



C.P.F. No. 1-2023-053-NOPSO  
Corrective Measure 16  
Direct Current Voltage Gradient (DCVG) Surveys  
DCVG Survey Results – Report 9

## Purpose

This document summarizes the results obtained by Mountain Valley Pipeline, LLC (Mountain Valley) during DCVG Survey 14 in compliance with Corrective Measures 14 (Reports/Results) and 16 (ACVG/DCVG Surveys) of the Consent Agreement in the above-captioned proceeding.

## Scope

Corrective Measure 16 requires Mountain Valley to:

- Prior to commissioning, conduct direct current voltage gradient (DCVG) surveys, alternating current voltage gradient (ACVG) surveys or other comparable inspections, tests, or surveys to assess the condition of coating on all installed pipe segments of the Mountain Valley Pipeline, except for those installed and tested after January 1, 2023; and
- After completing the survey, remediate any damaged coating indications found during the assessments that are classified as severe indications with voltage (IR) drop greater than 60 percent for DCVG or 70 dB $\mu$ V for ACVG, as provided in 49 C.F.R. § 192.461(h), or severe based on NACE SP 0502-2010.

Survey 14 encompassed 13.93 miles of pipe installed on Spread E between mile post (MP) 140.5 and MP 154.43.

## Data Collection

- Mountain Valley conducted DCVG Survey 14 in accordance with NACE SP 0502-2010, “Pipeline External Corrosion Direct Assessment Methodology” using Roberts Corrosion Services (RCS) as the qualified corrosion control personnel conducting the data collection and analysis.
- One survey crew from RCS conducted the entirety of this DCVG survey.
- The initial data collection phase of this effort was completed on December 1, 2023.

## Data Analysis

- After completing the initial data collection phase of DCVG Survey 14, the data was analyzed by a NACE Cathodic Protection Specialist (CP-4) and Cathodic Protection

Technologist (CP-3) to determine the voltage (IR) drop associated with each indication identified during the survey. There were no anomalies over 60%.

## Excavation and Repair

After completing the data analysis phase of Survey 14, Mountain Valley performed excavations to validate the survey results and determine the size of the indications. Because the shape of the anomaly indications was similar to the results of Survey 13, a greater number of locations were chosen for excavation and further examination. The locations and findings associated with the six excavations performed are contained in Table 1 below. These excavations are numbered E6 to E11 to continue the sequence used in performing the excavations for Survey 13, submitted as part of Report 8.

### Excavation E6

- Mountain Valley conducted Excavation E6 on December 15, 2023. The pipe was exposed and visually inspected to locate the coating anomalies. The pipe was also holiday tested in accordance with the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.2, "Holiday Detection", MVP Exhibit O, "Corrosion Control Plan", which are consistent with NACE Standard SP 0188-2006, "Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates," to ensure all anomalies were located on this region of pipe.
- Inspection showed the 11.84% indication was the result of several small holidays located along the top and side of the pipe. The total surface area exposed was less than 10 square inches.
- The coating was repaired per the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.3 "Holiday Repair."
- Prior to backfill, the pipe was again holiday tested per the specifications and standards identified above to ensure no holidays existed on the exposed portion of pipe.

### Excavation E7

- Mountain Valley conducted Excavation E7 on December 21, 2023. The pipe was exposed and visually inspected to locate the coating anomalies. The pipe was also holiday tested in accordance with the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.2, "Holiday Detection", MVP Exhibit O, "Corrosion Control Plan", which are consistent with NACE Standard SP 0188-2006, "Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates," to ensure all anomalies were located on this region of pipe.
- Inspection showed the 10.0% indication was the result of three holidays and several pinholes along the top half of the pipe. The total surface area exposed was less than 2 square inches.

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- The coating was repaired per the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.3 "Holiday Repair."
- Prior to backfill, the pipe was again holiday tested per the specifications and standards identified above to ensure no holidays existed on the exposed portion of pipe.

#### Excavation E8

- Mountain Valley conducted Excavation E8 on February 2, 2024. The pipe was exposed and visually inspected to locate the coating anomalies. The pipe was also holiday tested in accordance with the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.2, "Holiday Detection", MVP Exhibit O, "Corrosion Control Plan", which are consistent with NACE Standard SP 0188-2006, "Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates," to ensure all anomalies were located on this region of pipe.
- Inspection showed the 12.99% indication was the result of multiple small holidays along the top of the pipe for the length of the excavation. Less than 10 square inches of metal was exposed.
- The coating was repaired per the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.3 "Holiday Repair."
- Prior to backfill, the pipe was again holiday tested per the specifications and standards identified above to ensure no holidays existed on the exposed portion of pipe.

#### Excavation E9

- Mountain Valley conducted Excavation E9 on February 5, 2024. The pipe was exposed and visually inspected to locate the coating anomalies. The pipe was also holiday tested in accordance with the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.2, "Holiday Detection", MVP Exhibit O, "Corrosion Control Plan", which are consistent with NACE Standard SP 0188-2006, "Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates," to ensure all anomalies were located on this region of pipe.
- Inspection showed the 10.46% indication was the result of several small holidays and pinholes located along the top of the pipe. The total surface area exposed was less than 10 square inches.
- The coating was repaired per the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.3 "Holiday Repair."
- Prior to backfill, the pipe was again holiday tested per the specifications and standards identified above to ensure no holidays existed on the exposed portion of pipe.

#### Excavation E10

- Mountain Valley conducted Excavation E10 on February 5, 2024. The pipe was exposed and visually inspected to locate the coating anomalies. The pipe was also holiday tested

in accordance with the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.2, "Holiday Detection", MVP Exhibit O, "Corrosion Control Plan", which are consistent with NACE Standard SP 0188-2006, "Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates," to ensure all anomalies were located on this region of pipe.

- Inspection showed the 9.57% indication was the result of two large holidays on the bottom and scrapes along the 8:00 position of the pipe. The total surface area exposed was less than 10 square inches.
- The coating was repaired per the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.3 "Holiday Repair."
- Prior to backfill, the pipe was again holiday tested per the specifications and standards identified above to ensure no holidays existed on the exposed portion of pipe.

#### Excavation E11

- Mountain Valley conducted Excavation E11 on February 6, 2024. The pipe was exposed and visually inspected to locate the coating anomalies. The pipe was also holiday tested in accordance with the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.2, "Holiday Detection", MVP Exhibit O, "Corrosion Control Plan", which are consistent with NACE Standard SP 0188-2006, "Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates," to ensure all anomalies were located on this region of pipe.
- Inspection showed the 54.02% indication was the result of multiple small holidays and pinholes along the top of the pipe for the length of the excavation. Less than 10 square inches of metal was exposed.
- The coating was repaired per the requirements in MVP Standard 10.4, "Corrosion Control for Construction" Section 3.6.3 "Holiday Repair."
- Prior to backfill, the pipe was again holiday tested per the specifications and standards identified above to ensure no holidays existed on the exposed portion of pipe.

**Table 1: DCVG Survey 14 Calibration Dig Locations**

Survey Number	Excavation Number	Latitude	Longitude	Calculated IR Drop	Results
14	E6	(b) (7)(F)	(b) (7)(F)	11.84%	Less than 10 sq. in
14	E7	(b) (7)(F)	(b) (7)(F)	10.00%	Less than 10 sq. in
14	E8	(b) (7)(F)	(b) (7)(F)	12.99%	Less than 2 sq. in
14	E9	(b) (7)(F)	(b) (7)(F)	10.46%	Less than 10 sq. in
14	E10	(b) (7)(F)	(b) (7)(F)	9.57%	Less than 10 sq. in
14	E11	(b) (7)(F)	(b) (7)(F)	54.02%	Less than 10 sq. in

## Further Investigation

Although small holidays were present along the top of the pipe at each excavation, it was determined, based on the six excavations performed, further analysis and repairs are not required for the remaining indications identified during the survey. Based on the amount of exposed metal present at the excavations performed, analysis shows any exposed metal at the remaining locations is well within the conservatisms used in the design of the cathodic protection system for this section of the pipeline.

## Key Contacts

- MVP Coatings SME  
Nickey Zafris  
(412) 235-8806