**Risk(s):** *Inaccurate measurements on the cathodic protection system can lead to mitigation events not being initiated, which can lead to premature failure of anodes, and pipeline degradation.*

**Objective(s):** *Validate the cathodic testing results for PSCo.*

**Scope:** Gas distribution and transmission cathodic data from *April 2021 – April 2022 in PSCo.*

**Background:** *Cathodic testing results impact the decisions made about taking action to maintain a gas pipe. If it is discovered that a gas main has corroded beyond a certain level, then proper actions need to be taken by NACE certified individuals to properly address the issues within these pipes. This may involve covering holidays, replacing the sacrificial metal, replacing the pipe all together, or other methods of protection.*

**Audit Test Step and Results:**

1. Obtain the population of all points within the scope period with low reads from the Asset Compliance Management (ACM) system.
   1. Audit Services queried the data in ACM, see “Query” tab in DXXX-XXX
2. Select a random sample of points in step 3a
   1. Audit Services selected a random sample that was around ~10% of the total population of CP Sections Down:
      1. Using a number generator, making the bounds 2 through the last row of D404, numbers were generated where each number represented the row of a CP Section;
         1. 31 times a number was generated and copied from D404 into D407
         2. Numbers were generated until the rows in a sample accounted for small and large values of “DAYS\_DOWN” and included a proportionate number of 10 PERCENT and ANNUAL “CP\_SECTION\_TYPES” relative to their populations.
      2. Using a number generator, making the bounds 2 through the last row of D405, numbers were generated where each number represented the row of a CP Section;
         1. 5 times a number was generated and copied from D405 into D403
         2. Numbers were generated until the rows in a sample accounted for small and large values of “DAYS\_DOWN” and included a proportionate number of 10 PERCENT and ANNUAL “CP\_SECTION\_TYPES” relative to their populations.
3. Determine if a work/service request or work order (WO) was created.
   1. PSCO Work Orders were accumulated by a Work Coordinator in SAP and were placed in the file D406.
   2. All data in the columns PMTS\_ASSET\_ID and SAP Order were copied over to the D407 file in the sheet “PMTS\_ASSET\_ID\_VERIFY” from the file D406
   3. The PMTS\_ASSET\_IDs from the “PSCO SAMPLE” sheet in D407 was matched against the data in the column PMTS\_ASSET\_ID\_FROM\_ALL\_DATA to find the corresponding row number
      1. This corresponding row number was used to find the work order number of the same index in the column SAP Order
4. Tie the work/service request to the WO in SAP.
5. Ensure Service Center Operations is aware of the WO or that the service has been scheduled and/or completed.
   1. Audit Services only chose a sample from the entire population where the WO was completed.
      1. Audit Services filtered data from SAP in excel to only obtain a sample where the “Event Status” of the WO was filled out as either completed or scheduled.
6. Select a sample of completed WOs where service was completed. Determine if a second reading was performed.
7. Review the list of WOs and verify no work order is more than the remediation requirements set forth by Xcel Energy standards.
8. Select a sample of test points and verify the work was completed by contractors.
   1. Using D301 Audit Services determined if an address was remote by;
      1. Searching each address into a Google Maps and using the surrounding area seen in the image to determine how remote a property was.
      2. Meeting with a technician to show us the possibility and probability that a test lead or meter would be accessible
   2. Nine of these addresses were compiled in D306
   3. From June 8th, 2022 to June 15th, 2022 Audit Services visited the locations in D306 and verified if the work was done by determining if any ground disturbance near the test area remained, this procedure was done twice;
      1. The first time involved only Audit Services
      2. The second time was included both Audit Services and one Technical Expert

**Risk(s) Conclusion:** *Based on the overall testing performed for this area, enter the conclusion/opinion whether the risk for the objective being tested is being adequately managed. If a gap is identified, state where the risk is not managed properly.*

Audit Services found that the ~42% of the sample had creation dates greater than 365 days and ~35% of sample had creation dates under 100 days.