



OFFICE OF THE CITY AUDITOR COLORADO SPRINGS, COLORADO

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17-33 Colorado Springs Utilities Nixon Emission Controls Audit

December 2017

Purpose

The purpose of this audit was to monitor construction of the Nixon Unit 1 Emissions Controls for SO₂ (sulfur dioxide) scrubber and ultra-low NO_x (nitrogen oxide) burners at the Ray Nixon Power Plant.

The scope of this 2017 audit was from October 1, 2016 through September 30, 2017

Highlights

We conclude appropriate policies and procedures were in place relating to project management, governance, and reporting. Appropriate budget, financial, and schedule controls continued to be utilized for both the SO₂ scrubber and the ultra-low NO_x burner projects. The program appears to be on schedule for completion in December 2017 and the overall cost will come in under budget. There were no reportable recommendations.

The installation of the emissions controls on Unit 1 of the Nixon Power Plant has been a multi-year construction project by Colorado Springs Utilities. Previous reports were issued in 2014, 2015, and 2016 on the procurement and construction activities for the SO₂ scrubber and NO_x burner projects.

Background

The installation of the controls for sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions was required to comply with Colorado's Regional Haze State Implementation Plan. The Environmental Protection Agency (EPA) established the compliance date for Nixon Unit 1 SO₂ removal as December 31, 2017.

In anticipation of these requirements, Colorado Springs Utilities analyzed various emission control system options. The objective was to install the lowest overall cost control equipment considering capital and operating expenses, that ensured compliance with the regulatory requirement.

To achieve control of NO_x emissions, the lowest cost option was to reduce the formation of NO_x by installing Ultra-Low NO_x burners and an overfire air NO_x ports, extended nose arch tubes, removal/relocation/new installation of furnace cleaning and heat flux monitoring equipment.

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17-33 COLORADO SPRINGS UTILITIES NIXON EMISSION CONTROLS

2017 Results

Major project activities during our 2017 audit related to :

- Construction and installation of the Nixon Unit 1 Ultralow NOx burners during the fall 2016 outage.
- NOx performance testing for meeting contract guarantees.
- Mechanical completion of the SO2 scrubber with the flue gas path completion and the confirmed operation of the generating unit .
- SO2 scrubber tuning and performance testing for meeting contractually required performance guarantees.
- Successful completion of the availability test.
- Substantial completion of the SO2 scrubber.

As construction and installation progressed, our audit work focused on project controls including financial controls, schedule controls, project management, and governance activities. Project closeout for the Nixon emission control program is scheduled to be completed by December 2017. Substantial completion was met on September 13, 2017 and final completion is scheduled for December 1, 2017. As of September 30, 2017, the project was on schedule to meet the final completion deadline.

After completion of the performance guaranteed testing, which demonstrated compliance with the contract performance guarantees, an availability test was completed on September 3, 2017. The availability test successfully demonstrated the system operated and achieved emissions compliance for a 30 day period with an availability of 99%.

Estimated total direct costs for the Nixon SO2 and NOx projects as of September 30, 2017, appeared to be under budget by \$12.7M.

Project	Original Baseline Budget	Estimated Final Cost
Nixon SO2	\$ 87.1M	\$ 73.3M
Nixon NOx	\$ 9.7M	\$ 10.8M
Total	\$96.8M	\$ 84.1M

We appreciate the cooperation of project personnel during the audit.

This audit was conducted in conformance with the International Standards for the Professional Practice of Internal Auditing, a part of the Professional Practices Framework promulgated by the Institute of Internal Auditors.