



U.S. DEPARTMENT OF TRANSPORTATION
OFFICE OF INSPECTOR GENERAL

**PHMSA Has Incomplete Guidance
for Evaluating the Siting of Proposed
Liquefied Natural Gas Facilities
and Monitoring State Pipeline
Safety Programs**

PHMSA

Report No. ST2020031

April 28, 2020





PHMSA Has Incomplete Guidance for Evaluating the Siting of Proposed Liquefied Natural Gas Facilities and Monitoring State Pipeline Safety Programs

Self-initiated

Pipeline and Hazardous Materials Safety Administration | ST2020031 | April 28, 2020

What We Looked At

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is responsible for determining whether proposed and existing liquefied natural gas (LNG) facilities meet Federal safety standards. According to the U.S. Energy Information Administration, LNG exports from the United States are projected to rise from about 2 trillion cubic feet in 2020 to 6 trillion cubic feet in 2030. Given the importance of PHMSA's oversight of LNG facilities, we initiated this audit with the following objectives: to assess PHMSA's (1) review of new LNG facilities' plans for compliance with Federal siting requirements, (2) inspection of existing LNG facilities in accordance with Agency policies and Federal standards, and (3) evaluation of State gas programs' oversight of LNG facilities.

What We Found

PHMSA's standard operating procedures for its reviews of LNG facility developer applications are generally comprehensive, but they do not include a second-level verification of reviews by engineers. Second-level verification steps reduce the risk that PHMSA's analysis will be incomplete, contain errors, or lack consistency. In addition, while PHMSA's inspections of existing interstate LNG facilities met Agency standards, its evaluations of State gas programs missed deficiencies in inspection intervals and inspector training. One factor is that PHMSA's guidance does not require evaluators to document which records they review. Evaluators described using their own judgment when selecting records, but that means some State records may never be reviewed due to the inherent biases in judgmental sampling. As a result, there is an increased risk that the Agency's evaluation results will neither accurately measure State gas program performance nor give PHMSA the information it needs to respond to inquiries, conduct inspections, and pass on institutional knowledge to new evaluators.

Our Recommendations

PHMSA concurred with and implemented our three recommendations to improve its guidance on reviewing applications and evaluating State programs. We consider all three recommendations resolved and closed.

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Memorandum

Date: April 28, 2020

Subject: ACTION: PHMSA Has Incomplete Guidance for Evaluating the Siting of Proposed Liquefied Natural Gas Facilities and Monitoring State Pipeline Safety Programs | Report No. ST2020031

From: David Pouliott 
Assistant Inspector General for Surface Transportation Audits

To: Pipeline and Hazardous Materials Safety Administrator

According to the Pipeline and Hazardous Materials Safety Administration (PHMSA), operators of liquefied natural gas (LNG) facilities have reported 16 incidents since 2014. For example, the Plymouth LNG peakshaving¹ facility in Plymouth, WA, experienced a catastrophic failure and explosion in March 2014, resulting in five injuries.² During routine annual startup operations, a valve slowly leaked natural gas into piping that had been open to the atmosphere, and the air-gas mixture ignited by a normal heating process. The estimated total cost of property damages related to the incident was \$46.5 million.

Another of these incidents, which occurred at the Sabine Pass LNG export terminal in Cameron Parish, LA, resulted in no injuries and initial estimated property damages of \$9.3 million. In January 2018, workers found a release of LNG had caused cracks in the outer layer of an LNG storage tank. PHMSA officials later learned that another tank at the facility had also experienced LNG leaks along its base. A subsequent root cause analysis identified concerns with all five of the LNG storage tanks at the facility. In response, PHMSA directed the operator to take two tanks out of service for repair. In July 2019, PHMSA and the Federal Energy Regulatory Commission (FERC) identified 14 conditions the terminal operator must meet before returning the tanks to service and another 8 to be met within 2 months of returning them to service. The case remains open.

¹ Peakshaving facilities liquefy and store natural gas during summer months, and then vaporize the LNG and inject it into pipelines during winter months.

² The Plymouth incident is the only 1 of the 16 incidents to result in injuries, and none caused a fatality.

PHMSA is responsible for determining whether plans for proposed LNG facilities meet siting³ requirements in Federal safety standards.⁴ The Agency regulated a network of 157 existing LNG plants⁵ run by 88 LNG operators in 2018. However, PHMSA's oversight workload in regards to LNG applications and facilities is likely to increase over time. According to the U.S. Energy Information Administration, the United States became a net exporter of LNG in March 2016 after the Sabine Pass terminal began exporting the product. Since then, five facilities—Cameron, LA; Corpus Christi, TX; Cove Point, MD; Elba Island, GA; and Freeport, TX—have started exporting LNG, while an additional two facilities may begin exporting by 2025. Further, according to the U.S. Energy Information Administration, LNG exports from the United States are projected to rise from 2 trillion cubic feet in 2020 to about 6 trillion cubic feet in 2030.

The Office of Inspector General (OIG) initiated this audit, given the importance of PHMSA's oversight of the safety of LNG facilities. Our objectives for this audit were to assess PHMSA's (1) review of new LNG facilities' plans for compliance with Federal siting requirements, (2) inspection of existing LNG facilities in accordance with Agency policies and Federal standards, and (3) evaluation of State gas programs' oversight of LNG facilities.

To perform this audit, we interviewed PHMSA officials and examined documents PHMSA staff used to review the siting component of applications for proposed LNG facilities. We analyzed elements of PHMSA inspections of 26 existing LNG facility operators. We also examined PHMSA's evaluations of gas programs⁶ for a sample of seven States, as well as LNG inspection documents for those States.

We conducted this audit in accordance with generally accepted Government auditing standards. Exhibit A details our scope and methodology. Exhibit B lists entities we visited or contacted, and exhibit C lists acronyms we used.

We appreciate the courtesies and cooperation of Department of Transportation representatives during this audit. If you have any questions concerning this report, please call me at (202) 366-5630 or Kerry R. Barras, Program Director, at (817) 978-3318.

cc: The Secretary
DOT Audit Liaison, M-1
PHMSA Audit Liaison, PHO-10

³ For purposes of this report, siting refers to building a facility in a particular location.

⁴ Liquefied Natural Gas Facilities: Federal Safety Standards, Title 49, Code of Federal Regulations (CFR), Part 193 (2020).

⁵ Of these 157 facilities, 23 are export, import, or other types of facilities. Of the remainder, 69 are peakshaving facilities, and another 65 vaporize LNG and inject it into pipeline systems as needed.

⁶ State gas programs include LNG, intrastate gas pipelines, distribution gas pipelines, and other facilities.

Results in Brief

PHMSA's procedures for reviewing the siting of proposed LNG facilities do not include second-level verification steps.

PHMSA reviews LNG facility developers' applications for compliance with Federal LNG siting safety requirements. However, the Agency relied on a checklist that had not been finalized to document its review and had no standard operating procedures governing the overall process until September 2019. In addition, the application review process lacked a control to document PHMSA engineers' independent verification of completed checklists. According to PHMSA officials, the Agency had not developed standard operating procedures as it was too soon after it signed a 2018 interagency Memorandum of Understanding (MOU) with FERC that increased the Agency's oversight responsibilities and its portfolio of applications. PHMSA finalized standard operating procedures on this process in September 2019. The procedures are generally comprehensive, but do not include PHMSA's second-level verification of reviews by Agency or subcontractor engineers. *Standards for Internal Control in the Federal Government*⁷ charges management with designing policies and procedures that fit an entity's circumstances and integrating them into the entity's operations. We examined two checklists and found the second had minor errors. Without second-level verification steps, there is an increased risk that PHMSA engineers' or subcontractors' analyses of LNG facility applications may be incomplete, contain errors, or lack consistency. During this audit, PHMSA recognized the importance of including such verification steps in its standard operating procedures for reviewing LNG applications.

PHMSA's inspections of existing interstate LNG facilities met Agency standards.

PHMSA's standard inspections of existing LNG facilities complied with Agency standards for the 26 LNG facilities we reviewed. In accordance with those standards, the Agency performed inspections every 3 years as required, utilized PHMSA's standard set of LNG inspection questions, reported inspection results to operators within congressionally mandated timeframes, and appropriately addressed unsatisfactory conditions identified during inspections.

⁷ GAO, *Standards for Internal Control in the Federal Government*, (GAO-14-704G), September 10, 2014.

PHMSA's evaluations of State gas programs missed deficiencies in the State LNG facilities inspection intervals and LNG inspector training.

PHMSA annually evaluated the seven State gas programs we reviewed. However, we identified deficiencies related to LNG inspection intervals and LNG inspector training that PHMSA did not identify or report in these annual evaluations. According to PHMSA evaluators, they likely missed these deficiencies because they sampled State inspection records and may not have reviewed LNG-specific inspection records during their evaluations. However, the evaluators could not verify which records they reviewed because they did not keep that information. PHMSA's guidance does not require that evaluators keep such records. *Standards for Internal Control in the Federal Government* provides recordkeeping requirements for agencies. Evaluators described using their judgment and Agency priorities when selecting records to review. PHMSA guidance⁸ directs evaluators to verify that every facility was inspected within required time intervals, and each lead LNG inspector had completed the required PHMSA training. This guidance does not recognize that evaluators may need to sample records when reviewing State program areas or include a methodology for sampling records. Also, according to PHMSA officials, States need only one inspection team member who has completed all LNG training, but this information is not included in PHMSA's guidelines to States.⁹ Furthermore, evaluators' use of judgmental sampling introduces the risk that certain State program records may never be reviewed because of potential selection biases inherent in judgmental sampling. As a result, there is increased risk that PHMSA's evaluation results are not accurately measuring State gas program performance. Because evaluators do not keep a record of what they reviewed during evaluations, PHMSA lacks information for responding to inquiries, focusing future inspections, and passing on institutional knowledge to new evaluators. PHMSA officials expressed a willingness to include such information regarding sampling methodologies in its evaluator guidance, but it is also important that Agency leadership ensures evaluators follow the guidance.

We are making recommendations to improve PHMSA's internal guidance on reviewing applications and evaluating State programs.

⁸ PHMSA's *Pipeline Safety Gas State Program Evaluation, Evaluator Guidance* (2016) contains guidance, techniques, procedures, and other information that is used internally by PHMSA State Program staff.

⁹ PHMSA, *Guidelines for States Participating in the Pipeline Safety Program*, revised annually.

Background

The Natural Gas Pipeline Safety Act of 1968¹⁰ required the Department of Transportation (DOT) to establish minimum Federal safety standards for gas pipeline facilities and recognized States' roles in overseeing natural gas facilities. The Pipeline Safety Act of 1979¹¹ mandated that DOT establish minimum Federal safety standards for the siting, design, installation, initial testing, operation, and maintenance of LNG facilities. The Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2016¹² (PIPES Act of 2016) mandated improvements to pipeline safety, such as sharing safety inspection results—including from LNG inspections—with operators and establishing safety regulations.

PHMSA's Office of Pipeline Safety (OPS) is responsible for overseeing the safety of gas pipelines and LNG facilities. PHMSA has jurisdiction over onshore LNG facilities, and its LNG safety standards are codified in Federal regulations. Only PHMSA may enforce safety standards for interstate facilities, but the Agency can authorize States to inspect interstate LNG facilities within their jurisdictions. States report probable violations regarding interstate facilities to PHMSA for compliance action. However, States with an annual PHMSA certification have jurisdiction over intrastate LNG facilities within their boundaries. If a State does not satisfy the criteria for certification, PHMSA is responsible for overseeing all LNG facilities within that State. Most of the LNG facilities that PHMSA inspects are connected to interstate pipelines.

PHMSA's responsibilities for overseeing LNG safety include reviewing applications, submitted to FERC by facility developers, for proposed LNG facilities. PHMSA or subcontractor engineers¹³ review these applications for compliance with siting requirements, which are part of the Agency's LNG safety standards. Once PHMSA determines that an application meets these standards or could do so under certain conditions, it sends FERC a Letter of Determination.¹⁴ FERC accepts these letters as the authoritative determination of whether proposed LNG facilities can comply with Federal siting safety standards.

¹⁰ Pub. L. No. 90-481 (1968).

¹¹ Pub. L. No. 96-129 (1979).

¹² Pub. L. No. 114-183 (2016).

¹³ Under an interagency agreement, subcontractors from the Department of Energy's Oak Ridge National Laboratory provide PHMSA with a range of engineering support—including the review of LNG facility applications.

¹⁴ FERC is responsible for authorizing the siting and construction of onshore and near-shore LNG import or export facilities, and for issuing certificates of public convenience and necessity for LNG facilities connected to interstate gas pipelines. Developers must obtain this certificate to construct an LNG facility.

PHMSA inspects operational LNG facilities and construction projects for compliance with Federal safety regulations, investigates incidents, and takes enforcement actions against facility operators when necessary. PHMSA's inspectors conduct standard inspections as required, using direct observation and an established set of questions covering required procedures and documentation.

Additionally, PHMSA annually evaluates 51 State gas programs¹⁵ that oversee gas transmission pipelines, distribution pipelines, LNG facilities, and other types of facilities. Of those State programs, 32 oversee LNG facilities. The evaluation covers States' annual progress reports, and State agency policies, plans, procedures, records, and field inspections. PHMSA evaluators use a standard evaluation form to conduct their reviews, and PHMSA's guidance instructs them on how to complete the form. The evaluation assesses State program performance during the previous calendar year, and PHMSA uses the results to calculate States' grant awards.¹⁶

PHMSA's Procedures for Reviewing the Siting of Proposed LNG Facilities Do Not Include Second-Level Verification Steps

In August 2018, PHMSA and FERC entered into an MOU that increased PHMSA's workload for reviewing applications for proposed LNG facilities; however, the Agency had not developed comprehensive standard operating procedures for these reviews. Prior to the MOU, PHMSA assisted with FERC's analysis of applicants' compliance with Federal siting requirements. FERC and PHMSA entered into the MOU to improve coordination throughout the LNG permit application process. The MOU also reasserted PHMSA's role in determining compliance with safety requirements and related regulatory guidance.

PHMSA's siting review includes an evaluation of a project's preliminary design to make sure the public is protected from adverse effects, such as explosions, suffocation, and other potential hazards. After it agrees that a project meets

¹⁵ Every State participates in PHMSA's Natural Gas Program, except Hawaii and Alaska. There are more total State agencies than there are States because Puerto Rico and District of Columbia are certified State agencies, and Arkansas has two certified State agencies.

¹⁶ Under PHMSA's State Pipeline Safety grant-in-aid program, the grant award is calculated using a formula in 49 CFR § 198.13 (2020). The formula is based on State program performance and has a maximum of 100 performance points, including 50 for information provided in the State's annual certification/agreement attachments, which document its activities for the past year, and 50 for annual State program evaluation results.

Federal siting requirements for safety, PHMSA issues a Letter of Determination to FERC, fulfilling PHMSA's requirements from the August 2018 MOU. Since then, PHMSA has issued 14 Letters of Determination.

When reviewing an LNG facility application, PHMSA or subcontractor engineers used a set of questions (i.e., a checklist) to determine whether the siting of new facilities complies with elements of 49 CFR § 193. For example, PHMSA requires applicants to submit a Design Spill Package that includes the project description, aerial photographs of the site, engineering drawings, and a summary report of all computer program simulations. While PHMSA officials stated these initial reviews undergo second-level verification by Agency engineers, this verification was not documented in the two checklists we analyzed.

We analyzed the PHMSA checklists associated with two applications for accuracy, completeness, and supporting documentation. We randomly selected items from each checklist—31 of 56 items from the first checklist and 19 of 79 items from the other. Both checklists had complete data and engineering analysis, with minor exceptions. In one instance, the checklist included a few administrative errors and minor pressure miscalculations. When we communicated these errors to PHMSA officials, they corrected them. Nevertheless, without second-level verification, there is increased risk that initial PHMSA and subcontractor analyses of LNG facility applications may be incomplete, contain errors, or lack consistency.

Additionally, PHMSA's process for reviewing siting requirements lacked written procedures that detail, consolidate, and formalize the LNG facility siting review process to help ensure consistency across reviewers. For example, there was no explanation of how the reviewer will examine LNG facility data and documents provided by the applicant; prepare, review, and edit the checklist; and issue the Letter of Determination. The lack of procedures was inconsistent with *Standards for Internal Control in the Federal Government*, which charges management with the responsibility for designing the policies and procedures to fit an entity's circumstances and building them in as an integral part of the entity's operations.

According to PHMSA officials, the Agency had not developed standard procedures when we started the audit as it was too soon after it signed the MOU. These issues were addressed when PHMSA finalized standard operating procedures¹⁷ on this process—and its checklist—in September 2019. We reviewed the procedures and found they address steps for reviewing LNG facility applications for compliance with 49 CFR Part 193. However, the procedures still lack a control—steps to conduct and document PHMSA's second-level verification of initial reviews completed by Agency or subcontractor engineers.

¹⁷ PHMSA, *Standard Operating Procedures for 49 CFR 193, Subpart B, Siting Requirements Review* (2019).

During the audit, PHMSA expressed a willingness to include such verification steps in its standard operating procedures for reviewing LNG applications.

PHMSA's Inspections of Existing Interstate LNG Facilities Met Agency Standards

PHMSA conducted its inspections of existing LNG facilities in accordance with Agency policies and Federal standards, such as 49 CFR Part 193. Since 2016, PHMSA has required standard inspections to be conducted every 3 years.¹⁸ These inspections use PHMSA's LNG IA [Inspection Assistant] Inspection Set, a standard set of questions. Our analysis showed that 26 standard inspections PHMSA conducted in calendar years 2016 through 2019 met these requirements. Also, lead inspectors for those inspections had completed an OPS LNG inspection course and two LNG on-the-job training assignments, per PHMSA's suggested training curricula.

The PIPES Act of 2016 also requires that PHMSA inspectors provide the LNG facility operator with a verbal out-brief within 30 days of inspection completion and a post-inspection report within 90 days. We found that PHMSA met these timeliness and accuracy requirements with limited exceptions. Our analysis of PHMSA data showed that all 26 LNG inspections complied with the verbal out-brief requirement within 30 days. However, one of the associated 90-day post-inspection reports was submitted 11 days late. Another report was submitted on time but appeared late because the inspector entered it twice—the second entry was after the 90-day period. We concluded these two noncompliance items were human error and isolated instances.

We also found that PHMSA took action to mitigate unsatisfactory issues identified during its inspections. PHMSA determines that an inspection has an unsatisfactory result when an inspector identifies potential compliance issues and flags them for further evaluation or discussion with the operator. In fact, PHMSA issued 14 enforcement actions—including notices of amendment¹⁹ and notices of probable violations²⁰—in 6 of the 26 LNG inspections we reviewed. See exhibit D for a detailed explanation of the results and fines.

¹⁸ From January 2012 to September 2016, PHMSA required inspections to be completed annually.

¹⁹ PHMSA issues notices of amendment when an operator's plans and procedures are inadequate, requiring that the operator improve them.

²⁰ Notices of probable violations inform operators that PHMSA is charging them with probable violations of pipeline safety statutes or regulations.

We identified two cases where PHMSA did not pursue unsatisfactory issues after supervisory review and consultation with the operator or PHMSA legal counsel. However, these cases were handled in an appropriate manner. In one case, the Agency determined the proposed issues were not valid probable violations, and discussions with the operator satisfied an additional issue before PHMSA released a notice of amendment. In the other case, the Agency determined the proposed issue was not enforceable because the inspector had cited an obsolete Federal code section. PHMSA discussed the issue with the operator, and no further action was required.

PHMSA's Evaluations of State Gas Programs Missed Deficiencies in State LNG Inspection Frequency and LNG Inspector Training

PHMSA annually evaluated the seven State gas programs we reviewed. However, we found deficiencies in two State programs related to LNG inspection intervals and inspector training that PHMSA did not identify or report in its annual evaluations.

PHMSA evaluates State gas programs for compliance with the Agency's *Guidelines for States Participating in the Pipeline Safety Program* and notifies States of issues identified during its annual evaluations. In addition, PHMSA revises the guidelines annually with input from PHMSA personnel, State gas program offices, and the National Association of Pipeline Safety Representatives.

We reviewed several areas included in PHMSA evaluations of State gas programs: identifying LNG facilities, inspection frequency, inspector training, inspection forms, and inspection findings and resolutions. We identified deficiencies in two areas—inspection frequency and inspector training.

PHMSA guidelines require States to conduct inspections within certain timeframes. Starting in 2014, the guidelines required States to conduct standard inspections of LNG facilities at least every 5 years, although States could adopt more restrictive requirements.²¹ When PHMSA staff evaluate State performance, they use the timeframe established in the State's written procedures. We reviewed the frequency of standard inspections of 36 LNG facilities and found 18 facilities with inspection intervals exceeding the States' timeframes. However, the corresponding PHMSA evaluations did not identify these deficiencies.

²¹ During the audit, PHMSA aligned the State inspection interval with the 3-year Federal interval.

PHMSA guidelines also require State personnel to complete several pipeline safety training courses before leading LNG inspections. According to PHMSA officials, a State would satisfy this requirement if at least one inspection team member—not necessarily the lead—had completed all required LNG training, although this requirement is not included in PHMSA’s guidelines. We reviewed 42 inspections from calendar year 2014 to 2019 and identified 4 where none of the inspectors met the requisite training. The corresponding PHMSA evaluations did not identify these deficiencies.

This is not the first time we have identified weaknesses in these areas. Our 2014 report²² found that PHMSA evaluators did not identify that State programs could not verify they had conducted inspections within the required timeframe. The report also found that Agency guidelines did not include minimum qualifications for lead inspectors. In response to our report, PHMSA updated the guidelines to States with a maximum 5-year inspection timeframe for standard inspections and minimum training requirements for lead inspectors.

According to PHMSA evaluators, they likely missed deficiencies because their sample of State inspection records may not have included a review of LNG inspection records. The evaluators could not verify which records they reviewed because they did not keep that information. While PHMSA’s guidance does not include such a requirement, *Standards for Internal Control in the Federal Government* requires that management properly manage and maintain documentation and records.

PHMSA’s guidance for evaluators does not include guidance on sampling records when reviewing inspection frequencies and lead inspector training during evaluations of State gas programs. Without a sampling methodology to follow, evaluators described using personal judgment and Agency priorities when selecting records to review. However, the evaluators’ use of judgmental sampling introduces the risk that certain State program records may never be reviewed because of biases inherent in a judgmental selection process. As a result, there is an increased risk that PHMSA’s evaluation results do not fully measure State gas program performance. In addition, because the Agency does not clearly state its requirement for lead inspector training, States and PHMSA evaluators may use inconsistent criteria. Also, since evaluators did not document what they looked at during evaluations, PHMSA cannot use such information to respond to inquiries, focus future inspections, or pass on institutional knowledge to new evaluators. During the audit, PHMSA expressed a willingness to update its evaluator guidance to address these issues. However, it will be important for the Agency to

²² PHMSA’s *State Pipeline Safety Program Lacks Effective Management and Oversight* (OIG Report No. AV2014041), May 7, 2014. All OIG audit reports are available on our website at www.oig.dot.gov.

ensure evaluators implement the new steps because it will expand the tasks evaluators have to accomplish in a limited amount of time.

Conclusion

PHMSA plays an important role in promoting public safety and economic activity through its oversight of LNG facility siting, construction, and operations, as well as its evaluation of State natural gas safety programs. In the near future, as the Federal government approves the construction and operation of increasing numbers of facilities to export LNG overseas, these activities will be in greater demand and significance. This highlights the need for PHMSA to maintain updated guidance for reviewing applications for new sites and evaluating State programs, which are essential for providing effective oversight of LNG facilities.

Recommendations

To improve PHMSA's oversight of liquefied natural gas (LNG) facilities, we recommend the Pipeline and Hazardous Materials Safety Administrator:

1. Update and implement the Agency's procedures for reviewing the siting of proposed LNG facilities by adding steps to verify the accuracy and completeness of reviews conducted by Agency or subcontractor engineers and to document the verification.
 2. Update and implement the Agency's procedures for conducting evaluations of State natural gas programs, including how to (a) incorporate random sampling into the selection of operators and facilities for testing and (b) identify the records or other evidence that are needed to support the evaluation.
 3. Update guidelines to States to require at least one inspection team member to have completed all required training for lead inspectors.
-

Agency Comments and OIG Response

We provided PHMSA with our draft report on February 25, 2020, and received its response, included as an appendix to this report, on April 1, 2020. The Agency also provided technical comments on April 1, 2020, and we incorporated them

where appropriate. PHMSA concurred with all three of our recommendations and requested that we close them based on actions already taken.

Specifically, for recommendation 1, PHMSA provided updated procedures for reviewing the siting of proposed LNG facilities and implemented the recommendation on March 9, 2020. For recommendation 2, the Agency initially provided an appropriate response and a December 31, 2020, completion date but instead updated and implemented its procedures for evaluating State programs on April 6, 2020. For recommendation 3, the Agency stated they would take alternative actions and updated both its procedures for evaluating State natural gas programs and its guidelines to States. These documents specify that a lead inspector is any member of the team who has completed all required training. PHMSA implemented its updated procedures on April 6, 2020, and implemented its updated guidelines to States on April 7, 2020.

Therefore, we consider all recommendations resolved and closed.

Actions Required

We consider recommendations 1 through 3 resolved and closed.

Exhibit A. Scope and Methodology

We conducted this performance audit between October 2018 and February 2020 in accordance with generally accepted Government auditing standards as prescribed by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

To review PHMSA's processes for assessing applications for LNG facilities, we interviewed staff and reviewed documents related to the LNG facility application process at PHMSA and FERC. This included OPS' *Standard Operating Procedures for 49 CFR 193, Subpart B, Siting Requirements Review*. We also examined PHMSA checklists for two randomly selected applications from the six the Agency reviewed between September 2018 and March 2019. To analyze the first checklist, we randomly selected 31 of 56 checklist items; and to analyze the second checklist, we statistically identified 19 of 79 checklist items. The sample size for the first checklist was based on a confidence level of 90 percent, precision of 10 percent, and an error rate of 50 percent. As the results of the first checklist showed no errors, an error rate of 10 percent was used to calculate the sample size for the second checklist.

To evaluate PHMSA's process for conducting inspections of existing LNG facilities, we reviewed inspection documentation for 26 inspections conducted in calendar years 2016 through 2019. We reviewed OPS guidance documents, including *Conducting Inspection Policy*, *Inspection Scheduling Policy*, and inspector on-the-job training requirements. We compared inspection results to information in PHMSA's Safety Monitoring and Reporting Tool and IA databases and exit documentation the Agency provided to operators. To clarify concerns regarding database information accuracy, as well as policies and procedures for handling documentation, we obtained and analyzed additional information from PHMSA officials. We performed data analysis in order to identify trends or key variables that could identify relevant issues. This effort was supported by a senior OIG statistician and an OIG engineer.

To assess PHMSA's evaluation of State gas programs' oversight of LNG facilities, we reviewed information from six randomly sampled States and judgmentally

selected Massachusetts.²³ We compared our findings to PHMSA State program evaluations to determine whether the Agency found the same deficiencies. To conduct our assessment, we reviewed records that included State annual progress reports, gas program policies and procedures, inspection records, inspector training records, and correspondence with operators; LNG operator annual report data; and PHMSA evaluations of State gas programs. We also interviewed officials from PHMSA's State Programs Division and from the Massachusetts and Washington State Program offices and reviewed applicable legislation, PHMSA's *Guidelines for States Participating in the Pipeline Safety Program*, and PHMSA's *Pipeline Safety Gas State Program Evaluation, Evaluator Guidance*.

²³ We chose Massachusetts because the State had 18 LNG facilities—the largest number out of all the State gas programs. Our initial sample contained eight States. However, one State, North Dakota, had only recently gained jurisdiction over an LNG facility, and thus did not have any policies, procedures, or trained inspectors for LNG facilities.

Exhibit B. Organizations Visited or Contacted

Pipeline and Hazardous Materials Safety Administration

Office of Chief Counsel

Office of the Chief Financial Officer, Acquisition Services Division

Office of Pipeline Safety

Office of Pipeline Safety, Engineering and Research Division

Office of Pipeline Safety, State Programs Division

Office of Pipeline Safety, Operations and Standards Review Division

Office of Pipeline Safety, Southern Region

Office of Pipeline Safety, Western Region

Other Organizations

Federal Energy Regulatory Commission

Connecticut Department of Energy and Environmental Protection

Georgia Public Service Commission

Maryland Public Service Commission

Commonwealth of Massachusetts Department of Public Utilities

Minnesota Office of Pipeline Safety

North Dakota Public Service Commission

Oak Ridge National Laboratory

State of Washington, Utilities and Transportation Commission

Public Service Commission of Wisconsin

Fairbanks Natural Gas, LLC

Exhibit C. List of Acronyms

CFR	Code of Federal Regulations
DOT	Department of Transportation
FERC	Federal Energy Regulatory Commission
IA	Inspection Assistant
LNG	Liquefied Natural Gas
MOU	Memorandum of Understanding
OIG	Office of Inspector General
OPS	Office of Pipeline Safety
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIPES Act of 2016	Protecting Our Infrastructure of Pipelines and Enhancing Safety Act of 2016

Exhibit D. PHMSA Enforcement Actions Resulting from Standard Inspections of Existing Interstate LNG Facilities

This table details the types of enforcement actions PHMSA issued for 6 of the 26 operators in our sample. The types of enforcement actions include the Notice of Amendment, which is issued when an operator's plans and procedures are inadequate, requiring that the operator improve its plans and procedures. The Notice of Probable Violation informs an operator that PHMSA is charging it with probable violations of pipeline safety statutes or regulations. It includes language that outlines the maximum penalties that can be levied on a daily basis, as well as the recommended penalty amount. Operators can appeal decisions to either remove or reduce penalties. Lastly, a Warning Letter notifies an operator about alleged violations and directs it to correct them or be subject to further enforcement action.

No.	Operator	Enforcement Action Type	Issue	Civil Penalties
1	Transcontinental Gas Pipe Line Co	Notice of Amendment	Failure to include prescriptive procedures for (a) recognizing an uncontrollable emergency and (b) taking action to minimize harm in written emergency procedures.	Not Applicable
		Notice of Amendment	Failure to include details of inspections or tests—such as various evaluation and monitoring requirements or guidelines—in written procedures.	Not Applicable
		Notice of Probable Violation—Proposed Civil Penalty	Failure to maintain records of satisfactory completion of required training.	\$48,000 fine assessed and collected
2	Lake Charles LNG	Notice of Amendment	Inadequate procedures regarding requirement to perform leak surveys.	Corrected and PHMSA found correction acceptable
		Notice of Amendment	Inadequate procedures for detailing results of corrosion testing, threshold requirements, or need for additional testing.	Corrected and PHMSA found correction acceptable
		Notice of Amendment	Missing procedure regarding requirement for inspection and testing of control systems that are out of service for over 30 days.	Corrected and PHMSA found correction acceptable

No.	Operator	Enforcement Action Type	Issue	Civil Penalties
3	Total Peaking Services	Notice of Amendment	Failure to include updated guidance—for inspection of cryogenic personal protective equipment—in written plans and procedures.	Not Applicable
		Notice of Amendment	Inadequate written procedures for guidance regarding the timing of inspection and testing of ultraviolet smoke detectors.	Not Applicable
		Warning Letter	Failure to inspect and test ultraviolet fire detection systems every 6 months.	Not Applicable
		Warning Letter	Failure to conduct plant fire drills at least every 2 years.	Not Applicable
4	Pine Needle Gas Company	Notice of Probable Violation—Proposed Civil Penalty	Failure to submit geospatial data, attributes, metadata, and a transmittal letter in a timely fashion for calendar years 2014, 2015, 2016, and 2017.	\$25,000 fine assessed and collected
5	Chattanooga Gas LNG	Warning Letter	Failure to submit annual asset “No Change Notification.”	Not Applicable
		Warning Letter	Failure to maintain records of satisfactory completion of required training.	Not Applicable
6	Niagara Mohawk Power Co.	Notice of Probable Violation—Proposed Civil Penalty & Proposed Compliance Order	Failure to inspect each component of atmospheric corrosion at least every 3 years.	Withdrawn; PHMSA was unable to show inspections not done

Source: PHMSA

Exhibit E. Major Contributors to This Report

KERRY R. BARRAS

JERROLD SAVAGE

JASON MURTHA

HENNING THIEL

MARVIN TUXHORN

COLBY BRITTON

AMY BERKS

SUSAN CROOK-WILSON

GEORGE ZIPF

PROGRAM DIRECTOR

PROJECT MANAGER

SENIOR ANALYST

SENIOR ANALYST

SENIOR AUDITOR

ANALYST

DEPUTY CHIEF COUNSEL

WRITER-EDITOR

SUPERVISORY MATHEMATICAL
STATISTICIAN

Appendix. Agency Comments



U.S. Department
of Transportation

Memorandum

Pipeline and Hazardous Materials Safety Administration

Subject: INFORMATION: Management Response to the
Office of Inspector General (OIG) Draft Report on
PHMSA's Oversight of Liquefied Natural Gas (LNG)
Facilities

Date: April 1, 2020

From: Howard R. Elliott HOWARD
PHMSA Administrator ROBERT ELLIOTT

Digitally signed by HOWARD
ROBERT ELLIOTT
Date: 2020.04.01 14:35:03
-04'00'

To: Barry J. DeWeese
Assistant Inspector General for Surface Transportation Audits

PHMSA is committed to protecting people and the environment by advancing the safe transportation of energy and other hazardous materials that are essential to our daily lives. Under section 60103 of Title 49, United States Code, PHMSA has the authority to prescribe minimum safety standards for the siting, design, construction, and operational and maintenance of LNG facilities. PHMSA inspects LNG facilities and operators to ensure and enforce compliance with Federal regulatory requirements. PHMSA currently has regulatory oversight over more than 150 LNG facilities, a number expected to grow as the U.S. LNG export market continues to expand.

The OIG draft report acknowledged that PHMSA's inspections of existing interstate LNG facilities complied with Agency standards. Specifically, OIG noted that PHMSA performed inspections during the required inspection interval, used a standardized question-set, reported inspection results to operators within congressionally mandated timeframes, and addressed unsatisfactory conditions identified during inspections. PHMSA recognizes that its safety oversight of LNG facilities fulfills an important role in preventing accidents. Recent and ongoing PHMSA efforts to ensure that sufficient management and inspection resources remain available to carry out its regulatory responsibilities relative to LNG facilities include the following:

- Signed a Memorandum of Understanding with the Federal Energy Regulatory Commission (FERC) on August 31, 2018, strengthening coordination between the agencies to improve the permitting process for FERC jurisdictional LNG facilities.
- Completed a Workforce Management Study in August 2019, to assess the near-term adequacy of the Federal pipeline safety inspector workforce. The workforce planning assessment found that the currently authorized PHMSA Federal inspector force is adequate to perform safety oversight of the regulated pipeline industry.

- Established a formal standard operating procedure (SOP) in September 2019, for reviewing LNG siting. Prior to finalizing the SOP, PHMSA used detailed checklists that documented the siting review process and project trackers that contained internal schedules and milestones to ensure quality assurance and control reviews by management.
- Detailed two employees to PHMSA’s Office of Pipeline Safety Division of Engineering & Research in November 2019, to support the LNG program efforts. This Division onboarded one of the details to a full-time position and began onboarding another full-time engineer in February 2020, to conduct LNG safety design reviews. PHMSA is in the process of hiring one additional engineer. In addition, PHMSA’s Office of Chief Counsel has specialized experience and a team of attorneys to assist with all legal matters related to the LNG safety program.
- Establishing a field team of specialized inspectors focused on LNG facilities. This section will operate under a regional office and maintain oversight of all national LNG inspection requirements, beginning in the Spring of 2020.
- Updating Title 49 Code of Federal Regulations Part 193, and plan to issue a Notice of Proposed Rulemaking (NPRM) titled “Pipeline Safety: Amendments to Liquefied Natural Gas Facilities” in the Spring of 2020.

Upon review of OIG’s draft report, PHMSA concurs with the three recommendations as written. On March 11, 2020, we provided documentation to OIG on actions PHMSA completed to implement Recommendations 1 and 3 and request OIG close both recommendations within 30-days after issuing the final audit report. We plan to implement Recommendation 2 by December 31, 2020.

PHMSA appreciates the opportunity to respond to the OIG’s draft report. Please contact Nancy White, Director of Policy and Planning, at (202) 366-1419 with any questions or if you would like additional details.

U.S. DOT IG Fraud & Safety Hotline

hotline@oig.dot.gov | (800) 424-9071

<https://www.oig.dot.gov/hotline>

Our Mission

OIG conducts audits and investigations on behalf of the American public to improve the performance and integrity of DOT's programs to ensure a safe, efficient, and effective national transportation system.

OFFICE OF INSPECTOR GENERAL
U.S. Department of Transportation
1200 New Jersey Ave SE
Washington, DC 20590



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