



DEPARTMENT OF VETERANS AFFAIRS
OFFICE OF INSPECTOR GENERAL

Office of Audits and Evaluations

VETERANS HEALTH ADMINISTRATION

New York/New Jersey VA
Health Care Network
(VISN 2) Should Improve
Boiler Maintenance to
Reduce Safety Risks and
Prevent Care Disruptions

AUDIT

REPORT #21-00887-211

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Executive Summary

VA has struggled to manage the aging infrastructure of its medical facilities. Sixty-nine percent of VA hospitals were constructed over 50 years ago.¹ Boiler plants are essential to operating those facilities and supporting healthcare services by heating water for sanitation, food production and preparation, infection control, and heat. Many medical facilities are operating boilers that are past their expected lifespans.² If boilers are not properly inspected, updated, and maintained, they may fail, putting veteran and employee safety at risk and disrupting patients' access to care. The Veterans Health Administration (VHA) currently provides care for approximately six million veterans each year at about 1,300 healthcare facilities.³

VHA established a policy on the safe operation of boiler plants in VHA Directive 1810.⁴ The VA Office of Inspector General (OIG) conducted this audit to determine whether the New York/New Jersey VA Health Care Network—Veterans Integrated Service Network (VISN) 2—effectively followed that directive when inspecting and maintaining boiler plants.

The OIG selected VISN 2 because facility condition assessment data from fiscal year (FY) 2021 showed that VISN 2 exceeded all other VISNs in boiler plant components requiring maintenance and in deficiencies associated with boiler plant components being operated past their expected lifespans.⁵ The audit team selected four VISN 2 facilities for virtual site visits: Bath VA Medical Center, Buffalo VA Medical Center, Brooklyn VA Medical Center, and Northport VA Medical Center. Sites were selected based on (1) total number of boiler component deficiencies; (2) amount of boiler components past expected lifespans; (3) total estimated correction cost for deficiencies; (4) the veteran population affected at the medical facility (total outpatient encounters, unique patients, and enrollment); (5) the current count and project dollars of boiler

¹ "The American Jobs Plan Supports Veterans," Whitehouse.gov Fact Sheet, April 15, 2021, accessed November 19, 2021, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/15/fact-sheet-the-american-jobs-plan-supports-veterans>.

² VHA Directive 1810(1), *Boiler and Boiler Plant Operations*, app. A, pp. A-2–A-3, February 6, 2017. The directive lists the original expected lifespan as 30 years for fire tube boilers and 40 years for water tube boilers. VHA Directive 1810(1) will be referred to as VHA Directive 1810 throughout this report.

³ "Veterans Health Administration—About VHA," Department of Veteran Affairs, accessed March 17, 2022, <https://www.va.gov/health/aboutVHA.asp>; VHA, "Health Care Benefits Overview 2022 Edition, Vol. 1," November 2021.

⁴ VHA Directive 1810.

⁵ Facility condition assessment data were extracted from the VA Capital Asset Inventory on December 3, 2020. Each medical facility is assessed approximately every three years by a multidisciplinary team of architects and engineers that grades its infrastructure components. Components that are rated either D (poor) or F (critical) are considered deficient and assigned an estimated repair cost that is used by VA to calculate its deferred maintenance liability.

plant-related maintenance projects in VISN 2; and (6) the total nonrecurring maintenance projects and estimated project costs in medical facilities' long-range action plans.

What the Audit Found

The OIG determined that VISN 2 did not fully comply with VHA Directive 1810 on useful life assessments and operations testing and inspections. Additionally, VHA leaders lacked information necessary for effective oversight. Specifically, the OIG found problems in these three areas:

- Facilities did not conduct useful life assessments or reassessments for boilers operating beyond the recommended period of operation for 11 boilers.
- Facilities did not comply with boiler safety equipment testing and inspection requirements for 41 percent of tests the OIG reviewed.
- VHA leaders did not have clear visibility to information needed to perform effective oversight.

Useful life assessments or reassessments for boilers operating beyond the recommended period of operation were not conducted: The OIG evaluated 15 boilers at four medical facilities and determined that 11 of the boilers (73 percent) were operating past their expected lifespan without conducting assessments or reassessments to certify their suitability for extended use.⁶ The audit team reviewed available useful life assessments, interviewed boiler plant staff at each facility, and determined that 11 boilers were operating beyond their expected lifespans. VHA Directive 1810 requires an engineering assessment of the reliability, efficiency, and cost-effectiveness for boilers VHA plans to operate beyond their expected lifespans. In VISN 2, five of those 11 boilers had never received engineering assessments by third-party inspectors to determine if they were safe to continue operating. The remaining six had previous useful life assessments performed, but during the review were operating beyond the extended recommended period of operation without having an additional useful life assessment conducted to recertify the boiler for further extended use.

The OIG found that VHA Directive 1810 did not clearly specify when an assessment was needed or how often an engineering assessment should be performed. The OIG contracted with professional licensed engineers with boiler maintenance experience who explained that the National Board of Inspection Code guidelines require that boilers beyond their expected lifespans be reassessed at least every 10 years. The director of VHA's Office of Healthcare Engineering (OHE) stated that medical facilities should conduct an engineering assessment of the reliability, efficiency, and cost-effectiveness of extended operation at least three years before

⁶ VHA Directive 1810. Boilers that have had a useful life assessment performed by third-party inspectors may be certified to operate for an extended period beyond their original expected lifespans.

the end of a boiler's estimated lifespan. However, the directive language does not explicitly communicate the expectations of the director of healthcare engineering or give guidance on how long a boiler can continue an extended period of operation. VISN 2 has continued to operate 11 boilers beyond their expected lifespan. As of September 2021, one facility completed useful life assessments for its three boilers during the OIG audit. A second facility with four boilers conducted useful life assessments on two boilers in May 2022, and as of June 7, 2022, estimated completing the remaining two useful life assessments by the end of June 2022.

Lack of compliance with boiler testing requirements: VHA Directive 1810 requires that facilities periodically test all safety devices installed in boiler plants to ensure proper function. If boilers are improperly maintained or go without inspections, failures can occur that could affect employee safety and patients' access to care. VHA Directive 1810 specifies 60 essential tests per facility, and the OIG found that 98 of the 240 tests (41 percent) required at the four facilities reviewed did not comply with the directive's testing requirements. The contracted licensed professional engineers helped the OIG assess whether required tests were performed. A medical facility's performance of individual tests was considered noncompliant if the testing results were not documented, the tested equipment failed inspection and the appropriate facility leaders were not notified, or the facility failed to document all required elements for a particular test.

The OIG interviewed local facility chief engineers, boiler plant operators, and supervisors overseeing the maintenance of boilers. The audit team also interviewed OHE officials responsible for boiler policy and testing standards. Local staff were unclear about how many tests needed to be conducted and when they should be performed by medical facility staff versus third-party inspectors. They also admitted that they did not consistently document all testing results.

The OHE director said he expected medical facilities to document in their local boiler operations policy justifications for any deviations from the VA testing standards. He also expected the facilities to contract with third-party inspectors for all the semiannual testing requirements outlined in the directive once per year. However, the OIG determined that the directors' expectations for local policy justification for testing deviations were not clearly outlined in VHA Directive 1810, which also does not make clear which inspections need to be performed by third-party inspectors.

Lack of informed oversight: The VISN 2 director has oversight responsibilities to ensure corrective actions are developed and implemented, but without proper notification, did not have an opportunity to ensure the repairs were addressed. With the support of the contracted licensed professional engineers, the OIG assessed facility corrective action plans designed to address identified maintenance deficiencies. The OIG found that only one of the four facilities reviewed had records to demonstrate that safety equipment failures were being tracked and the related maintenance needs were being addressed. Local medical facility boiler operation policies were not clear on when to notify VISN 2 officials or what conditions required management to be

notified. The policies also did not specify how corrective action plans for repairs should be documented or what time frames were expected for correcting defective safety devices. Lastly, the OIG found officials often received inaccurate quarterly survey reports to monitor compliance with VHA Directive 1810 without being provided access to the associated documentation for additional verification, which limited the ability of VISN 2 and OHE to provide boiler maintenance oversight.

What the OIG Recommended

The OIG made six recommendations for facilities to manage the inspection and maintenance of boiler plants more effectively. The VISN 2 director should ensure useful life assessments are conducted for those boilers that are operating past their expected or extended lifespans outlined in this report to ensure safe operation.⁷ OHE leaders should clarify policies and procedures for scheduling useful life assessments for boilers.

In addition, OHE leaders should update VHA Directive 1810 to ensure medical facility boiler policies reflect current site-specific safety device testing procedures, including justifications for each test prescribed in the *VHA Boiler and Associated Plant Safety Device Testing Manual* that the medical facility does not plan to perform. OHE leaders should also update VHA Directive 1810 to clarify which tests and inspections require the use of third-party inspectors, as well as the frequency of these tests and inspections.

The OIG also recommended that the VISN 2 director review medical facilities' boiler operation policies regarding the notification of officials and creation of corrective action plans to ensure they are consistent with VHA Directive 1810. Finally, the VISN 2 director should employ a management information system to provide officials with oversight responsibilities access to inspection records, useful life assessments, and corrective action plans.

VA Comments and OIG Response

The VISN 2 director and the acting assistant under secretary for health for support concurred or concurred in principle with all the report's recommendations and submitted action plans for recommendation 1–6. Appendix B provides the full text of the director's and the acting assistant under secretary's comments, and appendix C provides their technical comments to the report.

The VISN 2 director and the acting assistant under secretary for health for support asserted that the OIG's report did not acknowledge annual inspections were conducted by an independent third-party national board-certified boiler inspection agency on all 15 boilers described in this report to determine if the boilers were safe to continue operation. VHA and VISN leaders commented that the required useful life assessments are considered additional safety measures

⁷ Change made based on technical comment 2 provided by VHA and VISN 2 and detailed in appendix C under "VHA and VISN Technical Comments."

and best practices by VA. Lastly, the technical comments stated the OIG report did not distinguish between annual boiler inspections conducted by independent third-party inspectors, the remaining useful life engineering assessments for boilers that are nearing their design life expectancy, and those boilers that have been previously assessed for remaining life five or more years prior.

The OIG could not substantiate and justify subsequent language changes to this report based on the director's and acting assistant under secretary's technical comments. However, the OIG did make minor revisions to recommendation 1 to clarify that the recommendation was applicable only to useful life assessments for those boilers operating past their expected or extended lifespans. To address the assertions received, the OIG provided responses under the management comments section of the report. The report distinguishes between annual boiler inspections conducted by independent third-party inspectors, the remaining useful life engineering assessments for boilers that are nearing their design life expectancy, and those boilers that have been previously assessed for remaining life but have since exceeded the period of certified extension without another assessment. In reference to the technical comment that useful life assessments were a best practice and not a requirement, VHA Directive 1810 instructs that "retention of equipment beyond the useful life expectancy must be based on an engineering evaluation of the reliability, efficiency, and cost effectiveness of continued operation." The OHE director stated the intent of this language is to ensure boilers were not to be operated beyond their expected lifespan without an assessment performed. The OIG's contracted licensed professional engineers agreed that annual inspections by independent national board-certified boiler inspection agencies are an important part of the safe and reliable operation of a boiler, however these inspections are limited to determining if visual damage is present and do not provide an assessment of the calculated remaining life of the boiler and its components. Further, these tests do not evaluate the integrity of the pressure retaining components or mechanical integrity of the boiler. Lastly, none of the four medical facilities could produce records for the 15 boilers highlighted in this report to show that they conducted all the annual inspections that require the use of independent national board-certified boiler inspection agencies.

Overall, the proposed corrective measures in the VISN 2 and VHA's action plans are responsive to the recommendations. The OIG will monitor execution of planned actions and will close the recommendations when VISN 2 and VHA provide sufficient evidence demonstrating progress addressing the issues identified.



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Abbreviations

FY	fiscal year
GAO	Government Accountability Office
OHE	Office of Healthcare Engineering
OIG	Office of Inspector General
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Network



Introduction

VA has struggled to manage the aging infrastructure of its medical facilities. Sixty-nine percent of VA hospitals were constructed over 50 years ago.⁸ Many older facilities have identified substantial unmet maintenance needs, including boilers operating past their expected lifespans.

Boiler plants are essential to the operation of these facilities and the support of healthcare services by providing steam and hot water for sanitation, food production and preparation, infection control, and heat. If boilers are not properly maintained, inspected, and updated, they may fail, putting the safety of veterans and employees in those facilities at risk and disrupting patients' access to care. The Veterans Health Administration (VHA) provides care for approximately six million veterans at about 1,300 healthcare facilities.⁹

VHA has divided its medical facilities into 18 Veterans Integrated Service Networks (VISNs), which are regional systems working together to better meet local healthcare needs and provide greater access to care. The Office of Inspector General (OIG) assessed whether facilities within the New York/New Jersey VA Health Care Network (VISN 2) were inspecting and maintaining boiler plants in compliance with VHA Directive 1810, described in the following section.¹⁰ The OIG selected VISN 2 because facility condition assessment data from fiscal year (FY) 2021 showed that VISN 2 exceeded all other VISNs in boiler plant components requiring maintenance and in deficiencies associated with boiler plant components being operated past their expected lifespans.¹¹ Appendix A details the audit scope and methodology.

VHA Directive 1810, *Boiler and Boiler Plant Operations*

VHA Directive 1810 requires VHA's Office of Healthcare Engineering (OHE) to develop policies and procedures to ensure the safe operation of boilers.¹² VISNs must oversee facility compliance with these procedures. Facilities are tasked with implementing the related policies. This directive requires that facilities also periodically test all safety devices installed in boiler

⁸ "The American Jobs Plan Supports Veterans," Whitehouse.gov Fact Sheet, April 15, 2021, accessed November 19, 2021, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/15/fact-sheet-the-american-jobs-plan-supports-veterans>.

⁹ "Veterans Health Administration – About VHA," Department of Veteran Affairs, accessed March 17, 2022, <https://www.va.gov/health/aboutVHA.asp>; VHA, "Health Care Benefits Overview 2022 Edition, Vol. 1," November 2021.

¹⁰ VHA Directive 1810(1), *Boiler and Boiler Plant Operations*, February 6, 2017. VHA Directive 1810(1) will be referred to as VHA Directive 1810 throughout this report.

¹¹ Facility condition assessment data were extracted from the VA Capital Asset Inventory on December 3, 2020.

¹² During an organizational restructure in March 2020, all Office of Capital Asset Management, Engineering and Support's responsibilities related to boiler and boiler plant operations outlined in VHA Directive 1810 were transferred to the Office of Healthcare Engineering.

plants to ensure proper function and identifies 77 tests for boiler plant equipment.¹³ Boilers with safety devices that fail these tests must be taken out of operation unless an interim safety measure has been approved in writing. Similarly, medical facilities must perform engineering assessments of the reliability, efficiency, and cost-effectiveness of continued operation for all boilers operating past their expected lifespans. The development of corrective action plans and the status of related corrective actions are monitored by the VISN director and reported to OHE. Figure 1 presents the oversight processes required by VHA Directive 1810.

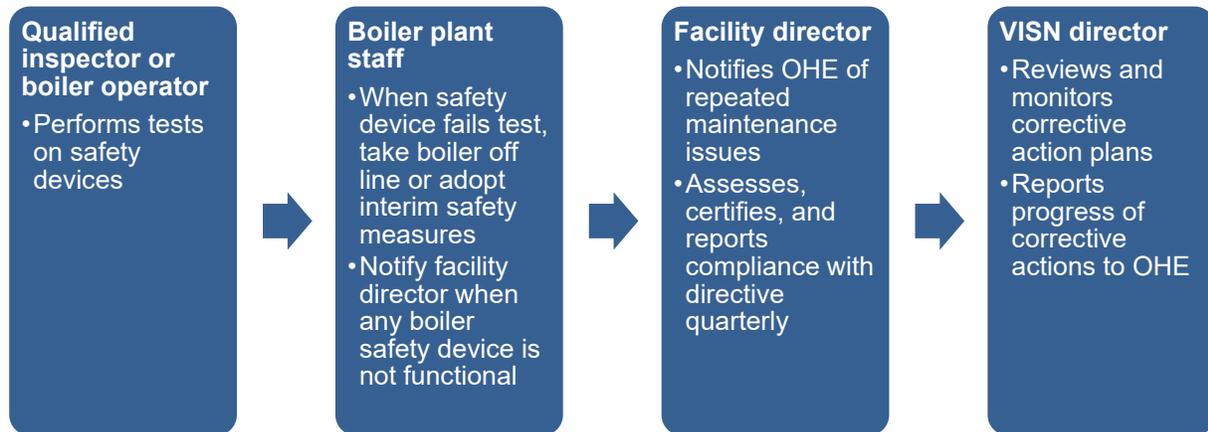


Figure 1. Boiler oversight process.
Source: VHA Directive 1810.

Boiler Maintenance—Roles and Responsibilities

The individuals and offices that oversee and perform boiler maintenance are listed below:

- **The Office of Healthcare Environment and Facilities Programs** serves as the principal environmental adviser on policy development and technical support to the Office of the Under Secretary for Health. This office provides oversight; establishes objectives, policy, operational guidance, and plans; and develops management systems and procedures to ensure program functions associated with environmental management services are effectively implemented and maintained at each VA medical facility. These programs include Occupational Safety and Health, Environmental Program Services, Enterprise Support Service, Healthcare Engineering, Capital Asset Management, and Special Engineering Projects.
- **The Office of Healthcare Engineering** is a subordinate organization under Healthcare Environment and Facilities Programs. The director of healthcare engineering is

¹³ VHA Directive 1810. The directive requires a total of 77 boiler plant inspections and operational tests. The OIG evaluated 60 required inspections and operational tests noted in the directive as essential for ensuring the safest operation of the boiler plant and did not assess the remaining 17.

responsible for the contents of VHA Directive 1810. The director is also responsible for developing and issuing requirements, guidance, and standards for the safe and efficient operations of boilers; conducting assessments and surveys related to implementing the directive; evaluating the reports submitted by each VISN and VA medical facility; providing consultation; and reviewing and approving all exceptions or waivers to VHA Directive 1810.

- **VISN directors** are responsible for ensuring all VA medical facilities in their purview comply with VHA Directive 1810 and any policy, requirement, or guidance from OHE. This includes resource prioritization and support for implementing VHA Directive 1810, such as hiring competent operating staff; ensuring facilities comply with reporting, inspection, and testing requirements; and regularly reviewing compliance and incident reporting. It also includes reviewing the development and fulfillment of corrective action plans for noncompliance and reporting corrective action progress to OHE.
- **The VA medical center director** is responsible for ensuring medical facility boiler plants comply with VHA Directive 1810 by completing required inspections and testing, retaining documentation for three years, and seeking OHE approval of any plans for installing new or replacement boilers. The director is also responsible for certifying quarterly boiler compliance reports submitted to OHE for equipment or systems subject to the requirements of VHA Directive 1810.
- **The VA medical center chief of engineering** is responsible for day-to-day operations within the facility, including those at the boiler plant. The chief has joint responsibility with the medical center director in certifying quarterly boiler compliance reports. The chief also develops a long-range action plan to address facility condition assessment deficiencies and monitors ongoing projects to ensure they are completed within the established milestones and budget.

Facility Condition Assessment

VA completes facility condition assessments on a rotating basis to evaluate the capital infrastructure of each medical center using a grading system to identify deficiencies. VA's Office of Construction and Facilities Management is responsible for managing the architectural and engineering firms contracted to conduct the assessments. Each facility is assessed every three years by a multidisciplinary team of architects and engineers that grades infrastructure components on a letter scale from best to worst: A, B, C, D, and F. The facility condition assessment team creates cost estimates to repair or replace systems that are graded D or F, which are considered deficient. A rating of D denotes that the asset is in poor condition and at the end of its useful life; a rating of F denotes a critical condition that requires immediate attention. VA, in general, uses the facility condition assessment estimates to determine its deferred maintenance and repairs liability for financial reporting purposes. This financial liability represents VA's

maintenance backlog costs that have accumulated because the facilities did not, or could not, keep their infrastructure in good working condition. VA estimated its deferred maintenance backlog at \$25.6 billion at the end of FY 2021.

As of April 2021, VHA had 774 boiler plant system deficiencies noted in its facility condition assessments that were estimated to cost \$308 million to repair. VISN 2 had 110 deficiencies with an estimated \$38.4 million in repair costs and 23 of 48 boilers, or 48 percent, operating past their expected lifespans.¹⁴

¹⁴ Facility condition assessment data were extracted from the VA Capital Asset Inventory on April 28, 2021; OIG analysis of VISN 2 boiler inventory was as of June 2021.

Results and Recommendations

Finding: VISN 2 Needs to Comply with VHA Policy to Ensure Its Boilers Operate Safely

The OIG determined that VISN 2 did not fully comply with VHA Directive 1810 requirements regarding useful life assessments, and operations testing and inspections. Additionally, VHA leaders lacked information necessary for effective oversight. Eleven of the 15 boilers (approximately 73 percent) at the four facilities that the OIG reviewed were operating past their expected or extended lifespans without initial useful life assessments or reassessments to certify their suitability for extended use.¹⁵ Additionally, the facilities were either not performing the safety tests and inspections required by VHA Directive 1810 or not retaining the required documentation in 41 percent of cases. Finally, VHA leaders within VISN 2 and OHE often received inaccurate quarterly survey data without being provided access to the associated documentation to alert them when safety equipment needed replacement or repair. As a result, the OIG determined VHA leaders did not have the information they needed to perform effective oversight to ensure boiler plants are operating safely. Resulting boiler breakdowns could directly affect the safety of boiler plant personnel and disrupt medical facilities' patient care.

The sections that follow support this finding:

- Three of four VISN 2 facilities did not conduct useful life assessments or reassessments for boilers operating past their expected or extended lifespans.
- Facilities did not fully comply with boiler safety equipment testing and inspection requirements.
- VHA leaders did not have clear visibility to information needed to perform effective oversight.

What the OIG Did

The audit team selected four of 13 facilities within VISN 2 to review based on the following parameters: (1) total number of boiler component deficiencies; (2) amount of boiler components past expected or extended lifespans; (3) total estimated correction cost for deficiencies; (4) the veteran population affected at the medical facility (total outpatient encounters, unique patients, and enrollment); (5) the current count and estimated costs of boiler plant-related maintenance

¹⁵ VHA Directive 1810 lists the original expected lifespan as 30 years for fire tube boilers and 40 years for water tube boilers. Boilers that have had useful life assessments performed by third-party inspectors may be certified to operate for an extended period beyond their original expected lifespans.

projects in VISN 2; and (6) the total nonrecurring maintenance projects and estimated project costs in medical facilities' long-range action plans.

The audit team reviewed boiler plant useful life assessments; inspection, testing, and maintenance records; boiler plant and safety issue monitoring processes; quarterly compliance survey responses; and corrective action plans for identified maintenance needs from the four facilities to assess their compliance with VHA Directive 1810. The audit team interviewed facility staff, including the medical facility directors, chief and deputy chief engineers, chief financial officers, and boiler operators and supervisors overseeing the maintenance of boilers. The team also conducted virtual site visits to the four VISN 2 medical facilities: Bath VA Medical Center, Buffalo VA Medical Center, Brooklyn VA Medical Center, and Northport VA Medical Center. In addition, multiple interviews were conducted with the VISN 2 energy manager and director of healthcare engineering regarding program oversight.

The OIG contracted with a professional licensed engineer and boiler inspectors to assist in determining the completeness of inspections and testing, as well as the sufficiency and timeliness of corrective actions taken to address deficiencies, and to review engineering assessments performed on VISN 2 boilers to determine if they were safe to continue operation past their expected or extended lifespans.

Three of Four VISN 2 Facilities Did Not Conduct Useful Life Assessments or Reassessments for Boilers Operating past Their Expected or Extended Lifespans

The OIG reviewed 15 boilers in operation at the four sampled VISN 2 facilities and found that, as of June 2021, three of the four facilities were operating 11 boilers (about 73 percent) beyond their expected lifespans without an engineering assessment to ensure continued safe operation.¹⁶

- Five of the 11 boilers did not have engineering assessments performed by third-party contracted inspectors to independently certify that they were fit to continue operating beyond their original expected lifespans.
- Six of the 11 boilers were certified by third-party inspectors to operate beyond their original expected lifespans but had exceeded the period of certified extension without being reassessed.

Figure 2 shows the summary results of the OIG's review of boilers at the four sampled VISN 2 medical facilities.

¹⁶ OIG analysis conducted during fieldwork revealed that these 11 boilers exceeded their expected or extended lifespans by an average of approximately six years.

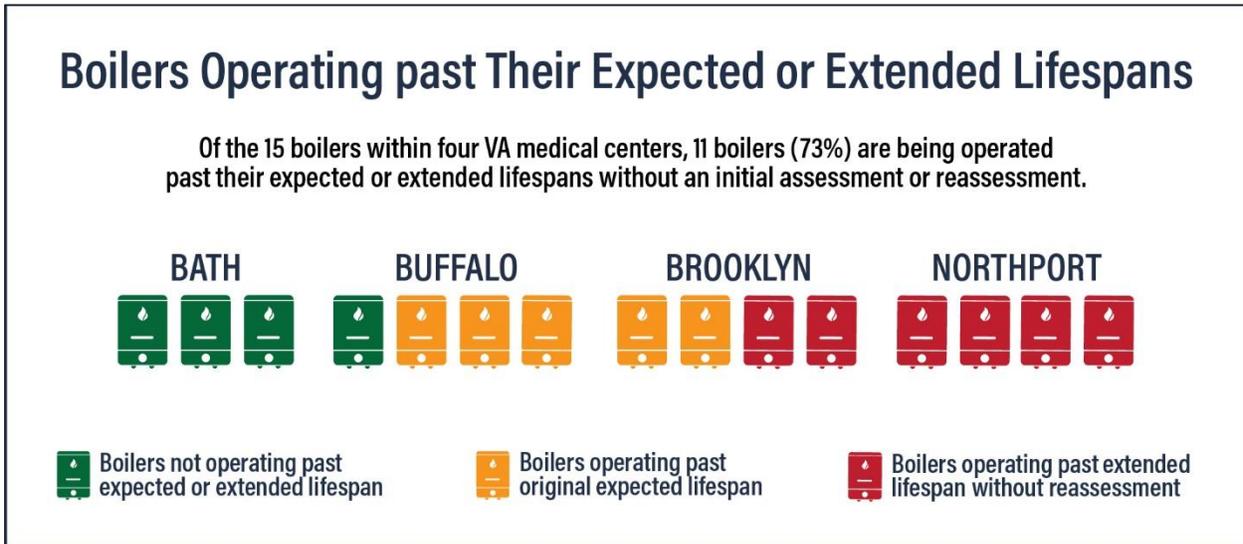


Figure 2. Boilers Operating past Their Expected or Extended Lifespans

Source: VA OIG analysis of VISN 2 boiler inventory and useful life condition assessments as of June 2021.

Required by VHA Directive 1810, useful life assessments are engineering evaluations to determine the reliability, efficiency, and cost-effectiveness of extended boiler operation beyond their expected lifespans. The purpose of these assessments is to evaluate the overall condition of boilers and their suitability for continued operation. These assessments include a comprehensive internal and external inspection, ultrasonic testing to measure shell and tube sheet thicknesses, magnetic particle testing to examine tube sheet weldments, boiler tube inspections, and boiler casings and enclosures inspections to determine structural integrity and estimate how long boilers can continue to operate safely. Third-party useful life assessments are necessary because VA medical facilities, according to the director of healthcare engineering, do not possess the expertise or equipment necessary to perform the required engineering assessments.

The audit team found that boilers are being used beyond their expected lifespans without being assessed or reassessed when their certification for extended operation expires. This occurred because VHA Directive 1810 does not specify when or how often the assessment should occur. The director of healthcare engineering said the intent of VHA Directive 1810 was that boilers were not to be operated beyond their expected lifespans without an assessment performed by a contracted third party no later than three years before expiration. However, the OIG’s review of VHA Directive 1810 determined that the policy did not reflect the director of healthcare engineering’s expectations.

VHA Directive 1810 instructs that “retention of equipment beyond the useful life expectancy must be based on an engineering evaluation of the reliability, efficiency, and cost effectiveness of continued operation.” However, the directive does not specify when the assessment should be performed. A facility chief engineer stated that the policy was unclear as to when a useful life assessment was required. The OIG reviewed the directive and determined it did not define who

should conduct the assessment, what qualifications the inspector should have, the time frame in which the assessment should be performed, and how long a boiler's life could be extended before needing additional assessments. The facility chief engineer stated that he believed the useful life assessment would be based on various factors that determine if the boilers were safe to continue operations since the policy was so vague on what constituted a proper useful life assessment. He opined that a boiler passing its expected lifespan does not automatically necessitate a useful life assessment nor the boiler's immediate replacement. As a result, the facility chief engineer chose not to perform the useful life assessments for their boilers.

Of the three VISN 2 facilities that were operating boilers past their expected or extended lifespans, only the Buffalo and Northport facilities took steps toward conducting future useful life assessments after the OIG initiated its audit in February 2021. As of September 2021, the Buffalo facility completed useful life assessments for all three of its boilers that were operating past their expected lifespans. According to the chief of engineering at the Northport VAMC, the facility completed useful life assessments on two of the four boilers in May 2022. The remaining two useful life assessments were anticipated to be completed by the end of June 2022. The Brooklyn facility, which is responsible for the remaining four of 11 boilers operating past their expected or extended lifespans, has yet to schedule any useful life assessments.

The licensed professional engineers contracted by the OIG evaluated the six useful life assessments performed on boilers at the medical facilities reviewed. They noted that, while it is standard industry practice to calculate a boiler's remaining useful life in such an assessment, four of the six useful life assessments did not include this information. According to the engineers, National Board of Inspection Code guidelines state that boilers beyond their expected lifespans should be reassessed at least every 10 years. The audit team confirmed reassessments were not performed within 10 years for all six of the boilers that had previously received useful life assessments. The engineers contracted by the OIG emphasized that failing to perform useful life assessments increase the likelihood of undetected deterioration and boiler component failures.

Given the lack of useful life assessments for aging boilers, the OIG determined VISN 2 and OHE officials cannot assure that medical facilities continuing to operate these boilers are not putting employee safety and veterans' care at risk. Recommendation 1 calls for the director of VISN 2 to ensure useful life assessments are conducted for those boilers that are operating past their expected or extended lifespans outlined in this report to ensure safe operation.¹⁷

Recommendation 2 calls for the director of healthcare engineering to clarify policies and procedures for scheduling useful life assessments of boilers before the end of their expected lifespans and after extensions have been granted.

¹⁷ Change made based on technical comment 2 provided by VHA and VISN 2 and detailed in appendix C under section "VHA and VISN Technical Comments."

Facilities Did Not Fully Comply with Boiler Safety Equipment Testing and Inspection Requirements

VHA Directive 1810 requires that boiler operational tests and inspections be conducted and documented monthly, semiannually, annually, and every six years. These tests are either performed by qualified VA employees, third-party inspectors, or qualified professional inspectors. In addition, the directive states that some semiannual tests are to be conducted by qualified third-party inspectors, but as discussed below, the number of devices to be tested and when third-party inspectors should be utilized is unclear. The goal of these operational tests and inspections is to identify any equipment that is not properly installed or not operating in accordance with VHA standards and American Society of Mechanical Engineers code.¹⁸ VISN, OHE, and medical facility leaders must take corrective actions after being notified by facility staff of any boiler plant components that the tests identify as not operating properly or failing to meet standards. Local medical facility engineering offices are required to retain documentation of these safety inspections for a minimum of three years.

VHA Directive 1810 lists 60 operational tests and inspections “essential for ensuring the safest possible operation” of boiler plants.¹⁹ The engineers contracted by the OIG reviewed the operational tests and inspections conducted at the four medical facilities in FY 2020—a combined total of 240 tests and inspections—and the OIG concluded that 98 were noncompliant (41 percent). The audit team considered tests noncompliant if facilities did not document that the test was performed; if tests were incomplete (missing date, name, or test results); or if facility staff did not notify leaders of failed results. Table 1 presents the summary of facility testing compliance.

¹⁸ Thomas Burch, David F. Dyer, and Glennon Maples, *VHA Boiler and Associated Plant Safety Device Testing Manual—Fifth Edition* (Auburn, AL: BEI LLC, December 2018).

¹⁹ VHA Directive 1810.

Table 1. VHA Directive 1810 Testing and Inspection Records Compliance

VAMC	Could not document test was performed	Incomplete tests*	Did not notify leaders of failed test	Total noncompliant tests (out of 60 tests per facility)	Noncompliance
Bath	36	1	0	37	62%
Brooklyn	10	8	10	28	47%
Buffalo	3	7	0	10	17%
Northport	21	2	0	23	38%
Totals	70	18	10	98 (of 240)	41%

Source: VA OIG analysis of FY 2020 boiler testing and inspection records.

*Includes incidents of missing testing elements, and when testing results did not indicate whether test or inspection performed was a pass or fail.

Of the 98 noncompliant tests, 70 had no record of being performed at all and 10 had no record of leaders being notified of the test’s failure. The remaining 18 tests were incomplete, including missing elements that prevented the audit team from determining if the test was completed or resulted in a pass or fail. Medical facility chief engineers and boiler staff explained to the audit team that they focused on completing the tests but not necessarily documenting the results. When the medical facility could not provide documentary evidence that a test had been performed, the OIG had no alternative source of information to validate if the facility had completed the test. VHA Directive 1810 requires facilities to document their test results and maintain testing records for a minimum of three years. Therefore, the OIG concluded any failure to document test results to be noncompliant with policy.

Testing and Inspection Requirements Need Clarification

The OIG found facilities did not perform all required testing and failed to utilize third-party inspectors to complete semiannual inspections when required. This occurred because medical facilities determined that specific tests or inspections were not required for their boilers, or they did not follow policy on how frequently a third-party inspector should be used to perform the work due to unclear guidance. When tests were deemed to be not required, the medical facilities did not document their reasons from deviating from VHA Directive 1810’s requirements to do the required inspections and operational tests. The director of healthcare engineering stated that he expected justifications for why tests were not performed to be documented within local VA medical facilities’ boiler operations policies. However, the audit team reviewed VHA Directive 1810’s guidance on local facility boiler policies and found no language instructing facilities to document justifications if they deviated from the testing and inspection requirements prescribed in the *VHA Boiler and Associated Plant Safety Device Testing Manual*.

Additionally, VHA Directive 1810 does not clearly define when third-party inspectors should be used to perform required safety testing. For the 41 tests that must be done semiannually, the directive states, “The VA medical facility shall utilize a qualified third-party review to perform one of the required Semi-annual tests at least once annually.” The OIG determined the directive is ambiguous, and facilities could interpret this to mean that they should contract out either a total of one semiannual test per year or one of *each* semiannual test per year, which would result in a total of 41 tests. When the OIG asked for clarification of third-party testing requirements, the director of healthcare engineering stated the intent of the policy language is that all devices that are required to be tested semiannually must be tested once per year by a third party—which results in 41 tests contracted out annually. The boiler plant supervisors of Bath, Brooklyn, and Northport informed the OIG that they did not interpret the policy to mean the semiannual tests had to be contracted out once annually to third-party inspectors. They thought it was acceptable for the semiannual tests to either be done by their own boiler plant operators or contracted out. If facilities had interpreted the testing policy as intended by the director of healthcare engineering, the medical facilities would understand the need to contract out these 41 tests with third-party inspectors. The OIG found none of the facilities reviewed complied with the director’s expectations for third-party reviews of semiannual tests.

To ensure the testing and inspection expectations of management are met, the OIG recommends VHA Directive 1810 be clarified to ensure deviations from testing and inspection standards are documented in local medical facilities’ boiler operation policies—if deviations are to be allowed at all.

Recommendation 3 calls on the director of healthcare engineering to update VHA Directive 1810 to ensure that medical facility boiler policies are updated to reflect site-specific safety device testing procedures, including justifications for each test prescribed in the *VHA Boiler and Associated Plant Safety Device Testing Manual* that the medical facility does not plan to perform. Recommendation 4 asks the director of healthcare engineering to update policy to clarify which tests and inspections are required to be performed by third-party inspectors and how often they should be performed.

VHA Leaders Did Not Have Clear Visibility to Information Needed to Perform Effective Oversight

VHA leaders within VISN 2 and the OHE were often not provided corrective action plans or accurate quarterly survey data to alert them when safety equipment needed replacement or repair. The OIG found that only one of the four facilities was tracking safety equipment failures through corrective action plans, and that facility had repaired only seven of its 41 safety device

deficiencies at the time of the audit team's virtual site visit in March 2021.²⁰ Additionally, none of the facilities were able to provide the audit team with any documentation to support how long it took to correct identified deficiencies.

The audit team reviewed invoices for repairs, project approvals for contracted services, and documented boiler issues for the three remaining sites that did not create corrective action plans to repair identified boiler maintenance needs. Two of the three facilities have since implemented corrective action plans: Bath VA Medical Center in October 2020 and Buffalo VA Medical Center in January 2021. Northport VA Medical Center did not have a corrective action plan and instead provided the audit team with identified device failures noted on their safety device testing reports. For the Bath, Buffalo, and Northport VA medical centers, the audit team calculated a total of 24 safety device failures identified in required inspections and tests or reported by employees through their daily monitoring of boiler plants. The medical facilities primarily notified the VISN 2 director through quarterly surveys when safety devices failed inspection or issues were identified.

Government Accountability Office (GAO) internal control standards emphasize the importance of corrective actions being documented and communicated to the appropriate level of the organizational structure and delegating authority for completion and remediation of deficiencies on a timely basis.²¹ VHA Directive 1810 requires that managers at the local facility and VISN be notified regarding boiler safety devices that are nonfunctional. Boilers with failed safety device testing must be taken out of operation unless there is an interim safety measure in place. Additionally, the policy requires that the VA medical facility director to notify OHE when boilers are out of service and when any safety incidents occur. Further, the policy states that the VISN director is responsible for regularly reviewing compliance and incident reporting, monitoring the development and fulfillment of corrective action plans for noncompliance, and reporting progress on corrective action plans to OHE.

The OIG determined local boiler operation policies at each of the four VISN 2 medical facilities need clarification on how and when officials should be notified when safety issues occur. The OIG reviewed local boiler operations policies at each of the four medical facilities and found that none of the policies addressed when VISN 2 officials would be notified if safety devices failed. Each policy did discuss when the medical facility director would be notified, but the criteria of events that trigger a notification differed.

The problems with the notification process further demonstrate the need for the VISN 2 director and other VHA officials to have access to safety device testing reports to ensure corrective actions and interim safety measures for device failures and deficiencies are documented and

²⁰ Bath and Buffalo VA medical centers had corrective action plans implemented at the beginning of FY 2021; however, these corrective action plans did not fall within the timeframe of the audit scope, FY 2020.

²¹ GAO, [Standards for Internal Control in the Federal Government](#), GAO-14-704G, September 2014.

implemented appropriately. For example, the audit team identified one facility that listed 41 deficiencies on its March 2021 corrective action plan with 34 of those deficiencies remaining open and uncorrected.²² While the chief engineer was aware of the corrective action plan, the director of healthcare engineering stated he was unaware of prolonged open deficiencies at the facility and added that there should be no open deficiencies carried long-term without solution. The director of healthcare engineering further explained in an April 2021 interview with the OIG, that his office does not have visibility of device failures needing corrective action due to the lack of information available from the facilities.

Examples 1 and 2 highlight additional incidents where deficiencies were not addressed promptly or not properly elevated to management officials.

Example 1

A medical facility deputy chief engineer informed the audit team that a purchase order for a new stop valve was created in May 2020. The stop valve had been identified as needing to be replaced due to leaking. Two third-party contractor inspections in June and August 2020 reported the leaky valve. In each report the inspector noted the leak warranted immediate attention. The medical facility did not repair the valve until October 2020, about five months after the problem was identified due to high costs and the difficulty of performing the repair because of the valve's location. The OIG's contracted engineers determined this uncontrolled leak could have become a safety hazard and said the five months needed to make the repair was excessive. Fortunately, the stop valve was in a location in the plant that was not easily accessible to employees, so the risk of the valve failing did not present an immediate danger to employee safety.

Example 2

According to the VHA Boiler and Associated Plant Safety Device Testing Manual, emergency stop/panic buttons should be located at each exit point from the boiler plant to shut down natural gas or fuel oil within three seconds in the case of emergency. In March 2021, a medical facility's corrective action plan indicated that the boiler plant failed safety device testing because the boiler plant did not have emergency stop/panic buttons. According to the boiler plant supervisor, the plant did not meet VHA Directive 1810 requirements because the facility was using on/off switches instead of the required emergency stop/panic buttons for emergency system shutdown. Boiler plant safety device testing noted these

²² Within this corrective action plan, 33 of these uncorrected deficiencies were identified as of January 2020 and not corrected during the 14-month period between January 2020 and March 2021.

switches would not be able to shut off the main gas valve or fuel oil pumps within three seconds. The medical facility's interim safety measure for this deficiency stated that all boiler plant staff are aware of this issue and have received instruction in proper emergency boiler plant shutdown procedures. However, the OIG's contracted professional licensed engineers disagreed with the interim safety measure. They expressed concern that in an emergency, the operators may not have enough time to stop the system and evacuate safely without the emergency stop/panic buttons installed.

The OIG found that VHA Directive 1810 did not specify how corrective action plans should be documented or provide timeline expectations for correcting defective safety devices. The incidents of identified, ongoing, and uncorrected device failures and issues not immediately being addressed demonstrate the need for VHA to clarify its policy guidance for corrective action plans to define what types of continued deficiencies, if any, are acceptable. Requiring VHA medical facilities to have documented corrective action plans that establish timelines for action would keep leaders with oversight responsibilities apprised of ongoing open and uncorrected device failures and deficiencies. Without timely correction of these device failures and deficiencies, VHA facilities are at greater risk for equipment failures, which may potentially prevent access to the facility and threaten the safety of veterans and VA employees inside those facilities.

Recommendation 5 calls for the VISN 2 director to review medical facilities' boiler operation policies to ensure procedures for notifying management and documenting corrective action plans and timelines for addressing safety incidents are consistent with VHA Directive 1810 requirements.

VISN 2 Quarterly Boiler Compliance Surveys Contained Inaccuracies

VHA Directive 1810 requires that policy compliance be assessed and reported quarterly, using a web-based survey, by each VA medical facility with equipment or systems subject to the directive. The facility director and chief engineer are required to certify responses given by facility engineering staff to survey questions regarding the performance of useful life assessments, creation of nonrecurring maintenance projects to replace aging equipment, implementation of failed device repairs, and correct and functional installation of all safety devices in the boiler plant. The accuracy of the quarterly compliance survey report depends on the quality of self-reported data from facility engineering staff and does not include supporting documentation for responses. VISN 2 and OHE leaders said they rely on the quarterly compliance survey reports to determine if corrective actions are being done when necessary, monitor facility maintenance and testing, and assess compliance with VHA Directive 1810.

The audit team found that the quarterly compliance survey responses submitted by the facilities did not accurately reflect the status of safety device repairs or the current functionality of boilers. For example, when addressing the quarterly survey question, “Are all safety devices in the boiler plant currently installed correctly and functional?” staff at two of four facilities incorrectly stated yes, despite the OIG’s review of corrective action plans identifying boilers that had uncorrected failures. Additionally, for the survey question, “Are all boiler plant safety devices being tested and documented in accordance with the Directive and the current VHA Boiler Plant Safety Devices Testing Manual, and are repairs being implemented immediately?” all facility staff incorrectly responded yes, despite the corrective action plan, inspection, and testing records showing uncorrected identified maintenance needs.

Additionally, the audit team found quarterly compliance survey responses did not accurately reflect the remaining useful life of boilers. When asked in the survey, “Is the remaining useful lifespan of boilers and associated equipment greater than three years, based upon the original expected useful lifespan associated with that equipment, as defined in the Directive?” staff from two of four facilities incorrectly stated that their boilers had more than three years of useful life left, despite their boilers all being over 40 years old.

Because VHA officials rely on quarterly survey reports for monitoring without being provided access to the associated boiler plant documentation for additional verification, the ability of VISN 2 and OHE to provide oversight of boiler maintenance is limited.

Recommendation 6 calls on the director of VISN 2 to employ a management information system to ensure all individuals with oversight responsibility are granted access to records for boiler maintenance deficiencies and corresponding corrective actions, boiler inventory, testing and inspection compliance, and useful life assessment completeness.

Conclusion

VISN 2 lacks assurance that boilers operating beyond their expected lifespans have been adequately assessed to ensure continued safe operation. Additionally, missing and incomplete safety testing and inspection documentation impedes the oversight of boiler plant operations and prevents timely correction of safety issues. The result is an increased risk of equipment failures. By addressing all these issues, VA can make boiler plant incidents that put employee safety and veterans’ access to care at risk less likely.

Recommendations 1–6

1. The director of Veterans Integrated Service Network 2 should ensure useful life assessments are conducted for those boilers operating past their expected or extended lifespans outlined in this report to ensure safe operation.²³
2. The director of the Office of Healthcare Engineering should clarify policies and procedures for scheduling useful life assessments of boilers prior to the end of expected lifespans and after an extension has been granted.
3. The director of the Office of Healthcare Engineering should update VHA Directive 1810 to ensure that medical facility boiler policies are updated to reflect site-specific safety device testing procedures, including justifications for each test prescribed in the *VHA Boiler and Associated Plant Safety Device Testing Manual* that the medical facility does not plan to perform.
4. The director of the Office of Healthcare Engineering should update VHA Directive 1810 to clarify which tests and inspections require the use of third-party inspectors, as well as the frequency of these tests and inspections.
5. The director of Veterans Integrated Service Network 2 should review medical facilities' boiler operation policies to ensure procedures for notifying management and documenting corrective action plans and timelines for addressing safety incidents are consistent with VHA Directive 1810 requirements.
6. The director of Veterans Integrated Service Network 2 should employ a management information system to ensure all individuals with oversight responsibility are granted access to records for boiler maintenance deficiencies and corresponding corrective actions, boiler inventory, testing and inspection compliance, and useful life assessment completeness.

Management Comments

The acting assistant under secretary for health for support concurred with recommendations 2, 3, and 4 and provided action plans to address each recommendation. Appendix B includes the full text of the acting assistant under secretary's comments. A summary of VHA's responses follow:

- **Recommendation 2, 3, and 4.** VHA is currently updating Directive 1810(1), Boiler and Boiler Maintenance, and will address the recommendation in the updated Directive. VHA expects to deploy all directive updates by January 2023.

²³ Change made based on technical comment 2 provided by VHA and VISN 2 and detailed in appendix C under "VHA and VISN Technical Comments."

The VISN 2 director concurred in principle with recommendation 1, concurred with recommendations 5 and 6, and provided action plans to address all three recommendations. Appendix B includes the full text of the director's comments. A summary of VISN 2 responses follow:

- **Recommendation 1.** VISN 2 medical centers with high pressure steam boilers that are within three years of their expected design life shall contract with a qualified engineering firm to conduct a remaining life assessment of those boilers. A follow-up remaining life study shall be contracted within the prior assessment's recommendation time frame for the next engineering assessment if the boilers are not under contract for replacement at that time. VISN 2 expects to complete these planned actions by August 2022.
- **Recommendation 5.** VISN 2 plans to have the VISN 2 Capital Asset Management office review medical center boiler plant operations policies to validate that the procedures and responsibilities are defined for notifying management, documenting corrective action plans, and establishing timelines for addressing safety issues which are consistent with VHA Directive 1810 requirements. Where policies are found not to have specific procedures and responsibilities defined, issues shall be identified and provided with recommended changes to be implemented by the medical center for corrective action. The VISN expects to complete these policy reviews and any required policy revisions and adoption by December 2022.
- **Recommendation 6.** The VISN 2 Capital Asset Management office plans to establish a standardized reporting and archiving system on the existing VISN 2 Capital Asset Management SharePoint site and plans to implement quarterly monitoring of reporting for compliance and quality assurance. Standardized templates to report boiler deficiencies, testing and inspection compliance and corresponding corrective actions are currently in progress for future mandatory use. VISN 2 expects to complete these actions by November 2022.

VHA and VISN 2 Technical Comments: VHA and VISN leaders asserted that the OIG's report did not acknowledge annual inspections were conducted on all 15 boilers described in this report to determine if the boilers were safe to continue operation. VHA and VISN leaders commented that the required useful life assessments are considered additional safety measures and best practices by VA. Lastly, the technical comments stated the OIG report did not distinguish between annual boiler inspections conducted by independent third-party inspectors, the remaining useful life engineering assessments for boilers that are nearing their design life expectancy, and those boilers that have been previously assessed for remaining life five or more years prior. The technical comments are shown in their entirety in appendix C.

OIG Response

The OIG will assess the satisfactory completion of the actions in conjunction with its routine recommendation follow-up. Overall, the proposed corrective measures in the VISN 2 director's and acting assistant under secretary for health's action plans are considered responsive to the recommendations. The OIG will monitor execution of planned actions and will close the recommendations when VISN 2 and VHA provide sufficient evidence demonstrating progress addressing the issues identified.

OIG response to VHA and VISN 2 technical comments: The audit team evaluated each comment and made changes where applicable to the report after verifying the accuracy of the information provided. The technical comments are shown in their entirety in appendix C. For the following reasons the OIG could not support all the report language changes requested by the acting assistant under secretary for health for support and VISN 2:

- The audit team and the engineers contracted by the OIG reviewed all inspections conducted at the four medical facilities in FY 2020 for the 15 boilers evaluated, including those conducted by independent third-party national board-certified boiler inspection agencies.²⁴ The report discusses and distinguishes between annual boiler inspections conducted by independent third-party inspectors, the remaining useful life engineering assessments for boilers that are nearing their design life expectancy, and those boilers that have been previously assessed for remaining life but have since exceeded the period of certified extension without another assessment. Additionally, the report discusses useful life assessments as separate to the 60 operational tests and inspections required by Directive 1810.
- In reference to the technical comment that useful life assessments were a best practice and not a requirement, VHA Directive 1810 instructs that “retention of equipment beyond the useful life expectancy must be based on an engineering evaluation of the reliability, efficiency, and cost effectiveness of continued operation.” The director of OHE stated the intent of this language is to ensure boilers were not to be operated beyond their expected lifespan without an assessment performed.
- The OIG's contracted licensed professional engineers agreed that annual inspections by independent national board-certified boiler inspection agencies are an important part of the safe and reliable operation of a boiler, however these inspections are limited to determining if visual damage is present and do not provide an assessment of the calculated remaining life of the boiler and its components. Further, these tests do not

²⁴ Inspection requirements for inspections and operational tests that require completion by independent national board-certified boiler inspectors, otherwise known as “Qualified Professional Inspectors,” is found in VHA Directive 1810, app. B, part 2. Table of required inspections and operational tests, b. Frequency chart.

evaluate the integrity of the pressure retaining components or mechanical integrity of the boiler. The OIG contracted engineer reiterated that industry boiler maintenance programs require engineering assessments at least every 10 years after original installation of a boiler to calculate the remaining life, per the National Board Inspection Code guidelines.

- None of the four medical facilities could produce records for the 15 boilers highlighted in this report to show that they conducted all the annual inspections that require the use of independent national board-certified boiler inspection agencies. In response to testing items 1–5 referenced in the technical comments, one facility did not perform item 3, *Deaerator: Inspection and wet magnetic particle testing of welds of pressure vessel interior*. All four facilities did not perform directive requirement item 4, *All Boilers for fouling and combustion gas flow check*.

The OIG made minor revisions to the report to address technical comments in response to recommendation 1. The OIG added language to recommendation 1 to clarify that the recommendation was applicable only to useful life assessments for those boilers operating past their expected or extended lifespans. The OIG did not agree with the proposed revision to add a statement that boilers should be evaluated to ensure boilers and accessory equipment are programmed for major rebuild or replacement within the projected remaining life for safe and reliable operation, as these aspects were neither completed nor reported on by the OIG. Any revisions to the report in response to the VHA and VISN technical comments are indicated in footnotes.

Appendix A: Scope and Methodology

Scope

The OIG conducted its work from February 2021 through June 2022. The audit team selected four facilities within VISN 2 for virtual site visits: Bath VA Medical Center, Brooklyn VA Medical Center, Buffalo VA Medical Center, and Northport VA Medical Center, to determine if medical facilities were inspecting and maintaining boiler plants from October 1, 2019, through September 30, 2020.

Methodology

The audit team reviewed VA directives, guidebooks, and guidance related to boilers, nonrecurring maintenance, and strategic capital investment planning. In addition, the team reviewed the VHA Boiler and Associated Plant Safety Device Testing Manual, and other applicable guidance.

The audit team interviewed staff from four medical facilities, VISN 2, and the Offices of Healthcare Engineering and Asset Enterprise Management. Due to the COVID-19 pandemic, the team did not travel to conduct site visits. All site visits and staff interviews were conducted virtually.

The audit team assessed VHA's administration of boiler maintenance. The team reviewed useful life assessments to determine if boilers were operating within their expected lifespan. It also reviewed available inspection reports to determine if there were known safety concerns or reports of defective safety devices within the boiler plant, if officials were properly notified of any safety device failures or safety concerns raised through independent inspections, if actions were taken through nonrecurring maintenance or recurring maintenance programs to address identified safety concerns, and if proposed projects address safety concerns.

The team also utilized a vendor with specialized boiler experience and education that met VA's Qualified Professional Inspector standards. The team documented the subject matter experts' knowledge and experience and utilized these subject matter experts to render opinions on technical boiler related issues encountered during the audit.

Internal Controls

The audit team assessed the internal controls that were significant to the audit objective. This included an assessment of the five internal control components to include control environment, risk assessment, control activities, information and communication, and monitoring.²⁵ In addition, the team reviewed the principles of internal controls as associated with the objective.

²⁵ GAO, [Standards for Internal Control in the Federal Government](#), GAO-14-704G, September 2014.

The team identified the following five components and 11 principles as significant to the objective. The team identified internal control weaknesses during this audit and proposed recommendations to address the following control deficiencies:

- Component 1: Control Environment
 - Principle 2: Exercise Oversight Responsibility
 - Principle 3: Establish Structure, Responsibility, and Authority
 - Principle 5: Enforce Accountability
- Component 2: Risk Assessment
 - Principle 6: Define Objectives and Risk Tolerances
 - Principle 7: Identify, Analyze, and Respond to Risks
- Component 3: Control Activities
 - Principle 10: Design Control Activities
 - Principle 11: Design Activities for the Information System
 - Principle 12: Implement Control Activities
- Component 4: Information & Communication
 - Principle 14: Communicate Internally
- Component 5: Monitoring Activities
 - Principle 16: Perform Monitoring Activities
 - Principle 17: Evaluate Issues and Remediate Deficiencies

Fraud Assessment

The audit team assessed the risk that fraud and noncompliance with provisions of laws, regulations, contracts, and grant agreements, significant within the context of the audit objectives, could occur during this audit. The team discussed the potential fraud indicators and exercised due diligence in staying alert to any fraud indicators throughout the audit. The OIG did not identify any instances of fraud or potential fraud during this audit.

Data Reliability

The audit team used computer-processed data maintained locally by medical facilities. To test the reliability of corrective action plans within the scope of our audit review, the OIG compared elements in these corrective action plans to inspection reports in the same time frame. Specifically, the OIG determined whether failed tests on the inspection reports were added to the corrective action plans. Based on this review, the team concluded that the data were sufficiently reliable to meet the audit's objective and support the conclusions in this report.

Government Standards

The OIG conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that the OIG plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for the findings and conclusions based on audit objectives. The OIG believes the evidence obtained provides a reasonable basis for the findings and conclusions based on the audit objective.

Appendix B: Management Comments

Acting Assistant Under Secretary for Health for Support Comments

Department of Veterans Affairs Memorandum

Date: July 22, 2022

From: Acting Assistant Under Secretary for Health for Support (19)

Subj: OIG Draft Report, New York/New Jersey VA Health Care Network (VISN 2) Should Improve Boiler Maintenance to Reduce Safety Risks and Prevent Care Disruptions (2021-00887-AE-0032) (VIEWS 6904124)

To: Assistant Inspector General for Audits and Evaluations (52)

1. Thank you for the opportunity to review and comment on the Office of Inspector General's draft report New York/New Jersey VA Health Care Network Should Improve Boiler Maintenance. The Assistant Under Secretary for Health for Support office concurs with the recommendations and provides action plans for recommendations 2, 3, and 4. Action plans for recommendations 1, 5, and 6 are provided by the Veterans Integrated Service Network 2 Director.

The OIG removed point of contact information prior to publication.

(Original signed by)

Deborah E. Kramer

Attachment

New York/New Jersey VA Health Care Network (VISN 2) Director Comments

Department of Veterans Affairs Memorandum

Date: July 8, 2022

From: Director, New York/New Jersey VA Health Care Network (VISN 2) (10N2)

Subj: OIG Draft Report, OIG Draft Report, New York/New Jersey VA Health Care Network (VISN 2)
Should Improve Boiler Maintenance to Reduce Safety Risks and Prevent Care Disruptions

To: Assistant Inspector General for Audits and Evaluations (52)

1. Thank you for the opportunity to review and comment on the Office of Inspector General (OIG) draft report New York/New Jersey VA Health Care Network (VISN 2) Should Improve Boiler Maintenance to Reduce Safety Risks and Prevent Care Disruptions. I concur with the comments action plan submitted by VISN 2 to address recommendations 1, 5 and 6.

The OIG removed point of contact information prior to publication.

(Original signed by)

McInerney, Joan E.

Attachment

VETERANS HEALTH ADMINISTRATION (VHA)

Action Plan

New York/New Jersey VA Health Care Network (VISN 2) Should Improve Boiler Maintenance to Reduce Safety Risks and Prevent Care Disruptions

(Project Number 2021-00887-AE-0032)

Date of Draft Report: June 27, 2022

Recommendation 1. The director of Veterans Integrated Service Network 2 should ensure boilers operating past their expected or extended lifespans outlined in this report are evaluated to ensure safe operation.

VHA Comments: Concur in principle. Each of the boilers reviewed in this investigation was and is annually inspected by independent national board-certified boiler inspection agencies, as is required of all VHA High Pressure Steam Boilers therefore while the useful life study may not have been in place the equipment was determined to be safe to operate.

VISN 2 medical centers with high pressure steam boilers that are within 3 years of their expected design life as defined by Directive 1810 shall contract with a qualified engineering firm to conduct a remaining life assessment of those boilers. A follow-on remaining life study shall be contracted within the prior assessment's recommendation time frame for the next engineering assessment if the boilers are not under contract for replacement at that time.

Currently, all VISN 2 boilers which are due for engineering remaining life assessments have completed the assessments or are in process to be completed by August 2022.

Status: In progress Target Completion Date: August 2022

Recommendation 2. The director of the Office of Healthcare Engineering should clarify policies and procedures for scheduling useful life assessments of boilers prior to the end of expected lifespans and after an extension has been granted.

VHA Comments: Concur. VHA is currently updating Directive 1810(1), Boiler and Boiler Maintenance, and will address the recommendation in the updated Directive. VHA requests a target completion date of January 2023.

Status: In progress Target Completion Date: January 2023

Recommendation 3. The director of the Office of Healthcare Engineering should update VHA Directive 1810 to ensure that medical facility boiler policies are updated to reflect site-specific safety device testing procedures, including justifications for each test prescribed in the VHA Boiler and Associated Plant Safety Device Testing Manual that the medical facility does not plan to perform.

VHA Comments: Concur. VHA is currently updating Directive 1810(1), Boiler and Boiler Maintenance, and will address the recommendation in the updated Directive. VHA requests a target completion date of January 2023.

Status: In progress Target Completion Date: January 2023

Recommendation 4. The director of the Office of Healthcare Engineering should update VHA Directive 1810 to clarify which tests and inspections require the use of third-party inspectors, as well as the frequency of these tests and inspections.

VHA Comments: Concur. VHA is currently updating Directive 1810(1), Boiler and Boiler Maintenance, and will address the recommendation in the updated Directive. VHA requests a target completion date of January 2023.

Status: In progress Target Completion Date: January 2023

Recommendation 5. The director of Veterans Integrated Service Network 2 should review medical facilities' boiler operation policies to ensure procedures for notifying management and documenting corrective action plans and timelines for addressing safety incidents are consistent with VHA Directive 1810 requirements.

VHA Comments: Concur. For those VISN 2 medical centers which have high pressure steam boilers the VISN 2 Capital Asset Management (CAM) office will review Medical Center Boiler Plant Operations policies to validate that the procedures and responsibility are defined for notifying management, documenting corrective action plans and establishing timelines for addressing safety issues which are consistent with VHA Directive 1810 requirements. Boiler plant operations policies which are found not to have specific procedures and responsibilities defined for notifying management, documenting corrective action plans, and establishing timelines for addressing safety issues shall be identified and provided with recommended changes to be implemented by the medical center for corrective action.

The Target Completion Date for completing these policy reviews and completing any required policy revisions and adoption is December 2022.

Status: In progress Target Completion Date: December 2022

Recommendation 6. The director of Veterans Integrated Service Network 2 should implement a management information system to ensure all individuals with oversight responsibility are granted access to records for boiler maintenance deficiencies and corresponding corrective actions, boiler inventory, testing and inspection compliance, and useful life assessment completeness.

VHA Comments: Concur. The VISN 2 CAM office is establishing a standardized reporting and archiving system on the existing VISN 2 Capital Asset Management SharePoint site. Standardized templates for reporting boiler maintenance deficiencies, testing and inspection compliance and corresponding corrective actions are currently in progress and will be issued to the medical centers for mandatory use, along with instructions for posting the reports quarterly to the SharePoint. The VISN 2 CAM office will monitor quarterly reporting compliance for program quality assurance.

Status: In progress Target Completion Date: November 2022

For accessibility, the original format of this appendix has been modified comply with Section 508 of the Rehabilitation Act of 1973, as amended.

Appendix C: VHA and VISN Technical Comments

VHA Technical Comments

OIG Draft Report: VISN 2 Should Improve Boiler Maintenance to Reduce Safety Risks and Prevent Care Disruptions

Comment 1

The report does not recognize or include the fact that the boilers are evaluated annually by an independent third-party national board-certified boiler inspection agency which is required by directive 1810 which ensures safe operation. The required remaining useful life engineering assessments once boilers are nearing their design life expectancy is an additional safety measure the VA takes which is a best practice.

All 15 boilers at the four medical centers had records that they were evaluated annually by independent national board-certified boiler inspection agencies for structural integrity, overall internal and external condition, and primary safety device functional condition as is required by Directive 1810, Appendix B, part 2. Table of Required Inspections and Operational Tests. See Section below.

Sample annual boiler inspection report attached for example.

2. TABLE OF REQUIRED INSPECTIONS AND OPERATIONAL TESTS:

a. Key to Frequency Abbreviations.

- (1) H = Hourly;
- (2) D = Daily;

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DATE

- (3) M = Once per month;
- (4) 6M = Once every 6 months;
- (5) Y = Once per year; and
- (6) 6Y = Once every 6 years.

b. Frequency Chart.

Number	Item	Frequency
1	High pressure boilers (15 gauge psig or greater): Inspect furnace and other internal surfaces, closures and accessories	Y
2	High pressure boilers (15 gauge psig or greater): Inspect exterior of Unit, casing, supports, closures, accessories, valves, controls	Y
3	Deaerator: Inspection and wet magnetic particle testing of welds of pressure vessel interior	6Y
4	All Boilers for fouling and combustion gas flow check	Y
5	Tube leak check on all boiler types	Y
<p><i>NOTE: Items 1 through 5 in this table must be accomplished by a documented Qualified Professional Inspector. Items 6 through 12 must be accomplished by a qualified inspector as determined by local VA medical facility management staff. Such a determination must be carefully made for each item and each individual.</i></p>		

Example on page ii of report:

Current language: Useful life assessments or reassessments for boilers operating beyond the recommended period of operation were not conducted: The OIG evaluated 15 boilers at four medical facilities and determined that 11, or 73 percent, of the boilers were operating past their expected lifespan without conducting assessments or reassessments to certify their suitability for extended use.

Proposed Revised Language: Useful life assessments or reassessments for boilers operating beyond the recommended period of operation were not conducted: The OIG evaluated 15 boilers at four medical facilities and determined that 11, or 73 percent, of the boilers were operating past their expected lifespan without conducting remaining life assessments or reassessments to certify their suitability for extended use. All 15 boilers at the four medical centers had records that they were evaluated annually by independent national board certified boiler inspection agencies for structural integrity, overall internal and external condition, and primary safety device functional condition as is required by Directive 1810.

Comment 2

The report does not make a distinction between or recognize that the boilers are evaluated annually by an independent third-party national board-certified boiler inspection agency which is required by directive 1810, and the also required remaining useful life engineering assessments once boilers are nearing their design life expectancy or have been previously assessed for remaining life five (5) or more years prior based on the previous assessment's recommendations.

All 15 boilers at the four medical centers had records that they were evaluated annually by independent national board-certified boiler inspection agencies for structural integrity, overall internal and external condition, and primary safety device functional condition as is required by Directive 1810.

Example on page iv of report:

Current language: What the OIG Recommended: The OIG made six recommendations for facilities to manage the inspection and maintenance of boiler plants more effectively. The VISN 2 director should ensure boilers in need of useful life assessments outlined in this report are evaluated to ensure safe operation. Office of Healthcare Engineering leaders should clarify policies and procedures for scheduling useful life assessments for boilers.

Proposed revised language: What the OIG Recommended. The OIG made six recommendations for facilities to manage the inspection and maintenance of boiler plants more effectively. The VISN 2 director should ensure boilers in need of useful life assessments outlined in this report are evaluated to ensure boilers and accessory equipment are programmed for major rebuild or replacement within the projected remaining life for safe and reliable operation. Office of Healthcare Engineering leaders should clarify policies and procedures for scheduling useful life assessments for boilers.

For accessibility, the original format of this appendix has been modified comply with Section 508 of the Rehabilitation Act of 1973, as amended.

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