

**SUPPORTING STATEMENT FOR THE
INFORMATION COLLECTION REQUIREMENTS OF THE
UNDERGROUND CONSTRUCTION STANDARD ¹
(29 CFR 1926.800)
OFFICE OF MANAGEMENT AND BUDGET (OMB)
OMB CONTROL NO. 1218-0067 (September 2020)**

This ICR is requesting the 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 the statute and regulation mandating or authorizing the collection of information.

The main objective of the Occupational Safety and Health Act of 1970 (the OSH 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 authorizes “the development and promulgation of occupational safety and health standards” (29 U.S.C. 651).

Section 6(b)(7) of the Act specifies that [a]ny standard promulgated under this subsection shall prescribe the 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 symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure. This provision goes on to state that “[t]he Secretary, in consultation with the Secretary of Health and Human Services, may by rule promulgated pursuant to section 553 of title 5, United States Code, make appropriate modifications in the foregoing requirements relating to the use of labels or other forms of warning . . . as may be warranted by experience, information, or medical or technological developments acquired subsequent to the promulgation of the relevant standard” (29 U.S.C. 655).

With regard to recordkeeping, the Act specifies 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). 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. 657).

¹The purpose of this Supporting Statement is to analyze and describe the burden hours and cost associated with provisions of this Standard that contain paperwork requirements; this Supporting Statement does not provide information or guidance on how to comply with, or how to enforce, the Standard.

Therefore, under the authority granted by the OSH Act, the Occupational Safety and Health Administration (“OSHA” or “the Agency”) published its Standard on Underground Construction at §1926.800. This standard contains information collection requirements for posting warning signs and notices, certifying inspection records for hoists, and developing and maintaining records for air-quality tests.

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

The following sections describe the purpose and use of the information collection requirements contained in §1926.800.

(A) Posting Warning Signs and Notices

Seven paragraphs of §1926.800 require employers to post warning signs or notices during underground construction. The table below identifies these paragraphs and cites the regulatory text containing the paperwork requirement.

Paragraph	Regulatory Text
(b)(3)	Unused chutes, manways, or other openings shall be tightly covered, bulkheaded, or fenced off, and shall be posted with warning signs indicating “Keep Out” or similar language.
(i)(3)	Each entrance to a gassy operation shall be prominently posted with signs notifying all entrants of the gassy conditions.
(j)(1)(vi)(A)	Prominently post a notice at all entrances to the underground jobsite to inform all entrants [that air contaminants may be present in sufficient quantity to be dangerous to life].
(m)(2)(ii)	Readily visible signs prohibiting smoking and open flames shall be posted in areas having fire or explosion hazards.
(o)(2)	The employer shall ensure ground stability in hazardous subsidence areas by shoring, by filling in, or by erecting barricades and posting warning signs to prevent entry.
(q)(11)	A caution sign reading “Buried Line,” or similar working shall be posted where air lines are buried or otherwise hidden by water or debris.
(t)(1)(iv)(B)	A sign warning that work is being done in the shaft shall be installed at the shaft collar, at the operator’s station, and at each underground landing.

The warning signs and notices required by these provisions enable employers to effectively alert workers to the presence of hazards or potential hazards at the job site, thereby, preventing worker exposure to hazards or potential hazards associated with underground construction that could kill or seriously injure them.

(B) Certifying Inspection Records for Hoists

Paragraph (t)(3)(xxi) of §1926.800 requires employers to inspect and load test hoists when they install them, and annually thereafter; they must also inspect and load test a hoist after making any repairs or alterations to it that affect its structural integrity, and after tripping a safety device on the hoist. Employers must also prepare a certification record of each inspection and load test that includes the following information: The date of the inspection and load test; a serial number or other identifier for the hoist; and the signature of the individual who performed the inspection and load test. In addition, employers must maintain the most recent certification record until they complete the construction project.

The inspections and load tests identify problems such as deterioration caused by exposure to adverse weather conditions, worn components and other flaws and defects that develop during use, and accelerated wear resulting from misalignments of connecting systems and components. Establishing and maintaining a written record of the most recent inspection and load test alerts equipment mechanics to problems that need correction. Prior to returning the equipment to service, employers can review the records to ensure that the mechanics performed the necessary repairs and maintenance. Accordingly, by using only equipment that is in safe working order, employers will prevent severe injury and death to the equipment operators and other workers who work near the equipment. In addition, these records provide the most efficient means for an OSHA compliance officer to determine that an employer performed the required inspections and load tests, thereby assuring that the equipment is safe to operate.

(C) Recordkeeping for Air Quality Tests

The standard requires employers to monitor air quality during underground construction. The following table lists the paragraphs containing the requirements for air-quality tests, and provides a brief description of each requirement.

Paragraph	Requirement for Air-Quality Test
(j)(1)(ii)(A) through (j)(1)(iii)(A)	Employers must conduct quantitative air quality test for oxygen, carbon monoxide, nitrogen dioxide, hydrogen sulfide, and other toxic gases, as well as dusts, vapors, mists, and fumes as often as necessary.
(j)(1)(iii)(B)	Employers must monitor quantitatively for methane and other flammable gases as often as necessary.
(j)(1)(iii)(C)	If employers use ventilating fans or compressors driven by diesel or gasoline

Paragraph	Requirement for Air-Quality Test
	engines they must initially test the inlet air of the fans or compressors to ensure that engine exhaust is not contaminating the air supply.
(j)(1)(iii)(D)	<p>Employers must conduct air quality tests:</p> <ul style="list-style-type: none"> • As necessary to maintain adequate levels of fresh air as specified by paragraph (k)(1)(i) of the standard; and • To assess affected areas for accumulations of methane or flammable gas after reducing or stopping, and then restoring, ventilation, consistent with paragraphs (k)(7) and (k)(8) of the standard.
(j)(1)(iv)	If employers use rapid excavation machines for underground construction, they must operate a continuous flammable gas monitor with the sensor(s) of the monitor placed as high and close to the front of the machine’s cutter head as practicable.
(j)(1)(v)(A)	If hydrogen sulfide is present at concentrations of five part per million (ppm) or more, employers must test the affected work areas at least at the beginning and midpoint of each shift until the hydrogen sulfide level is less than five ppm for three consecutive days.
(j)(1)(v)(B)	Employers must test affected work areas continuously for hydrogen sulfide if it exceeds 10 ppm.
(j)(2)(i) through (j)(2)(v)	<p>If underground construction operations are potentially gassy or gassy as specified as paragraph (h) of the standard,* employers must:</p> <ul style="list-style-type: none"> • Test for oxygen levels in affected work areas and in areas immediately adjacent to these areas at least at the beginning and midpoint of each shift; • When using rapid excavation machines, test the air at the heading, on the rib, and in the return air duct using continuous automatic flammable gas monitoring equipment; • Use a manual flammable gas monitor as necessary, but at least at the beginning and midpoint of the shift to ensure that oxygen, carbon monoxide, nitrogen dioxide, hydrogen sulfide, and other toxic gases, dusts, vapors, mists, fumes, and methane and other flammable gases do not exceed the limits specified by the standard; • Conduct local tests prior to, and continuously during, any welding, cutting, or other hot work; and

Paragraph	Requirement for Air-Quality Test
	<ul style="list-style-type: none"> <li data-bbox="456 323 1386 428">• In underground operations involving drill-and-blast methods, test the air in affected areas for flammable gas prior to re-entry, and continuously if workers are working in the areas.

*This paragraph classifies an underground operation as potentially gassy if air monitoring shows 10% or more of the lower explosive limit (LEL) for methane or other flammable gas for more than a 24-hour period, or the history of the geographical area or geological formation indicates that 10% or more of the LEL for methane or other flammable gas is likely to be encountered during underground operations. An underground operation is gassy if air monitoring discloses 10% or more of the (LEL) for methane or other flammable gas for three consecutive days, or there has been ignition of methane or other flammable gas emanating from the strata, or an underground operation is both connected to an unground area currently classified as gassy and is subject to a continuous course of air that contains a flammable gas concentration.

Paragraph (j)(3) contains the recordkeeping requirements for the air quality tests mandated by paragraph (j) of §1926.800. These recordkeeping requirements specify that employers must maintain, at an above ground location at the jobsite, a record of every air quality test conducted during the underground construction project. Each air quality record must include the location, date, time, substance, and amount tested. Employers must retain air quality records associated with worker exposures to toxic substances according to the requirements of §1910.1020 (“Access to worker exposure and medical records”), and maintain other air quality test records until the underground construction project is complete; they must also make the records available to OSHA compliance officers on request.

Maintaining records of air quality tests allows employers to document oxygen levels and specific atmospheric contaminants, ascertain the effectiveness of controls (especially ventilation), and implement additional controls if necessary; they can also provide this information to crews on later shifts. Accordingly, employers will prevent serious injury and death to workers who work on the underground construction project. In addition, these records provide an efficient means for workers to evaluate the accuracy and effectiveness of an employer’s exposure reduction program and for OSHA compliance officers to determine that employers performed the required tests and implemented appropriate controls.

(D) Maintaining Check-In/Check-Out Procedures (§1926.800(c))

The standard requires that employers must maintain a check-in/check-out procedure to ensure that aboveground personnel can determine an accurate count of the number of persons underground in the event of an emergency

(E) Performance-Oriented Provisions (§1926.800(d), (e)(1), (e)(2), (j)(1)(v)(C), (q)(6), and (t)(3)(iii))

The following paragraphs require employers to instruct, inform or provide information to workers. Since the standard does not specify how or what specific information the employer must disclose to the employees, the Agency believes this is performance-oriented and is not taking a burden: (d) Instruct workers to recognize and avoid hazards; (e)(1) Inform oncoming shifts of hazards; (e)(2) Employers must establish and maintain direct communications with other workers; (j)(1)(v)(C) Inform workers when hydrogen sulfide concentration exceeds 10 ppm; (q)(6) Warn workers on jumbo decks whenever drilling is about to begin.

Finally, paragraph (t)(3)(iii) assigning the load and speed ratings to hoists used for both personnel and material hoisting. OSHA believes this is covered in paragraph (t)(3)(xxi) where contractors must inspect and perform load tests on hoists annually, as well as under other specified conditions, then prepare a certification record of each inspection and load test that provides required information. Therefore, OSHA is not taking a burden for paragraph (t)(3)(iii).

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 meet the paperwork requirements specified by §1926.800. The Agency wrote the paperwork requirements of the Standard in performance-oriented language (i.e., in terms of what data to collect, not 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 purpose(s) described in A.2 above.

The information collection requirements in §1926.800 are specific to each employer involved, and no other sources or agencies duplicate these requirements or can make the required information available to OSHA (i.e., the required information is available only from employers).

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

The information collection requirements specified by §1926.800 do not have a significant impact on a substantial number of small entities.

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

The Agency believes that the information collection frequencies required by §1926.800 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 collections required by §1926.800, or delay in providing this information, workers are at risk of serious injuries or death while working on underground construction projects.

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 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 prove 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 requirements are within 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 collecting, 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 mitigate against 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 July 30, 2020 (85 FR 45929) soliciting comments from the public and other interested parties on the information collection requirements contained in the Underground Construction Standard (29 CFR 1926.800). The notice was part of a preclearance consultation program that provided interested parties with an opportunity to comment on OSHA's request for an extension by the Office of Management and Budget (OMB) of a previous approval of the information collection requirements found in the Underground Construction Standard. The Agency did not receive any public comments regarding this information collection request.

9. Explain any decision to provide any payments or 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 §1926.800 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 §1926.800 do not involve collection of 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 and aggregate the hour burdens.**
- **Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage-rate categories.**

Burden-Hour and Cost Determinations

The following sections describe the burden hour and cost estimates for the information collection requirements specified by §1926.800. These sections determine burden hours and cost separately for posting warning signs and notices, certifying inspection records for hoists, and recordkeeping for air quality tests.

In the previous ICR, OSHA relied on information from the American Underground Construction Association (AUCA).² In order to update our previous ICR's data, OSHA derived percentage changes from Bureau of Census press releases indicating the percent changes in the overall value of construction put in place between 2008 and 2016. Overall there was a 28.5% increase. Cumulatively, the data indicate that for 2017, the construction industry started about 212 underground construction projects. Additionally, the cumulative effect shows that 28 of these projects involved tunnels with bores over five feet (i.e., "big-bore projects"), while the remaining 184 projects were small- and medium-bore projects. On average, it takes about three years to complete a big-bore project and two years to complete a small- or medium-bore project. Therefore, for each year of the period covered by this ICR, 84 big-bore projects and 368 small- and medium-bore projects (for a total of 452 projects) will be under construction.³ In addition, OSHA estimates that each year contractors continue to classify an average of three underground construction projects as gassy or potentially gassy. Assuming each of these projects lasts about three years, then nine gassy projects will be under construction annually (see footnote 3) in addition to the other 452 underground projects for a total of 461 projects.

² American Underground Construction Association (AUCA); Howard J. Haned, Chair, via fax letter dated 4/6/98.

³ This determination accounts for contractors completing some projects from the previous three-year period during the current three-year period.

Underground Construction Standard (29 CFR 1926.800)
1218-0067
November 30, 2020

TABLE 1- CHANGES IN NUMBER OF UNDERGROUND PROJECTS

	ICR	Updates	
	Jun-14	2017	Source
No. of projects			
No. of projects that involved tunnels with bores over five feet (i.e. "big-bore projects")	22	28	Calculated
No. of small and medium-bore projects	143	184	Calculated
Total No. of underground construction projects started	165	212	Calculated
No. of years to complete project			
Average no. of years to complete a big-bore project	3	3	Same as before
Average no. of years to complete a small- or medium-bore project	2	2	Same as before
No. of big-bore projects per year	66	84	Calculated
No. of small and medium-bore projects per year	286	368	Calculated
Total projects under construction per year	352	452	Calculated
Average no. of underground construction projects that are gassy or potentially gassy	3	3	Same as before
Estimated no. of years each project lasts	3	3	Same as before
No. of gassy projects under construction	9	9	Same as before
Items	2013	2016	Source
Value of Construction Put in Place (<i>Millions of Dollars</i>)	906,351	1,164,471	U.S. Census Bureau, 2017
Percent Change in Value of Construction Put in Place	28.5%		Calculation

OSHA believes that it is a usual and customary practice of the construction industry to designate one employer (i.e., contractor) at a project to perform the required air quality tests, record the test results, and calibrate the monitors. Therefore, a total of 461 contractors are responsible for the paperwork requirements associated with the air-quality tests performed at the 461 projects under construction four times per year. The Agency assumes that these contractors are also responsible for the other two paperwork requirements specified by §1926.800 – posting warning signs and notices, and certifying the inspection records for hoists.

The Agency has received anecdotal information from several underground construction industry representatives that modern digital and computer technologies have greatly improved environmental monitoring. Many instruments sample every second or so for as many as five air/gas conditions simultaneously. These instruments incorporate alarms and data storage in handheld or portable configurations. The instruments may be calibrated, operationally checked and recharged simply by placing them in a docking station. These docking stations also download the monitoring data directly to computer storage in a matter of seconds. Data retrieval is as fast as accessing the file and printing it. Some representatives indicate that placing an instrument in a docking station, having the data downloaded and printed, and the instrument checked as well as recalibrated including test gas takes one to one and a half minutes. They also indicate that battery recharging requires approximately 90 minutes (90/60 hours). However, there is no need for the charging to be attended or recorded. The instruments indicate when they are properly charged and ready for use.

The Agency understands that as old instruments retire, underground contractors upgrade to the newer more efficient devices; however, the extent of use of the newer devices is unknown. As a consequence of this lack of information the Agency seeks no change in the burden hours associated with its standards regulating underground construction and only seeks changes based on updated worker costs.

The Agency determined the wage rate from mean hourly wage earnings to represent the cost of employee time. The following hourly wage rates for the relevant occupational categories have been derived from the *National Occupational Employment and Wage Estimates United States, May 2019*, published by the Bureau of Labor Statistics. 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 Statistics (OES), May 2019* [date accessed: May 2020]. Fringe markup is from the following BLS release: *Employer Costs for Employee Compensation* news release text; released 10:00 AM (EDT), December 2019 (https://www.bls.gov/oes/current/oes_nat.htm). BLS reported that for civilian workers, fringe benefits accounted for 29.9 percent of total compensation and wages accounted for the remaining 70.1 percent. To calculate the loaded hourly wage for each occupation, the Agency divided the mean hourly wage by 1 minus the fringe benefits.

Table 2 - WAGE HOUR ESTIMATE

WAGE HOUR ESTIMATE				
Occupational Title	Standard Occupation Code	Mean Hourly Wage Rate (A)	Fringe Benefits (B)⁴	Loaded Hourly Wage Rate (C) = (A)/(1-(B))
Construction Worker	47-000	\$20.06	.299	\$28.62

⁴ No construction worker's time is taken to develop and post signs for §1926.800(b)(3) and (q)(11) since specific language is provided in the regulatory text

(A) Posting Warning Signs and Notices

The Agency believes that contractors, at the 461 projects, implement two of the seven posting requirements (§1926.800(m)(2)(ii) and (t)(1)(iv)(B)) for each underground-construction project once a year. For the remaining five posting requirements (§1926.800(b)(3), (i)(3), (j)(1)(vi)(A), (o)(2) and (q)(11)), contractors post the specified signs or notices in about half of the 461 projects each year. In addition, OSHA determines that a construction worker, at an hourly wage rate of \$28.62, spends five minutes (5/60 hour) developing and posting each sign or notice.⁴ Therefore, the annual burden hours and cost associated with these posting requirements are:

Burden hours: (461 projects x 2 postings x 1 a year = 922) + ((461 projects x .5 x 5 postings = 1,153)) x 5/60 hour = 173 hours

Cost: 173 hours x \$28.62 = \$4,951

(B) Certifying Inspection Records for Hoists

Under paragraph (t)(3)(xxi) of §1926.800, contractors must inspect and perform load tests on hoists annually, as well as under other specified conditions, and then prepare a certification record of each inspection and load test that provides required information. OSHA assumes that: Each of the 461 underground construction projects uses one hoist; a construction worker inspects and performs a load test on 50% of the hoists annually, while the other half will be tested four times a year (one of the four inspections will be the required annual inspection); and this worker takes one hour to inspect, load test, and complete and maintain a certification record for the hoist. Accordingly, the burden hour and cost estimates for this paperwork requirement are:

Burden hours: ((461 hoists x .5 inspections x 1 (annually) = 231) + ((461 x .5 inspections x 4 quarterly = 922)) x 1 hour = 1,153 hours

Cost: 1,153 hours x \$28.62 = \$32,999

(C) Recordkeeping for Air Quality Tests

To comply with §1926.800(j), contractors usually test and record results for five substances (i.e., oxygen, methane, carbon monoxide, nitrogen oxide, and hydrogen sulfide). The monitors typically used for this purpose are electronic units with the following characteristics: Stand-alone with simultaneous and continuous readouts for five substances (i.e., no delay in obtaining the readouts) (the “continuous monitors”); hand-held with simultaneous readouts for the substances and a 30-second delay to obtain the readouts (the “simultaneous monitors”); and hand-held with serial readouts for each of the five substances and a 30-second delay to obtain each readout (totaling 2.5 minutes 2.5/60 hour) to obtain the five readouts) (the “serial monitor”). In addition to obtaining the readouts, the Agency estimates that a construction worker requires 30 seconds to record the results for all five substances. Therefore, the total time required to obtain the readouts and record the results for five substances at one sampling location for each

type monitor: Continuous monitors, 30 seconds (.008 hour); simultaneous monitors, 1 minute (1/60 hour); and serial monitors, 3 minutes (3/60 hour).

Big-Bore Projects

OSHA estimates that, on average, contractors on big-bore projects, 84 projects, read and record air-quality results at least once a day from six different locations (i.e., at the face of the tunnel, and at five additional sites within the tunnel). They typically use continuous monitors at the face of the tunnel, resulting in a total of 250 records per project during a 250-day work-year (i.e., 1 record per day x 250 days). At the other five locations, the industry sources estimate that half of the contractors take air quality measurements with simultaneous monitors and the other half use serial monitors. During a 250-day work-year, contractors record 1,250 readouts with simultaneous monitors and an additional 1,250 readouts from serial monitors per project (i.e., ((5 samples per day x 250 day)). Thus, the estimated annual burden hours and cost for obtaining and recording the air-quality results for the 84 big-bore projects under construction each year are:

Table 3 - Burden hours by Monitoring: Big-Bore Projects

Continuous Monitoring	((84 projects) x (1 location x 250 days)) records x .008 hour = 168 hours
Simultaneous Monitoring	((84 projects x .5) x (5 locations x 250 days)) records x 1/60 hour = 875 hours
Serial Monitoring	((84 projects x .5) x (5 locations x 250 days)) records x 3/60 hour = 2,625 hours
Total Hours:	3,668 hours
Total Cost:	3,668 hours x \$28.62 = \$104,978

Small and Medium-Bore projects

Projects with conventionally-bored tunnels

OSHA estimates that two-thirds (245) of the 368 small- and medium-bore projects use conventional boring techniques. Additionally, the Agency assumes that contractors adopt the same monitoring protocol for these projects that they implement for big-bore projects (i.e., at the face of the tunnel, and at five additional sites within the tunnel). Accordingly, once-a-day continuous monitoring at the face of the tunnel results in a total of 250 records per project during a 250-day work-year. At the other five locations, half of them collect the readings with simultaneous monitors and the other half use serial monitors; during a work-year, each of these monitors obtain 1,250 records per project. Therefore, this monitoring requirement results in the following burden hour and cost estimates each year:

**Table 4 - Small and Medium-Bore Projects
 Burden Hours by Monitoring -- Projects with conventionally-bored tunnels**

Continuous Monitoring	$(245 \text{ projects} \times 250) \text{ records} \times .008 \text{ hour} = 490 \text{ hours}$
Simultaneous Monitoring	$((245 \text{ projects} \times .5) \times (5 \text{ locations} \times 250 \text{ days})) \text{ records} \times 1/60 \text{ hour} = 2,563 \text{ hours}$
Serial Monitoring	$((245 \text{ projects} \times .5) \times (5 \text{ locations} \times 250 \text{ days})) \text{ records} \times 3/60 \text{ hour} = 7,688 \text{ hours}$
Total Hours:	10,741 hours
Total Cost:	10,741 hours x \$28.62 = \$307,407

Projects that bore with microtunneling equipment

The remaining 123 small- and medium-bore projects consist of tunnels bored with microtunneling equipment; this technology reduces worker entry into the underground-construction worksites compared to tunnels bored using conventional techniques, thereby reducing the monitoring requirements. Accordingly, the Agency estimates that contractors monitor each such project once daily at the face of the tunnel and at two sites within the tunnel. In addition, OSHA assumes that contractors involved in microtunneling use continuous monitors at the face of the tunnel, resulting in a total of 250 records per project during a 250-day work-year. At the two remaining locations, half obtain the readings with simultaneous monitors and the other half use serial monitors; therefore, during a 250-day work-year, they use each of these monitors to collect results for 250 records per project. The yearly burden hour and cost estimates for this monitoring requirement are:

Table 5 - Burden Hours by Monitoring - Projects that bore with microtunneling equipment

Continuous Monitoring	$123 \text{ projects} \times 250 \text{ records/days} \times .008 \text{ hour} = 246 \text{ hours}$
Simultaneous Monitoring	$((123 \text{ projects} \times .5) \times 250 \text{ records/days}) \times 1/60 \text{ hour} = 258 \text{ hours}$
Serial Monitoring	$((123 \text{ projects} \times .5) \times 250 \text{ records/day}) \times 3/60 \text{ hour} = 775 \text{ hours}$
Total hours:	1,279 hours
Total Cost:	1,279 hours x \$28.62 = \$36,605

Projects classified gassy or potentially gassy

OSHA assumes that these gassy projects require continuous monitoring at the face of the tunnel and at five locations within the tunnel, and that these monitors have an automatic signaling device that activates an alarm (at the jobsite, above ground, or both) if a gas exceeds a preset level. The Agency estimates that the contractors read and record the results from a monitor

twice each shift (for three shifts each day) during a 250-day work-year, for a yearly total of 1,500 records for each monitor. With nine gassy projects under construction each year, the annual burden hours and cost associated with monitoring gassy projects are:

Burden hours: $((9 \text{ projects} \times 6 \text{ locations} \times 250 \text{ days}) \times .008 \text{ hour}) = 108 \text{ hours}$

Cost: $108 \text{ hours} \times \$28.62 = \$3,091$

Monitor Calibration

The Agency assumes that a contractor must calibrate and recharge the battery for each monitor once a day. OSHA estimates that, on average, a construction worker trained to calibrate monitors spends about 10 minutes (10/60 hour) calibrating a continuous monitor, and takes about five minutes (5/60 hour) to calibrate a simultaneous or serial monitor. Recharging and calibrating utilize technically sophisticated docking stations, which in the near future will reduce the burden for downloading, recording data, calibrating and recharging monitors by automating the processes. The Agency takes a conservative burden based on industry reports that a significantly increasing number of monitors dock with automated docking stations.

Big-bore projects:

Continuous Monitoring Calibrations, $84 \text{ projects} \times 1 \text{ location} \times 250 \text{ days} = 21,000$
Simultaneous or serial monitor calibrations, $84 \text{ projects} \times 5 \text{ locations} \times 250 \text{ days} = 105,000$

Small- and medium conventional bore projects:

Continuous Monitoring Calibrations, $245 \text{ projects} \times 1 \text{ location} \times 250 \text{ days} = 61,250$
Simultaneous or serial monitor calibrations $245 \text{ projects} \times 5 \text{ additional sites} \times 250 \text{ days} = 306,250$

Small- and medium micro tunnel projects:

Continuous Monitoring Calibrations, $123 \text{ projects} \times 250 \text{ days} \times 1 \text{ face of tunnel} = 30,750$
Simultaneous or serial monitor calibrations $123 \text{ projects} \times 2 \text{ remaining locations} \times 250 \text{ days} = 61,500$

Gassy classified projects:

Continuous Monitor Calibrations, $9 \text{ projects} \times (2 \text{ twice a day} \times 3 \text{ shifts}) \times 250 \text{ days} = 13,500$

Therefore, the total number of continuous monitor calibrations is 126,500 (21,000 + 61,250 + 30,750 + 13,500), and the total number of simultaneous or serial monitor calibrations is 472,750 (105,000 + 306,250 + 61,500). Accordingly, the annual burden hour and cost estimates for this calibration requirement are:

Burden hours: (126,500 continuous monitor measurements x 10/60 hour = 21,083 hours
 + (472,750 simultaneous or serial monitor measurements x 5/60 hour =
 39,396 hours)) = 60,479 hours

Cost: 60,479 hours x \$28.62 = \$1,730,909

(D) Maintaining Check-In/Check-Out Procedures (§1926.800(c))

The standard requires that employers must maintain a check-in/check-out procedure to ensure that aboveground personnel can determine an accurate count of the number of persons underground in the event of an emergency.

OSHA believes that the underground construction company established a company-wide check-in/check-out procedure ensuring that aboveground personnel have accurate counts of the number of people underground. The Agency estimates that it would take 2 minutes (2/60 hour) to maintain this procedure.

Burden hour: 461 projects x 2/60 hour = 15 hours

Cost: 15 hours x \$28.62= \$429

Table 6 - Estimated Annualized Respondent Hour and Cost Burdens

Collections of Information	No. of Respondents	No. of Responses per Respondent	Total No. of Responses	Avg. Burden per Response (in Hrs.)	Total Burden Hours (rounded)	Average Mean Wage Rate	Total Burden Costs (rounded)
A. Posting Warning Signs and Notices **							
1. §1926.800 (m) (2) (ii) and (t)(1) (iv)(B)	461	2	922	5/60	77	28.62	2,203
2. §1926.800 (b) (3), (i)(3), (j)(1) (vi)(A), (o)(2) and (q)(11)	231	4.99	1,153	5/60	96	28.62	2,747
Grand Total Posting			2,075	-	173	\$28.62	\$4,950

Collections of Information	No. of Respondents	No. of Responses per Respondent	Total No. of Responses	Avg. Burden per Response (in Hrs.)	Total Burden Hours (rounded)	Average Mean Wage Rate	Total Burden Costs (rounded)
B. Certifying Inspection Records for Hoists (paragraph (t)(3)(xxi) of §1926.800)**							
1. Inspections	231	1	231	1.00	231	28.62	6611
2. Projects	231	3.99	922	1.00	922	28.62	26,388
Grand Total Inspection Records		-	1,153	-	1,153	\$28.62	\$32,999
C. Recordkeeping - Air Quality Tests (§1926.800(j))							
1. Big-Bore Projects							
<i>Continuous Monitoring</i>	84	250	21,000	.008	168	28.62	4,808
<i>Simultaneous Monitoring</i>	42	1,250	52,500	1/60	875	28.62	25,043
<i>Serial Monitoring</i>	42	1,250	52,500	3/60	2,625	28.62	75,128
Subtotal Monitoring		-	126,000	-	3,668	\$28.62	\$104,979
2. Small and medium conventional bore projects							
<i>Continuous Monitoring</i>	245	250	61,250	.008	490	28.62	14,024
<i>Simultaneous Monitoring</i>	123	1,250	153,750	1/60	2,563	28.62	73,353
<i>Serial Monitoring</i>	123	1,250	153,750	3/60	7,688	28.62	220,031
Subtotal Monitoring		-	368,750	-	10,741	\$28.62	\$307,408
3. Small and							

Collections of Information	No. of Respondents	No. of Responses per Respondent	Total No. of Responses	Avg. Burden per Response (in Hrs.)	Total Burden Hours (rounded)	Average Mean Wage Rate	Total Burden Costs (rounded)
medium micro tunnel projects							
<i>Continuous Monitoring</i>	123	250	30,750	.008	246	28.62	7,041
<i>Simultaneous Monitoring</i>	62	250	15,500	1/60	258	28.62	7,384
<i>Serial Monitoring</i>	62	250	15,500	3/60	775	28.62	22,181
Subtotal Monitoring		-	61,750	-	1,279	\$28.62	\$36,606
4. Gassy classified projects	9	1,500	13,500	.008	108	\$28.62	\$3,091
Grand Total Monitoring		-	570,000	-	15,796	\$28.62	\$452,084
5. Monitor Calibration - Continuous Monitoring							
<i>Big-bore projects</i>	84	250	21,000	10/60	3,500	28.62	100,170
<i>Small and medium conventional bore projects</i>	245	250	61,250	10/60-	10,208	28.62	292,153
<i>Small and medium micro tunnel projects</i>	123	250	30,750	10/60-	5,125	28.62	146,678
<i>Gassy classified projects</i>	9	1,500	13,500	10/60-	2,250	28.62	64,395
Subtotal Calibration			126,500	10/60	21,083	\$28.62	\$603,396
6. Monitor Calibration - Simultaneous or serial monitoring							
<i>Big-bore projects</i>	84	1,250	105,000	5/60	8,750	28.62	250,425
<i>Small and medium conventional</i>	245	1,250	306,250	5/60	25,521	28.62	730,411

Collections of Information	No. of Respondents	No. of Responses per Respondent	Total No. of Responses	Avg. Burden per Response (in Hrs.)	Total Burden Hours (rounded)	Average Mean Wage Rate	Total Burden Costs (rounded)
<i>bore projects</i>							
<i>Small and medium micro tunnel projects</i>	123	500	61,500	5/60	5,125	28.62	146,678
Subtotal Calibration	452	-	472,750	5/60	39,396	\$28.62	\$1,127,514
Grand Total Calibration		-	599,250	-	60,479	\$28.62	\$1,730,910
(D) Maintaining Check-In/Check-Out Procedures ((§1926.800(c))	461	1	461	2/60	15	\$28.62	\$429
Duplicated Total			1,172,939		77,616		\$2,221,372

** For purpose of this analysis, OSHA assumes that each of the 461 underground construction projects uses one hoist; and each project has one employer.

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 estimates 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 service 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 respondent (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.**

The capital cost of these paperwork requirements consists mainly of replacing the exposure monitors. As noted under Item 12 above (“Monitor Calibration”), OSHA estimates that each underground construction project uses two monitors, for a total of 922 monitors (i.e., 461 projects x 2 monitors each). Based on manufacturers’ data, the Agency finds that the average monitor costs about \$1,800.⁵ In addition, OSHA believes that employers replace about 10% (92) of the monitors each year. Accordingly, the annual total cost of replacing the monitors is:

Cost: 92 monitors x \$1,800 = \$165,600

14. Provide estimates of the 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 Item 12, 13, and 14 into a single table.

Agency has no annualized cost associated with enforcing the Standard. OSHA would only review records in the context of an investigation of a particular employer to determine compliance with the Standard. These activities are outside the scope of the PRA. See 5 CFR 1320.4(a)(2).

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

There is an adjustment increase of 1,139 burden hours (from 76,477 hours to 77,616 hours). This increase in burden hours is a result of the agency calculating its hours in fractions rather than decimals. The Agency is also requesting to retain its existing operating and maintenance costs of \$165,600 for exposure monitor equipment replacement.

⁵Regardless of the type of monitor: Continuous, simultaneous, or serial.

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 §1926.800.

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 requirements. (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. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

This Supporting Statement does not contain any collection of information requirements that employs statistical methods.