March 7, 2019

VIA EMAIL
The Honorable Robert M. Sumwalt
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Re: Accident ID DCA17FP006
Millersville, PA
2 July 2017 Pipeline Accident

Dear Chairman Sumwalt:

On February 25, 2019, the NTSB issued a final report in the above-referenced matter. The publication came as a shock to our client, Elster Perfection.[1] The Investigator-in-Charge ("IIC") had repeatedly promised Elster Perfection's party coordinator that underlying factual material would be provided to him for review and that, thereafter, a date for receipt of Elster Perfection's party submission would be established. These promises were broken, and Elster Perfection was deprived of its right under 49 C.F.R. § 831.14 to provide a party submission.

Based on the limited information provided to Elster Perfection (consisting primarily of interview transcripts), it appears the final report is inaccurate in several important respects. Further, the report failed to analyze how the leak response led to the accident. In fact, it is clear to us that the slow, uncoordinated, and undermanned response to the leak was the probable cause of the house explosion and significant damages to nearby residences. These failures, however, are not even listed as contributing causes. No safety recommendations were issued pertaining to the leak response, thus missing an opportunity to improve safety in this critical area.

[1] Elster Perfection is a division of Elster American Meter Company, LLC.

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As a remedy for the NTSB's violation of Elster Perfection's rights under 49 C.F.R. § 831.14 and, as detailed below, given the need to correct and augment the report in numerous areas, we request that:

1. The final report be withdrawn.

2. The factual material promised to Elster Perfection, detailed below, be provided to Elster Perfection by March 15. (In this regard, we note that the public docket consists almost exclusively of lab reports, does not contain any data responses from the parties, or even the interview transcripts, and has not been updated since June 26, 2018.)

3. Elster Perfection be given until April 1, 2019, to provide a party submission.

4. Safety Recommendations P-18-003 and P-18-004 issued to Honeywell International, Inc.[2] be withdrawn and/or Elster Perfection be permitted to meet with the NTSB to explain and demonstrate why the recommendations are not in the interest of safety.

This letter is organized as follows:

I. NTSB Violation of 49 C.F.R. § 831.14

In violation of 49 C.F.R. § 831.14, the IIC did not inform Elster Perfection when its written submission was due. On the contrary, the IIC stated that factual materials would be provided to Elster Perfection and, thereafter, he would set a date for receipt of Elster Perfection's party submission. 49 C.F.R. § 831.14(b) states that: "The IIC will inform parties when submissions are due. All written submissions must be received by the IIC by the due date…." Violation of this regulation deprived Elster Perfection of its opportunity to be heard and has resulted in a final report that is inaccurate, imbalanced, and not in the best interests of safety.

II. Broken Promises to Provide Factual Materials

On December 11, 2018, Elster Perfection's party coordinator requested that the IIC provide him certain documents, including:

- UGI GOM Section 70.20;

[2] Honeywell International, Inc. is the ultimate parent company of Elster American Meter Company, LLC.

- UGI GOM Section 60.50;
- Any documents on the safety initiatives of UGI implemented after the accident that are summarized in the draft brief;
- Any responses of UGI to the NTSB's requests for information during the investigation; and
- Any timeline for the leak response by UGI.

The IIC agreed to provide the above information to Elster Perfection by December 17, and further agreed that thereafter a date would be set for Elster Perfection to provide its party submission. After numerous follow-ups by Elster Perfection's party coordinator, on February 19, 2019, the IIC agreed to send all of the information he had, and reiterated his commitment to allow Elster Perfection additional time to provide its input once the information was provided. Notwithstanding this commitment, the NTSB released its final report without providing the underlying factual information to Elster Perfection, and without providing Elster Perfection an opportunity to make a party submission.

III. Errors in NTSB's Final Report

The NTSB's final report contains many statements that conflict with the interview transcripts. The below is just a sampling.

A. The report inaccurately moves up the timeline of the leak response.

The report reads that "By 11:50 a.m., the senior supervisor had assembled a three-person crew at the site." NTSB Final Report, p. 3. According to the interview transcripts, however, the senior supervisor did not arrive until between 12:05 p.m. and 12:14 p.m., and the third UGI employee, a foreman, arrived approximately five minutes later. See Trimble 68:22-25 and 70:14-17.[3] In fact, the foreman was not even asked to come to the site until 11:52 a.m. Trimble 19:6-10; Lopez 17:2-5.

The disparity, amounting to perhaps as long as thirty minutes, between the response timeline set forth in the NTSB's final report and the actual response timeline is significant given the fact that the utility recognized the leak was an emergency and that time was of the essence. The leak notification was received at 10:26 a.m., and the leak was classified as an emergency at 11:18 a.m. The explosion occurred at 12:32 p.m., shortly after the response crew arrived on site.

[3] References to interview transcripts herein list the last name of the interviewee, followed by the page and line numbers in page:line(s) format.

B. The report incorrectly records the gas readings leading up to the accident.

The NTSB's final report does not reference any gas readings at the 206 Springdale Lane residence (the house that exploded) other than in the following passage:

> While the main line was being excavated, the occupant of 206 Springdale Lane responded to the technician. Based on the gas percentage reading of 20 percent LEL in the home, the technician decided to evacuate the home.

Based on the interview transcripts, the above passage in the NTSB's final report is wrong, dramatically understates the gas readings that were recorded, and misses the actual reason for the evacuation. The lower explosive limit ("LEL") for natural gas is approximately 5% gas in volume by air, so 20% LEL equates to 1% gas in volume by air. According to the interview transcripts, however, the technician/decedent told the senior supervisor he had recorded "21 gas in home," not 20% LEL. Trimble 24:17-18, 31:11-16, 48:15-21.

Further, in the interviews, the senior supervisor testified that the technician/decedent had obtained readings of 10 or 11 gas in volume by air in the house and was evacuating the house. Trimble 23:60-61; 64:4; 77:24. This information is consistent with the resident's testimony that upstairs there was a reading of "12," and downstairs there was a reading of "11." J. Hughes 22:17-19. Again, 10 or 11% gas in volume by air is a gas level 10-11 times higher than 20% LEL. So the factual error, if the interview testimony is accurate, is significant.

The 10-12% gas in volume by air readings are in the 5-15% range within which natural gas can combust. In fact, shortly after the readings were taken, the gas did ignite and the house exploded.

C. The report is wrong on the timing of the gas readings.

The report states that the 20% LEL reading (as noted above, the reading was actually over 20 times higher, or 21% gas in volume by air) triggered the evacuation at 206 Springdale Lane. The interview transcripts, however, make clear that the resident was already evacuated by this time. Trimble 60:24 – 61:4; 64:1-8. The resident was evacuated based on gas readings of 10-11% gas by volume in air inside the house. Trimble 48:22-23. In fact, the 21% reading was obtained just 10-15 seconds prior to the explosion. Trimble 24:16-20; 48:15-21.

IV. Unfounded Probable Cause and Failure to Analyze the Leak Response

The probable cause should be revised to address the probable cause of the explosion, not the leak. The explosion is the event that resulted in the death and the property damage. As such, the "accident" being investigated is the explosion, not the leak. If the leak had been effectively remediated, the NTSB would not have investigated. Leaks rarely lead to deaths, injuries, or property damage. The probable cause should address why it did so in this instance.

The NTSB's investigation revealed that the installation error was the probable cause of the leak, but was not the probable cause of the accident. The gas odor was reported at 10:26 a.m., and the explosion occurred at 12:32 p.m. The utility had over two hours to determine the nature and severity of the problem and remediate it. In fact, the leak was almost immediately classified by the utility as an emergency. Notwithstanding this classification:

a) After the utility worker's first responder reported the leak as an emergency at 11:18 a.m., the first responder was not supported on site with additional personnel until after 12:00 p.m. (see Trimble 18:22-22:4, 68:22-25; 70:14-17), and the resident of 206 Springdale Lane was not evacuated until after the senior supervisor had arrived. Trimble 33:5-8.

b) The utility did not contact the electric company to shut off electrical service to the street until after the explosion, almost two hours after the gas leak was classified as an emergency and, accordingly, throughout the leak response, electricity continued to flow to residences experiencing dangerous natural gas accumulations (this critical piece of information is buried in a footnote, n. 10, of the NTSB's final report).

c) The utility worker checked for gas in the basement of 202 Springdale Lane, but did not check anywhere else in that home (see NTSB final report, p. 4), despite the fact that natural gas is lighter than air and rises inside a structure.

d) Despite obtaining LEL readings over 10% in the basement of 202 Springdale Lane, the utility worker did not evacuate the residents of 202 Springdale Lane. See NTSB final report, p. 4.

e) Despite gas readings of 12% gas in volume by air in the upstairs level of 206 Springdale Lane, and 11% gas in volume by air in the downstairs level of 206 Springdale Lane, within the explosive range for natural gas, the utility worker displayed no urgency in evacuating the resident and, instead, joked with the resident as they opened windows together inside the home. J. Hughes 25-33.

f) The utility worker permitted the resident of 206 Springdale Lane to activate a dangerous ignition source when he allowed her to drive her car out of her garage. NTSB final report, p. 4.

g) The utility failed to conduct a proper assessment of whether the valve on the street should be shut down instead of performing a squeeze at the leak site. Trimble 28:17-21.

h) The utility did not have sufficient available personnel to respond to the leak:

- an on-call duty operator did not answer repeated phone calls (NTSB final report, p. 3);

- an on-call foreman was advised of the emergency at 11:23 a.m., but was not asked to come to the site until he was called again at 11:52 a.m. (Trimble 19:10-13);

- other employees did not arrive on scene in time to assist (Trimble 20-21); and

- only three employees were working at the site at the time of the explosion at 12:32 p.m., over two hours after the initial leak report and one hour after the leak was classified as an emergency (see Trimble, generally).

i) Because the utility lacked a sufficient number of available personnel to respond to the leak, it apparently did not have the option of both working to close the valve on the street and squeezing off the main at 206 Springdale Lane.

j) The utility failed to establish an isolation area to protect its employees, firefighters, sewer workers, and the public from a potential explosion.

k) Even though the senior supervisor was on the scene at the time the utility worker informed him, about 20 seconds before the explosion, that the gas in volume by air had exceeded the upper explosive limit inside the home at 206 Springdale Lane, the utility did not evacuate its workers and others from the area.

l) As the U.S. Department of Labor found, the utility's procedures failed to provide employees with clear and concise methods to control and render a natural gas leak safe, including insufficient procedures in its Gas Operations Manual with respect to:

- pressurized subsurface gas leaks;
- support to on scene responders with evacuation;
- when to use shut-off valve versus alternate methods when isolating a gas leak or reducing gas volume;
- when to request electrical service be disconnected to an area of an uncontrolled leak; and
- when to evacuate the area when an explosive range is found and there are uncontrolled ignition sources.

It appears that the cause of the accident was the utility's slow, undermanned, and uncoordinated response to the reported gas leak. A probable cause that addresses the probable cause of the accident, not the leak, is needed. Elster Perfection will provide its recommendations for the investigation's findings, probable cause and, if warranted, additional safety recommendations, once it is provided the investigation's factual materials.

V. Unwarranted Safety Recommendations

Safety Recommendations P-18-003 and P-18-004 should be withdrawn. As set forth in the enclosed correspondence, the company has explained why the product's installation

instructions are in the best interests of safety. In this regard, the company would like to make several further points to ensure that its concerns are properly understood.

A. Safety Rec. P-18-003: … "[E]xplain what an installer should sense while using those tools throughout the installation process."

The company's prior response to this portion of the recommendation stated, in part:

> Use of depth tube to verify the proper installation of the cutter sleeve is included in both the previous and current installation instructions. This removes the need for subjective sensory input, such as the torque changes between the punching of the main line, and the installation of the cutter sleeve.

Simply put, if the depth tube is used as instructed, the tee will be installed correctly. Elster Perfection's party coordinator is not aware of any incorrect installations in which the depth tube was used as instructed. Although the safety recommendation is well-intentioned, it would lead to several problems. For example:

- Adding instructions based on subjective sensory input might distract the installer from relying on the depth tube, which is the only objective standard for a proper installation.

- The sensations experienced by installers throughout the installation process might vary based on the tools used, friction level variations, pipe materials, hand and tool positions, and individual physiological variances.

- The July 2, 2017 Safety Recommendation Report states that as of October 2002, personnel installing mechanical tapping tee assemblies are required to "have received qualification training prior to installing a tee assembly." The OQ requirements are further assurance that the contractors will follow the Permalock® tee assembly instructions. (As the attached correspondence noted, the OQ rule was not in effect when the tee was installed.) If the instructions are not followed, then the contents of the instructions will not affect the outcome.

- Lengthier instructions, however, increase the chance that a step will be missed, and might cause installers to increase their reliance on memory or past practices, which is less reliable than following the written instructions.

- The addition of instructions based on sensations might create confusion between reliance on visual cues and reliance on feel.

B. Safety Rec. P-18-4: "Specify in your Permalock mechanical tapping tee assembly installation instructions a not-to-exceed torque limit for Nylon bolts and have that value checked and adjusted with a torque wrench immediately after installation."

Specifying a torque limit is problematic, because it introduces a false scientific certainty that might cause the installer to rely on the torque reading, rather than following the simple existing instructions. The current guidance ensures proper tightness between the tower and the base of the tee assembly by instructing the installer to tighten the bolts until the corners of the tower and base are touching. Also, it is not possible for an installer to accurately measure torque values because of the numerous variables affecting the same, which include:

- Friction level variations due to sand, precipitation, dirt, and other environmental particulates on the pipe
- Temperature / environmental conditions on outside of pipe
- The fact that plastic exhibits a high sensitivity to loading rate
- The speed at which bolts are driven
- Roundness of the main pipe
- Age of main pipe
- Material of main pipe
- Manufactured tolerances of main pipe
- The pitch or angle of the bolt threads
- Corrosion of the metal pipe (corrosion might be on interior pipe surface and not visible to the installer)
- The amount of leak test soap solution or silicone grease applied to the surface of the main and the saddle o-rings prior to installation
- Hand position on the torque wrench
- The type and extent of pipeline coating

The fact that torque readings are variable is evident from the testing performed by the NTSB on a limited number of tees. For example, Table 2 of the NTSB's Materials Lab Factual Report 18-003, inserted below, shows torque readings of properly installed tees that range from 13.6 to 38.8:

1	2	3	4
(Torque values are set forth in following format: Release/Locking.)			
201: 22.3/25.3	29.1/31.8	22.2/29.0	35.5/38.8
202: 20.7/23.8	22.4/27.3	15.1/13.6	24.4/25.7
206 34.9/29.6	Fractured	Fractured	34.7/31.2

Even under controlled laboratory conditions, the locking torque values of three exemplar tee assemblies ranged from 24 to 31 when properly installed, and the release torque values ranged from 22 to 30. *See* NTSB Materials Lab Factual Report 18-004, Table 2. Although the torque values for the exemplar tees were much higher when "moderate torque" was applied, this does not support Safety Recommendation P-18-004, because generating these torque values required ignoring the installation instructions, and continuing to tighten the bolt even after the corners touched. *See* NTSB Materials Lab Factual Report, pp. 2-3.

Creating additional installation instructions to address intentional disregard of the instructions is not helpful, for the obvious reason that the installer has already decided to ignore the instructions. Adding the proposed instructions also might generate confusion for OQ'd installers who follow the current instructions.

Further, even if bolts are over-torqued, there is no evidence that an initial bolting torque affects the long-term performance of the bolts. Over-torqueing would tend to result in the base being stripped out. Instead, it appears the bolts failed in this instance because the sleeve was not engaged in the pipe wall.

The July 2, 2017 Safety Recommendation Report contains other inaccuracies. For example, the report states that:

> In reviewing the written instructions and the instructional video for the tee assembly involved in the accident, the NTSB has found that the different formats provided varying amounts of critical information about the installation process, which likely affected the installation outcomes.

There is no basis for this conclusion. Making such a determination would require a study of how different installation outcomes correlate with the instructions provided. Such a study would likely not be possible, especially considering that the limited number of reported tee failures and investigations have found that poor installation outcomes were achieved by the installer ignoring the installation instructions. The NTSB has not identified a single instance wherein following the installation instructions resulted in an ineffective installation.

Also, the report states that the written installation instructions "do not specify all of the necessary details to properly accomplish the installation and ensure that the locking sleeve attaches to the main." This is demonstrably false. Millions of mechanical tapping tees across the country and the world have been correctly installed. In fact, the NTSB found that the tees that were installed on either side of the tee at 206 Springdale Lane were correctly installed.

Elster Perfection requests an opportunity to meet with the relevant personnel to explain and demonstrate in person why these recommendations are not in the best interests of safety. Also, as discussed above, Elster Perfection requests that the final report be withdrawn, that the factual material promised to it be provided by March 15, and that it be given until April 1, 2019, to provide a party submission.

Sincerely,

[redacted]

Morgan W. Campbell
David Tochen [redacted]

Enclosure

cc: Sharon Bryson (via email)
Kathleen Silbaugh (via email)
Robert Hall (via email)

ATTACHMENT

August 22, 2018

Honeywell

Mr. Robert L. Sumwalt, III
National Transportation Safety Board
490 L'Enfant Plaza E, SW
Washington, D.C. 20594

Via Email to: correspondence@ntsb.gov

Edward Myszka
Vice President & General Manager
Smart Energy
Honeywell International Inc.
1250 W Sam Houston Pkwy S
Houston, TX 77042
United States

[redacted]

Re: Incident # DCA17FP006
Recommendation # P-18-1 through 4
Honeywell Response

Dear Mr. Sumwalt.

Honeywell[1] acknowledges and appreciates the substantial efforts of the National Transportation Safety Board's (the "Board") staff in connection with its response to Incident #DCA17FP006, its investigation of the causes thereof, and its efforts to address and enhance industry safety. Honeywell's Perfection business has supported and cooperated fully with the Board and its staff throughout this process and commits to continue to do so in the future.

In particular, Perfection commits to work collaboratively with the Board and its staff in regards to Recommendations P-18-3 and P-18-4. Our commitment to health, safety and the environment is an integral aspect of our design of products, processes and services. Honeywell's Health, Safety, Environmental, Product Stewardship and Sustainability (HSEPS) Management practices are managed by a global team of trained professionals with extensive knowledge and hundreds of years of collective experience.

We support the spirit behind the recommendations (i.e., improving safety) and include herewith revised installation instructions for Perfection Permalock® tapping tees – we've made enhancements in the interest of continuous improvement and refinement; however, we maintain that our instructions were not and have never been inadequate in any way. Further, we believe it beneficial to offer clarification concerning some of the Board's findings and suggestions.

This letter addresses:

1) Federal Regulations and corresponding installer qualification requirements that have come into existence since the installation of the tees in question
2) The fact that the installer appears to have disregarded the written instructions provided with the tees
3) Specific concerns with respect to Recommendations P-18-3 and P-18-4

Updates to Federal Regulations

As acknowledged by the Board, since the 1998 installation of the tee at issue, new federal regulations concerning operator qualification and training were adopted. The Operator Qualification (OQ) rule was adopted into the Code of Federal Regulations under Subpart N in 49 CFR Part 192 and Subpart G in 49 CFR Part 195. Under the rule, each pipeline operator is responsible for developing an OQ program, following their written OQ plan, establishing a covered task list applicable to their system, and defining the training and qualification requirements for personnel performing covered tasks on their pipeline facility. It is the operator's responsibility to ensure their contractors and vendors comply with their program requirements.

[1] Honeywell International Inc. is the ultimate parent company of Elster American Meter Company LLC. Elster Perfection Corporation was merged into Elster American Meter Company LLC on February 17, 2017. Perfection is a division of Elster American Meter Company LLC. For purposes of clarification, reference herein will be made to "Perfection" as opposed to "Honeywell".

49 CFR Part 192 was passed in 1999 and amended in 2005. The stated objective of this rule was to reduce the risk of accidents on pipeline facilities attributable to human error. It is intended to provide an additional level of safety by requiring operators of pipelines and natural gas distribution systems to develop qualification programs to evaluate an individual's ability to perform covered tasks. The qualification programs should also ensure that personnel can recognize and react to abnormal operating conditions that may occur while performing covered tasks.

As noted in the report, "*... when the tee assembly involved in the accident was installed in 1998, federal regulations concerning operator qualification training standards for installation of tee assemblies did not exist, and UGI did not have a training program for installing them...*" The Operator Qualification rule, designed to reduce casualty incidents, was not in effect when the Permalock® tee was installed.

Disregard of Written Instructions

In 1998, UGI was relying solely on each of its individual installers to follow the written installation instructions shipped with the tee assembly[2]. The report states: "*NTSB examination of the Permalock® tee assembly involved in the accident has revealed that the tee assembly was incorrectly installed. Although the cutter tool pierced a hole in the main, the locking sleeve did not progress down far enough into the tower to form threads in that hole. As a result, the locking sleeve was not attached to the main.*"

In other words, the installer of the tee in question did not follow the written installation instructions, at a minimum Step 6 of the instructions (set forth below) was omitted. The depth tube was not used, and as a result, the steel locking sleeve never engaged the main. This was evidenced by the lack of formed threads through the entire cross-section of the pipe wall. The punched bore through the exhumed pipe was smooth. During a proper installation, the sleeve always produces a double-lead thread form in the pipe wall. The steel locking sleeve is designed to serve as the primary anchor to the main; preventing radial, lateral and rotational movement. If the instructions were followed, and the depth tube utilized, this incident would not have occurred. Written instructions, no matter how detailed or clearly presented, are only useful if the installer follows them.

Specific Concerns with Respect to Recommendations

The recommendations made by the Board were:

1. Update your Permalock® mechanical tapping tee assembly installation instructions to specify the exact tools that should be used during installation and explain what an installer should sense while using those tools throughout the installation process. (P-18-3)

2. Specify in your Permalock® mechanical tapping tee assembly installation instructions a not-to-exceed torque limit for Nylon bolts and have that value checked and adjusted with a torque wrench immediately after installation. (P-18-4)

<u>Prescribing Exact Tool Size</u>

A general description of tool length may provide some benefit. However, using a shorter wrench is subjective rather than objective and does not guarantee or increase the likelihood of a proper installation. Therefore, while we don't think it's necessary, we have added guidance in the updated instructions submitted with this letter.

<u>Installers Should Follow Written Directions and Not Rely on Sense</u>

The use of a depth tube to verify the proper installation of the cutter sleeve is included in both the previous and current installation instructions. This removes the need for subjective sensory input, such as the torque changes between the punching of the main line, and the installation of the cutter sleeve. As mentioned above, the failure of the installer to follow instructions and use the depth tube was the cause of the incorrect installation.

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[2] Also in support of its recommendations, the Board cites commentary made in a 22 year old installation video. The video was not included with the tees in question. It was available upon request. It is unknown if UGI possessed a copy of the video at the time the tee in question was installed. For purposes of this analysis and updates to the written installation instructions, we will not further address this topic at this time.

The installation instructions which were reviewed during this investigation were p/n 37575 revision level F, which was the active revision level at the time of installation. These instructions are currently at revision level R. The modifications that have been made to the installation instructions were either made to offer increased clarity to the end user, or to due to design changes to the Permalock® tapping tee which required clarification of the instructions. The installation instructions (both current and previous revisions) explicitly and objectively state the following:

- Revision F[3], Step 6: Place DEPTH TUBE on top of the CUTTER ASSEMBLY. Thread CUTTER ASSEMBLY downward using a 5/16" hex wrench. Continue threading the CUTTER ASSEMBLY downward until it becomes snug. The DEPTH TUBE will be flush to 1/8" above the top of the TEE TOWER.

- Revision R[4], Step 1: ...NOTE: A blue colored depth tube is required for 1 1/4 IPS main installation, and a white colored depth tube is required for 2-4 IPS main installation. If you do not have the proper color depth tube, DO NOT install the fitting.

- Revision R, Step 6: Place DEPTH TUBE on top of the CUTTER ASSEMBLY. Thread CUTTER ASSEMBLY downward using a 5/16" hex wrench. Continue threading the CUTTER ASSEMBLY downward until it bottoms in the tower. The DEPTH TUBE is a visual guide and will be approximately flush with the top of the Tee Tower when the cutter is engaged.

As demonstrated by the above statements, the instructions at the time of installation explicitly refer to the use of the depth tube to verify correct installation. The only consistent and accurate method of determining proper installation of the cutter sleeve is by use of the depth tube. Accordingly, we do not intend to address a *subjective* "sensing" in updated instructions because the prior and current instructions provide a more reliable *objective* standard and methodology for correct installation.

Torque Values Should Not be Utilized to Install Nylon Bolts

It would not be possible for an installer to accurately measure the torque values requested by the Board. There are numerous variables that could impact torque readings. These variables include, but are not limited to, friction level variations due to sand, precipitation, dirt, and other environmental particulates. Temperature differences will impact torque values. Plastic materials are also visco-elastic; they exhibit a high sensitivity to loading rate. The speed at which the bolts are driven, the roundness of the main pipe, the age of the main pipe, the material of the main pipe, and the manufactured tolerances of the main pipe, will also have an effect on a torque reading. The inclusion of torque values in the instructions would not help assure proper installation and in fact could have a detrimental impact on the installation process.

Similar to the use of a depth tube, the use of an additional visual indicator to determine the proper installation of the four (4) bolts is a significantly more accurate method compared to relying on varying torque rates, in addition to requiring less training and tooling on the part of the end user. The installation instructions (both current and previous revisions) explicitly and objectively state the following:

- Revision F, Step 3: Bolt TEE onto PE main and tighten until the corners touch using a cross over tightening pattern (a gap between the flanges in the locating pin area is acceptable).

- Revision R, Step 3: Bolt TEE onto PE main and tighten until the corners touch using a crossover tightening pattern. The bolts should be flush with the bottom of the base. Do not tighten further (a gap between the flanges in the locating pin area is acceptable).

[3] Installation instructions in effect at the time of the subject installation.

[4] Current installation instructions.

Conclusion

As indicated in the Board's Report dated June 18, 2018, over the past thirty years Perfection has designed, manufactured and sold millions of Permalock® Mechanical Tapping Tees. The Permalock® Mechanical Tapping Tees are designed and manufactured in conformance with 49 CFR 192 and fully meet or exceed ASTM D 2513, F 1924 standards.

We would like to stress once again that the safety of our products is our first and foremost concern. Therefore, we have enhanced the Permalock® installation instructions in the interest of continuous improvement, including utilizing additional visual aids, to support the installation process. A copy of the revised installation instructions is included herewith and we intend to issue the updated instructions in the near future unless we hear from the Board that these updates are inadequate to address the Board's concerns. Should the Board have any questions or comments we are available for discussions at the Board's convenience.

Please direct all future correspondence to my attention. Thank you for your time and consideration

Yours truly,

[redacted]

Edward Myszka
VP & General Manager

Enclosure: Perfection Permalock® Tapping Tee (PMTT) – Installation Instructions

Honeywell
THE POWER OF CONNECTED | Gas Solutions

Perfection Permalock® Tapping Tee (PMTT) - Installation Instructions

1 ¼ IPS to 4 IPS (PE) Main

For Use On Polyethylene Gas Systems Only

WARNING

FAILURE TO INSTALL THIS PRODUCT CORRECTLY IN ACCORDANCE WITH PMTT INSTALLATION INSTRUCTIONS CAN RESULT IN ESCAPING GAS THAT COULD IGNITE.

SERIOUS INJURY, PROPERTY DAMAGE OR DEATH COULD OCCUR.

ONLY PROPERLY TRAINED PERSONNEL SHALL INSTALL THIS PRODUCT.

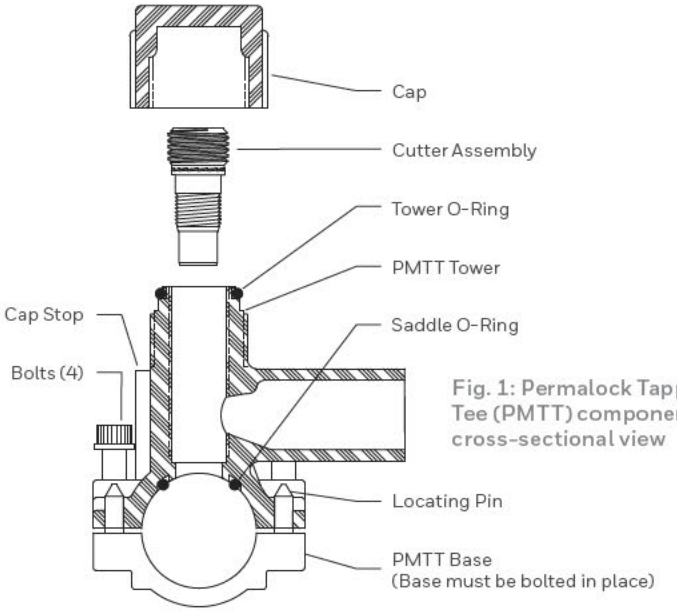

Fig. 1: Permalock Tapping Tee (PMTT) components cross-sectional view

Tools Required for Assembly

Depth Tube (included)
5/16" T-Handle and/or Hex Socket Wrench (wrench handle should be no longer than 12")

Installation Instructions

1. **Assembly Preparation.** Remove Permalock Tapping Tee (PMTT) and Depth Tube from the bag (check PMTT Tower for Tower and Saddle O-Rings).

   NOTE: A blue colored depth tube is required for 1-1/4 IPS (PE) Main installation, and a white colored depth tube is required for 2-4 IPS (PE) Main installation. If you do not have the proper color depth tube, DO NOT install the fitting.

2. **(PE) Main Preparation.** Clean surface of Polyethylene (PE) Main where PMTT is to be installed. Avoid areas that are gouged or damaged. Lubricate Saddle O-Ring and (PE) Main surface with leak test soap solution or silicone grease.

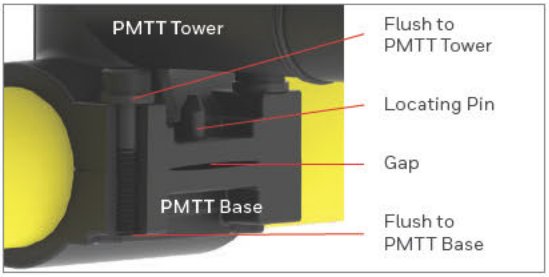

Fig. 2 - PMTT Assembly – Key areas during installation

3. **Assemble onto (PE) Main.** Bolt the PMTT onto the (PE) Main first by hand-threading. Then using a 5/16" hex wrench, tighten the 4 Bolts as follows:

   - Tighten each Bolt in a crossover pattern (see Fig. 3 - Bolt Tightening) until the head of each Bolt makes contact with the PMTT Tower (see Fig. 2 – Flush to PMTT Tower).

     NOTE: It is important to tighten the bolts evenly to not strip the PMTT Base.

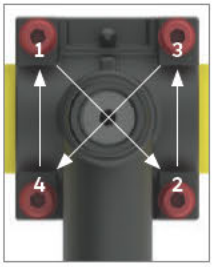

Fig. 3
Bolt tightening crossover pattern

   - When all 4 Bolts have made contact with the PMTT Tower, go back to the first Bolt and tighten the Bolts in the same crossover pattern until the PMTT Tower and PMTT Base are flush. The Bolts should be flush with the bottom of the PMTT Base (see Fig. 2 – Flush to PMTT Base). Do not tighten further, a gap below the locating pin area is acceptable (see Fig. 2 – Locating Pin and Gap)

Installation instructions continued on back

4. **Connect Outlet.** Connect PE service line to the PMTT assembly outlet using the appropriate installation instructions for that joint.

5. **Leak Test.** Test tapping tee/service line assembly in accordance with your company's standard leak test procedures.

6. **Tap the PE Main.** Place Depth Tube on top of the Cutter Assembly. Thread Cutter Assembly downward using a 5/16" hex wrench. Continue threading the Cutter Assembly downward until the Depth Tube is flush with the PMTT Tower, engaging the cutter.

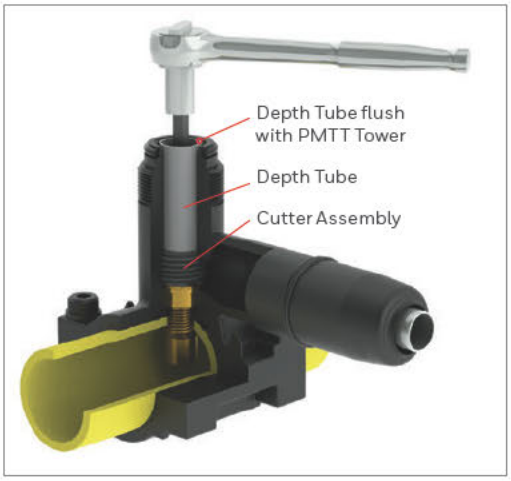

Fig. 4 - Full installation of Cutter Assembly, Cutter Sleeve engaged in (PE) Main, Depth Tube is flush with top of PMTT Tower

7. **Retract Cutter Punch and Remove Depth Tube:** Thread Cutter Assembly upward (counterclockwise) until top of Cutter Assembly is flush with the top of the Tower assembly. Remove and discard the Depth Tube.

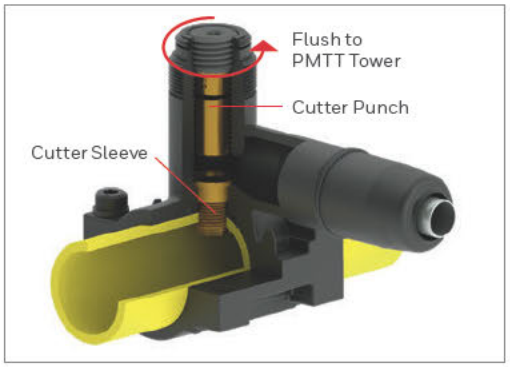

Fig.5 - Service Gasified – Cutter Punch retracted, Cutter Sleeve remains engaged with (PE) Main

8. **Replace PMTT Cap.** Install the PMTT Cap on the PMTT Tower. Hand tighten until the cap contacts the Cap Stop.

Fig. 6 - Completed Installation of Permalock Tapping Tee (PMTT)

End of installation instructions

Contact your Honeywell Sales or Customer Service Representative for additional installation support.

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Honeywell

From:	Sumwalt Robert
To:	MD-3
Subject:	FW: NTSB Final Report on July 2, 2017 Pipeline Accident, Millersville, PA, Accident ID DCA 17FP006
Date:	Thursday, March 7, 2019 7:49:27 PM
Attachments:	7 March 2019 Letter to NTSB.pdf

From: Duda-Compton, Lauren A. <[redacted]> **On Behalf Of** Tochen, David K.
Sent: Thursday, March 7, 2019 10:57 AM
To: Sumwalt Robert <robert.sumwalt@ntsb.gov>; Dalton Sean <sean.dalton@ntsb.gov>; Bryson Sharon <brysons@ntsb.gov>; Silbaugh Kathleen <kathleen.silbaugh@ntsb.gov>; Hall Robert <robert.hall@ntsb.gov>
Subject: NTSB Final Report on July 2, 2017 Pipeline Accident, Millersville, PA, Accident ID DCA 17FP006

Dear NTSB Officials,

Please see the attached letter on behalf of our client, Elster Perfection.

Sincerely,

Morgan Campbell
David Tochen
Lauren A. Duda-Compton
Legal Assistant
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