall be left unattended or unprotected.
- (t) The blaster shall keep an accurate, up-to-date record of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate running inventory of all explosives and blasting agents stored on the operation.
- (u) When loading blasting agents pneumatically over electric blasting caps, semiconductive delivery hose shall be used and the equipment shall be bonded and grounded.

[[44 FR 8577](#), Feb. 9, 1979; [44 FR 20940](#), Apr. 6, 1979, as amended at [58 FR 35184](#), June 30, 1993]

## **§ 1926.906 Initiation of explosive charges—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) Before adopting any system of electrical firing, the blaster shall conduct a thorough survey for extraneous currents, and all dangerous currents shall be eliminated before any holes are loaded.
- (c) In any single blast using electric blasting caps, all caps shall be of the same style or function, and of the same manufacture.
- (d) Electric blasting shall be carried out by using blasting circuits or power circuits in accordance with the electric blasting cap manufacturer's recommendations, or an approved contractor or his designated representative.
- (e) When firing a circuit of electric blasting caps, care must be exercised to ensure that an adequate quantity of delivered current is available, in accordance with the manufacturer's recommendations.
- (f) Connecting wires and lead wires shall be insulated single solid wires of sufficient current-carrying capacity.
- (g) Bus wires shall be solid single wires of sufficient current-carrying capacity.



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- (h) When firing electrically, the insulation on all firing lines shall be adequate and in good condition.
- (i) A power circuit used for firing electric blasting caps shall not be grounded.
- (j) In underground operations when firing from a power circuit, a safety switch shall be placed in the permanent firing line at intervals. This switch shall be made so it can be locked only in the “Off” position and shall be provided with a short-circuiting arrangement of the firing lines to the cap circuit.
- (k) In underground operations there shall be a “lightning” gap of at least 5 feet in the firing system ahead of the main firing switch; that is, between this switch and the source of power. This gap shall be bridged by a flexible jumper cord just before firing the blast.
- (l) When firing from a power circuit, the firing switch shall be locked in the open or “Off” position at all times, except when firing. It shall be so designed that the firing lines to the cap circuit are automatically short-circuited when the switch is in the “Off” position. Keys to this switch shall be entrusted only to the blaster.
- (m) Blasting machines shall be in good condition and the efficiency of the machine shall be tested periodically to make certain that it can deliver power at its rated capacity.
- (n) When firing with blasting machines, the connections shall be made as recommended by the manufacturer of the electric blasting caps used.
- (o) The number of electric blasting caps connected to a blasting machine shall not be in excess of its rated capacity. Furthermore, in primary blasting, a series circuit shall contain no more caps than the limits recommended by the manufacturer of the electric blasting caps in use.
- (p) The blaster shall be in charge of the blasting machines, and no other person shall connect the leading wires to the machine.
- (q) Blasters, when testing circuits to charged holes, shall use only blasting galvanometers or other instruments that are specifically designed for this purpose.
- (r) Whenever the possibility exists that a leading line or blasting wire might be thrown over a live powerline by the force of an explosion, care shall be taken to see that the total length of wires are kept too short to hit the lines, or that the wires are securely anchored to the ground. If neither of these requirements can be satisfied, a nonelectric system shall be used.
- (s) In electrical firing, only the man making leading wire connections shall fire the shot. All connections shall be made from the bore hole back to the source of firing current, and the leading wires shall remain shorted and not be connected to the blasting machine or other source of current until the charge is to be fired.

(t) After firing an electric blast from a blasting machine, the leading wires shall be immediately disconnected from the machine and short-circuited.

[[44 FR 8577](#), Feb. 9, 1979; [44 FR 20940](#), Apr. 6, 1979, as amended at [63 FR 33469](#), June 18, 1998]

## **§ 1926.907 Use of safety fuse.**

- (a) Safety fuse shall only be used where sources of extraneous electricity make the use of electric blasting caps dangerous. The use of a fuse that has been hammered or injured in any way shall be forbidden.
- (b) The hanging of a fuse on nails or other projections which will cause a sharp bend to be formed in the fuse is prohibited.
- (c) Before capping safety fuse, a short length shall be cut from the end of the supply reel so as to assure a fresh cut end in each blasting cap.
- (d) Only a cap crimper of approved design shall be used for attaching blasting caps to safety fuse. Crimpers shall be kept in good repair and accessible for use.
- (e) No unused cap or short capped fuse shall be placed in any hole to be blasted; such unused detonators shall be removed from the working place and destroyed.
- (f) No fuse shall be capped, or primers made up, in any magazine or near any possible source of ignition.
- (g) No one shall be permitted to carry detonators or primers of any kind on his person.
- (h) The minimum length of safety fuse to be used in blasting shall be as required by State law, but shall not be less than 30 inches.
- (i) At least two men shall be present when multiple cap and fuse blasting is done by hand lighting methods.
- (j) Not more than 12 fuses shall be lighted by each blaster when hand lighting devices are used. However, when two or more safety fuses in a group are lighted as one by means of igniter cord, or other similar fuse-lighting devices, they may be considered as one fuse.
- (k) The so-called “drop fuse” method of dropping or pushing a primer or any explosive with a lighted fuse attached is forbidden.
- (l) Cap and fuse shall not be used for firing mudcap charges unless charges are separated sufficiently to prevent one charge from dislodging other shots in the blast.

(m) When blasting with safety fuses, consideration shall be given to the length and burning rate of the fuse. Sufficient time, with a margin of safety, shall always be provided for the blaster to reach a place of safety.

## **§ 1926.908 Use of detonating cord.**

- (a) Care shall be taken to select a detonating cord consistent with the type and physical condition of the bore hole and stemming and the type of explosives used.
- (b) Detonating cord shall be handled and used with the same respect and care given other explosives.
- (c) The line of detonating cord extending out of a bore hole or from a charge shall be cut from the supply spool before loading the remainder of the bore hole or placing additional charges.
- (d) Detonating cord shall be handled and used with care to avoid damaging or severing the cord during and after loading and hooking-up.
- (e) Detonating cord connections shall be competent and positive in accordance with approved and recommended methods. Knot-type or other cord-to-cord connections shall be made only with detonating cord in which the explosive core is dry.
- (f) All detonating cord trunklines and branchlines shall be free of loops, sharp kinks, or angles that direct the cord back toward the oncoming line of detonation.
- (g) All detonating cord connections shall be inspected before firing the blast.
- (h) When detonating cord millisecond-delay connectors or short-interval-delay electric blasting caps are used with detonating cord, the practice shall conform strictly to the manufacturer's recommendations.
- (i) When connecting a blasting cap or an electric blasting cap to detonating cord, the cap shall be taped or otherwise attached securely along the side or the end of the detonating cord, with the end of the cap containing the explosive charge pointed in the direction in which the detonation is to proceed.
- (j) Detonators for firing the trunkline shall not be brought to the loading area nor attached to the detonating cord until everything else is in readiness for the blast.

## **§ 1926.909 Firing the blast.**

- (a) A code of blasting signals equivalent to Table U-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. Danger signs shall be placed at suitable locations.

(b) Before a blast is fired, a loud warning signal 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 which pass through the danger zone so as to stop traffic during blasting operations.

(d) It shall be the duty of the blaster to fix the time of blasting.

(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, or other opening is about to hole through, shall be carefully guarded. The blaster shall make sure that all employees are out of the blast area before firing a blast.

## **Table U-1**

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.

### **§ 1926.910 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, and in tunnels, after the muck pile has been wetted down.

### **§ 1926.911 Misfires.**

(a) If a misfire is found, the blaster shall provide proper safeguards for excluding all employees from the danger zone.

(b) 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.

(c) No attempt shall be made to extract explosives from any charged or misfired hole; a new primer shall be put in and the hole reblasted. If refiring 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.

(d) 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.

(e) No drilling, digging, or picking shall be permitted until all missed holes have been detonated or the authorized representative has approved that work can proceed.

## **§ 1926.912 Underwater blasting.**

(a) A blaster shall conduct all blasting operations, and no shot shall be fired without his approval.

(b) Loading tubes and casings of dissimilar metals shall not be used because of possible electric transient currents from galvanic action of the metals and water.

(c) Only water-resistant blasting caps and detonating cords shall be used for all marine blasting. Loading shall be done through a nonsparking metal loading tube when tube is necessary.

(d) No blast shall be fired while any vessel under way is closer than 1,500 feet to the blasting area. Those on board vessels or craft moored or anchored within 1,500 feet shall be notified before a blast is fired.

(e) No blast shall be fired while any swimming or diving operations are in progress in the vicinity of the blasting area. If such operations are in progress, signals and arrangements shall be agreed upon to assure that no blast shall be fired while any person is in the water.

(f) Blasting flags shall be displayed.

(g) The storage and handling of explosives aboard vessels used in underwater blasting operations shall be according to provisions outlined herein on handling and storing explosives.

(h) When more than one charge is placed under water, a float device shall be attached to an element of each charge in such manner that it will be released by the firing. Misfires shall be handled in accordance with the requirements of [§ 1926.911](#).

## **§ 1926.913 Blasting in excavation work under compressed air.**

- (a) Detonators and explosives shall not be stored or kept in tunnels, shafts, or caissons. Detonators and explosives for each round shall be taken directly from the magazines to the blasting zone and immediately loaded. Detonators and explosives left over after loading a round shall be removed from the working chamber before the connecting wires are connected up.
- (b) When detonators or explosives are brought into an air lock, no employee except the powderman, blaster, lock tender and the employees necessary for carrying, shall be permitted to enter the air lock. No other material, supplies, or equipment shall be locked through with the explosives.
- (c) Detonators and explosives shall be taken separately into pressure working chambers.
- (d) The blaster or powderman shall be responsible for the receipt, unloading, storage, and on-site transportation of explosives and detonators.
- (e) All metal pipes, rails, air locks, and steel tunnel lining shall be electrically bonded together and grounded at or near the portal or shaft, and such pipes and rails shall be cross-bonded together at not less than 1,000-foot intervals throughout the length of the tunnel. In addition, each low air supply pipe shall be grounded at its delivery end.
- (f) The explosives suitable for use in wet holes shall be water-resistant and shall be Fume Class 1.
- (g) When tunnel excavation in rock face is approaching mixed face, and when tunnel excavation is in mixed face, blasting shall be performed with light charges and with light burden on each hole. Advance drilling shall be performed as tunnel excavation in rock face approaches mixed face, to determine the general nature and extent of rock cover and the remaining distance ahead to soft ground as excavation advances.

## **§ 1926.914 Definitions applicable to this subpart.**

- (a) *American Table of Distances* (also known as Quantity Distance Tables) means American Table of Distances for Storage of Explosives as revised and approved by the Institute of the Makers of Explosives, June 5, 1964.
- (b) *Approved storage facility* —A facility for the storage of explosive materials conforming to the requirements of this part and covered by a license or permit issued under authority of the Bureau of Alcohol, Tobacco and Firearms. (See [27 CFR part 55](#))

(c) **Blast area** —The area in which explosives loading and blasting operations are being conducted.

(d) **Blaster** —The person or persons authorized to use explosives for blasting purposes and meeting the qualifications contained in [§ 1926.901](#).

(e) **Blasting agent** —A blasting agent is any material or mixture consisting of a fuel and oxidizer used for blasting, but not classified an explosive and in which none of the ingredients is classified as an explosive provided the furnished (mixed) product cannot be detonated with a No. 8 test blasting cap when confined. A common blasting agent presently in use is a mixture of ammonium nitrate (NH<sub>4</sub> NO<sub>3</sub>) and carbonaceous combustibles, such as fuel oil or coal, and may either be procured, premixed and packaged from explosives companies or mixed in the field.

(f) **Blasting cap** —A metallic tube closed at one end, containing a charge of one or more detonating compounds, and designed for and capable of detonation from the sparks or flame from a safety fuse inserted and crimped into the open end.

(g) **Block holing** —The breaking of boulders by firing a charge of explosives that has been loaded in a drill hole.

(h) **Conveyance** —Any unit for transporting explosives or blasting agents, including but not limited to trucks, trailers, rail cars, barges, and vessels.

(i) **Detonating cord** —A flexible cord containing a center core of high explosives which when detonated, will have sufficient strength to detonate other cap-sensitive explosives with which it is in contact.

(j) **Detonator** —Blasting caps, electric blasting caps, delay electric blasting caps, and nonelectric delay blasting caps.

(k) **Electric blasting cap** —A blasting cap designed for and capable of detonation by means of an electric current.

(l) **Electric blasting circuitry** —

(1) Bus wire. An expendable wire, used in parallel or series, in parallel circuits, to which are connected the leg wires of electric blasting caps.

(2) Connecting wire. An insulated expendable wire used between electric blasting caps and the leading wires or between the bus wire and the leading wires.

(3) Leading wire. An insulated wire used between the electric power source and the electric blasting cap circuit.

(4) Permanent blasting wire. A permanently mounted insulated wire used between the electric power source and the electric blasting cap circuit.

(m) **Electric delay blasting caps** —Caps designed to detonate at a predetermined period of time after energy is applied to the ignition system.

(n) **Explosives** —

(1) Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion; that is, with substantially instantaneous release of gas and heat, unless such compound, mixture or device is otherwise specifically classified by the U.S. Department of Transportation.

(2) All material which is classified as Class A, Class B, and Class C Explosives by the U.S. Department of Transportation.

(3) Classification of explosives by the U.S. Department of Transportation is as follows:

*Class A Explosives.* Possessing detonating hazard, such as dynamite, nitroglycerin, picric acid, lead azide, fulminate of mercury, black powder, blasting caps, and detonating primers.

*Class B Explosives.* Possessing flammable hazard, such as propellant explosives, including some smokeless propellants.

*Class C Explosives.* Include certain types of manufactured articles which contain Class A or Class B explosives, or both, as components, but in restricted quantities.

(o) **Fuse lighters** —Special devices for the purpose of igniting safety fuse.

(p) **Magazine** —Any building or structure, other than an explosives manufacturing building, used for the storage of explosives.

(q) **Misfire** —An explosive charge which failed to detonate.

(r) **Mud-capping** (sometimes known as bulldozing, adobe blasting, or dobying). The blasting of boulders by placing a quantity of explosives against a rock, boulder, or other object without confining the explosives in a drill hole.

(s) **Nonelectric delay blasting cap** —A blasting cap with an integral delay element in conjunction with and capable of being detonated by a detonation impulse or signal from miniaturized detonating cord.

(t) **Primary blasting** —The blasting operation by which the original rock formation is dislodged from its natural location.



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(u) **Primer** —A cartridge or container of explosives into which a detonator or detonating cord is inserted or attached.

(v) **Safety fuse** —A flexible cord containing an internal burning medium by which fire is conveyed at a continuous and uniform rate for the purpose of firing blasting caps.

(w) **Secondary blasting** —The reduction of oversize material by the use of explosives to the dimension required for handling, including mudcapping and blockholing.

(x) **Stemming** —A suitable inert incombustible material or device used to confine or separate explosives in a drill hole, or to cover explosives in mud-capping.

(y) **Springing** —The creation of a pocket in the bottom of a drill hole by the use of a moderate quantity of explosives in order that larger quantities or explosives may be inserted therein.

(z) **Water gels, or slurry explosives** —A wide variety of materials used for blasting. They all contain substantial proportions of water and high proportions of ammonium nitrate, some of which is in solution in the water. Two broad classes of water gels are:

(1) Those which are sensitized by a material classed as an explosive, such as TNT or smokeless powder, and

(2) those which contain no ingredient classified as an explosive; these are sensitized with metals such as aluminum or with other fuels. Water gels may be premixed at an explosives plant or mixed at the site immediately before delivery into the bore hole.

(aa) **Semiconductive hose.** Semiconductive hose—a hose with an electrical resistance high enough to limit flow of stray electric currents to safe levels, yet not so high as to prevent drainage of static electric charges to ground; hose of not more than 2 megohms resistance over its entire length and of not less than 5,000 ohms per foot meets the requirement.

[[44 FR 8577](#), Feb. 9, 1979; [44 FR 20940](#), Apr. 6, 1979, as amended at [58 FR 35184](#), [35311](#), June 30, 1993]