



Page 1 of 2  
Corrective/Preventive Action Request (CPAR)

CA  PA

(Check appropriate box to indicate corrective or preventive action)

Initiator: K. Oxholm

Corrective Action # 2015-006

Date: 11/18/2015

Preventive Action # \_\_\_\_\_ or

|                | Date Due   | By/Assigned to      | Completed Initials & Date |
|----------------|------------|---------------------|---------------------------|
| Investigation  | 12/9/2015  | Christopher LeForce | CAL 12/11/2015            |
| Implementation | 12/11/2015 | Christopher LeForce | CAL 12/11/2015            |
| Audit          |            |                     |                           |
| CAR/PAR closed |            |                     |                           |

Description of Issue

In areas where pipe was installed by the 2014 Contractor (Over & Under) on ANGP, trench breakers were not installed as designed in numerous locations. A table attached, titled "ANGP Trench Breaker As-built 2014 (Segment 1)", shows the general design locations by station number and the corresponding as-built location if installed. There were both sand trench breakers and bentonite trench breakers on this list. Also there were some trench breakers installed where there was not a designed location.

Work Processes need to be modified or ceased during investigation?: Yes \_\_\_ No x  
If so, specify:

Approved by: [Signature]

Date: 12/11/15

Investigation Finding

The list titled "ANGP Trench Breaker As-built 2014 (Segment 1)" was reviewed and the locations plotted on a set of design drawings. After talking to field personnel (inspectors), it was determined that some of the locations where trench breakers were designed on paper were omitted because the field conditions warranted them not to be installed. On the other hand there were locations where there was no designed trench breaker, but field conditions warranted one to be installed. There was no documentation of this process.



Vermont Gas

Page 2 of 2  
Corrective/Preventive Action Request (CPAR)

| Recommendations for Corrective / Preventive Action  |
|---|
| <p>VGS will investigate the areas where a designed trench breaker was not installed. If field conditions show that one is not needed, then it will be documented as to the reason why not. If one is needed, then one will be scheduled to be installed.</p> <p>While this investigation takes place, VGS Operations will patrol the transmission corridor on a monthly basis, not to exceed 45 days, or after any significant rain event to ensure no erosion occurs due to the lack of a trench breaker. If VGS Operations finds erosion occurring, it will be remediated to ensure the safety of the pipeline.</p> |

| Action Taken / Verification  |
|--|
| <p>Any future re-evaluation and follow-up required? Yes ___ No ___<br/>If so, specify:</p> <p>As required by code, the transmission corridor is continually patrolled multiple times each year by VGS Operations and one of the items that is looked for is erosion areas or potential erosion areas. Anything that is deemed a threat to the pipe will be remediated by VGS Operations.</p> <p>Verified by: _____ Date: _____</p> <p>Was action taken effective? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, new CA/PA number: _____</p> <p>Comments: _____</p> |

## ANGP Trench Breaker Locations As-Built 2014 (Segment 1)

NOTE: The following approximate stations are the minimum locations for both sand and bentonite trench breakers for Segment 1 (As Built 2014) of the Addison Natural Gas Project. This list was created using information from details #2 and #5 on drawing ANGP-T-G-015 Rev. 1 from the Plan Set titled "Addison Natural Gas Project Transmission Mainline" dated 04-02-15. The Construction Management Team/Inspectors should review actual field conditions and direct the Contractor to install additional trench breakers as necessary to supplement the listed areas.

**LEGEND:**

|  |                          |
|--|--------------------------|
|  | Sand Trench Breaker      |
|  | Bentonite Trench Breaker |

| "Theoretical Station" | Type      | As-Built Station | As-Built Type | Comments  |
|-----------------------|-----------|------------------|---------------|---|
| NONE                  | N/A       | 129+15           | SAND          |   |
| NONE                  | N/A       | 132+62           | SAND          |   |
| NONE                  | N/A       | 144+15           | SAND          |   |
| NONE                  | N/A       | 147+22           | SAND          |   |
| NONE                  | N/A       | 150+10           | SAND          |   |
| 187+75                | BENTONITE | NONE             | N/A           | ) These are both W. of the Indian Banks crossing, where ANGP parallels Hwy 288, they straddle a low spot in a marshy area |
| 188+50                | BENTONITE | 188+78           | BENTONITE     |   |
| NONE                  | N/A       | 189+14           | SAND          |   |
| NONE                  | N/A       | 190+10           | SAND          |   |
| 190+55                | BENTONITE | 190+53           | BENTONITE     |   |
| 193+15                | BENTONITE | 193+56           | BENTONITE     |   |
| 194+55                | SAND      | NONE             | N/A           |   |
| 195+80                | SAND      | NONE             | N/A           |   |
| 197+00                | SAND      | NONE             | N/A           |   |
| 202+17                | SAND      | NONE             | N/A           |   |

## ANGP Trench Breaker Locations As-Built 2014 (Segment 1)

NOTE: The following approximate stations are the minimum locations for both sand and bentonite trench breakers for Segment 1 (As Built 2014) of the Addison Natural Gas Project. This list was created using information from details #2 and #5 on drawing ANGP-T-G-015 Rev. 1 from the Plan Set titled "Addison Natural Gas Project Transmission Mainline" dated 04-02-15. The Construction Management Team/Inspectors should review actual field conditions and direct the Contractor to install additional trench breakers as necessary to supplement the listed areas.

**LEGEND:**

|  |                          |
|--|--------------------------|
|  | Sand Trench Breaker      |
|  | Bentonite Trench Breaker |

| "Theoretical Station" | Type      | As-Built Station | As-Built Type | Comments |
|-----------------------|-----------|------------------|---------------|----------|
| 202+95                | SAND      | NONE             | N/A           |          |
| 211+90                | SAND      | NONE             | N/A           |          |
| NONE                  | N/A       | 238+79           | SAND          |          |
| 328+10                | SAND      | 327+77           | SAND          |          |
| 328+92                | SAND      | 328+64           | SAND          |          |
| 330+65                | SAND      | 331+22           | SAND          |          |
| 331+40                | SAND      | 331+66           | SAND          |          |
| 343+62                | SAND      | NONE             | N/A           |          |
| 344+35                | SAND      | 344+50           | SAND          |          |
| 345+08                | SAND      | 345+02           | SAND          |          |
| 347+42                | SAND      | NONE             | N/A           |          |
| 348+00                | SAND      | 347+80           | SAND          |          |
| 348+60                | SAND      | NONE             | SAND          |          |
| 348+80                | BENTONITE | 348+45           | BENTONITE     |          |
| 349+25                | BENTONITE | 349+52           | BENTONITE     |          |

## ANGP Trench Breaker Locations As-Built 2014 (Segment 1)

NOTE: The following approximate stations are the minimum locations for both sand and bentonite trench breakers for Segment 1 (As Built 2014) of the Addison Natural Gas Project. This list was created using information from details #2 and #5 on drawing ANGP-T-G-015 Rev. 1 from the Plan Set titled "Addison Natural Gas Project Transmission Mainline" dated 04-02-15. The Construction Management Team/Inspectors should review actual field conditions and direct the Contractor to install additional trench breakers as necessary to supplement the listed areas.

**LEGEND:**

|  |                          |
|--|--------------------------|
|  | Sand Trench Breaker      |
|  | Bentonite Trench Breaker |

| "Theoretical Station" | Type      | As-Built Station | As-Built Type | Comments |
|-----------------------|-----------|------------------|---------------|----------|
| 350+72                | BENTONITE | 350+72           | BENTONITE     |          |
| 351+06                | BENTONITE | 351+06           | BENTONITE     |          |
| 367+30                | BENTONITE | 367+40           | BENTONITE     |          |
| 369+12                | BENTONITE | 368+72           | BENTONITE     |          |
| 369+47                | SAND      | NONE             | N/A           |          |
| 370+45                | BENTONITE | NONE             | N/A           |          |
| 371+10                | BENTONITE | NONE             | N/A           |          |
| 374+22                | SAND      | NONE             | N/A           |          |
| 375+05                | SAND      | NONE             | N/A           |          |
| 380+45                | SAND      | NONE             | N/A           |          |
| 381+40                | SAND      | NONE             | N/A           |          |
| 380+75                | BENTONITE | 380+80           | BENTONITE     |          |
| 382+10                | BENTONITE | NONE             | N/A           |          |
| 382+60                | BENTONITE | NONE             | N/A           |          |
| 384+00                | BENTONITE | NONE             | N/A           |          |

*The PL is parallel w/ a railroad track between the RR and Winmark. Run*

*This is what I refer to as a rolling wetland with high flow spots. The bentonite was installed @ the edges, but not in the middle.*

## ANGP Trench Breaker Locations As-Built 2014 (Segment 1)

NOTE: The following approximate stations are the minimum locations for both sand and bentonite trench breakers for Segment 1 (As Built 2014) of the Addison Natural Gas Project. This list was created using information from details #2 and #5 on drawing ANGP-T-G-015 Rev. 1 from the Plan Set titled "Addison Natural Gas Project Transmission Mainline" dated 04-02-15. The Construction Management Team/Inspectors should review actual field conditions and direct the Contractor to install additional trench breakers as necessary to supplement the listed areas.

**LEGEND:**

|  |                          |
|--|--------------------------|
|  | Sand Trench Breaker      |
|  | Bentonite Trench Breaker |

| "Theoretical Station" | Type      | As-Built Station | As-Built Type | Comments |
|-----------------------|-----------|------------------|---------------|----------|
| 384+60                | BENTONITE | NONE             | N/A           |          |
| 385+00                | BENTONITE | 386+12           | BENTONITE     |          |
| 401+49                | SAND      | NONE             | N/A           |          |
| 403+00                | SAND      | NONE             | N/A           |          |
| 404+93                | SAND      | NONE             | N/A           |          |
| 406+42                | SAND      | NONE             | N/A           |          |
| 407+96                | SAND      | NONE             | N/A           |          |
| 409+48                | SAND      | NONE             | N/A           |          |
| 411+00                | SAND      | NONE             | N/A           |          |
| 429+35                | BENTONITE | 429+30           | BENTONITE     |          |
| 429+05                | BENTONITE | 429+43           | BENTONITE     |          |
| 429+50                | SAND      | NONE             | N/A           |          |
| 430+30                | SAND      | NONE             | N/A           |          |
| 433+50                | SAND      | 433+53           | SAND          |          |
| 435+00                | SAND      | NONE             | N/A           |          |

## ANGP Trench Breaker Locations As-Built 2014 (Segment 1)

NOTE: The following approximate stations are the minimum locations for both sand and bentonite trench breakers for Segment 1 (As Built 2014) of the Addison Natural Gas Project. This list was created using information from details #2 and #5 on drawing ANGP-T-G-015 Rev. 1 from the Plan Set titled "Addison Natural Gas Project Transmission Mainline" dated 04-02-15. The Construction Management Team/Inspectors should review actual field conditions and direct the Contractor to install additional trench breakers as necessary to supplement the listed areas.

**LEGEND:**

|  |                          |
|--|--------------------------|
|  | Sand Trench Breaker      |
|  | Bentonite Trench Breaker |

| "Theoretical Station" | Type      | As-Built Station | As-Built Type | Comments |
|-----------------------|-----------|------------------|---------------|----------|
| 436+90                | BENTONITE | 436+70           | BENTONITE     |          |
| NONE                  | N/A       | 437+00           | BENTONITE     |          |
| 437+20                | BENTONITE | 437+19           | BENTONITE     |          |
| 440+50                | BENTONITE | 440+22           | BENTONITE     |          |
| 440+70                | BENTONITE | 441+10           | BENTONITE     |          |
| 448+40                | BENTONITE | 447+75           | BENTONITE     |          |
| 449+30                | BENTONITE | 449+09           | BENTONITE     |          |
| 459+50                | BENTONITE | NONE             | N/A           |          |
| 460+15                | BENTONITE | 460+09           | BENTONITE     |          |
| 466+05                | BENTONITE | 466+00           | BENTONITE     |          |
| 466+55                | BENTONITE | 466+50           | BENTONITE     |          |
| 468+70                | BENTONITE | 468+62           | BENTONITE     |          |
| 469+30                | BENTONITE | 469+35           | BENTONITE     |          |
| 506+45                | BENTONITE | NONE             | N/A           |          |
| 507+30                | BENTONITE | NONE             | N/A           |          |

The PLC parallels Redmond Rd

by a drainage ditch under Redmond Rd

wet spots @ edge of golf course

The PLC parallels the golf course

## ANGP Trench Breaker Locations As-Built 2014 (Segment 1)

NOTE: The following approximate stations are the minimum locations for both sand and bentonite trench breakers for Segment 1 (As Built 2014) of the Addison Natural Gas Project. This list was created using information from details #2 and #5 on drawing ANGP-T-G-015 Rev. 1 from the Plan Set titled "Addison Natural Gas Project Transmission Mainline" dated 04-02-15. The Construction Management Team/Inspectors should review actual field conditions and direct the Contractor to install additional trench breakers as necessary to supplement the listed areas.

**LEGEND:**

|  |                          |
|--|--------------------------|
|  | Sand Trench Breaker      |
|  | Bentonite Trench Breaker |

| "Theoretical Station" | Type      | As-Built Station  | As-Built Type | Comments  |
|-----------------------|-----------|-------------------|---------------|---|
| 510+25                | BENTONITE | 509+90            | BENTONITE     |   |
| 511+80                | BENTONITE | NONE              | N/A           |   |
| 514+70                | BENTONITE | 514+89            | BENTONITE     | <i>parallels golf course</i>  |
| 515+50                | BENTONITE | 515+45            | BENTONITE     |   |
| 540+35                | BENTONITE | 540+43            | BENTONITE     | <i>drainage ditch edge of golf course</i>   |
| 540+65                | BENTONITE | 537+60 (STA EQN.) | BENTONITE     |   |
| 546+30                | BENTONITE | 546+09            | BENTONITE     | <i>these saddle Allen Brook</i>   |
| 547+35                | BENTONITE | 547+62            | BENTONITE     |   |
| 548+00                | BENTONITE | NONE              | N/A           | <i>CG drainage ditch flowing to Allen Brook need to confirm with survey TRBKR type</i>  |
| NONE                  | N/A       | 549+68            | Unk.*         |   |
| 551+00                | BENTONITE | NONE              | N/A           | <i>@ a drainage ditch flowing to Allen Brook need to confirm with survey TRBKR type</i> |
| 552+60                | BENTONITE | 553+30            | Unk.*         |   |