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PUBLIC SERVICE COMMISSION

August 20, 2012

Mr. Jeff Derouen
Executive Director
Public Service Commission
P O Box 615
Frankfort, KY 40602

Dear Mr. Derouen:

Delta appreciates the opportunity to participate on the Regulation Revision Advisory Board. In July the Commission notified the Advisory Board members the revised regulations had been filed with LRC and further comments could be submitted at a formal hearing on August 27, 2012, which Delta plans to attend. In advance of the hearing, Delta would like to address two additions to the Regulations that it opposes: the requirement to verify meter readings in 807 KAR 5:006, Section 26, and the release of confidential information in 807 KAR 5:001, Section 13.

807 KAR 5:006 Section 26

Delta has been using radio based encoder receiver transmitter technology (ERTs) to read all of its meters for fifteen years. Delta primarily serves rural areas with population density far less than the larger LDCs. Because of the rural nature of its service territory Delta made the investment in mobile meter reading technology to reduce the cost of meter reading. In doing so, Delta has been able to reduce the number field personnel required to read meters and this efficiency has been passed through to customers in the form of reduced rates.

807 KAR 5:006 Section 26 has been revised to include Item 2. which states:

> 2. At intervals not to exceed three (3) years, meters using remote reading technology shall be manually inspected and visually examined for proper working condition and readings verified.

The purpose of Section 26 is to develop requirements to assure safe and adequate operation of a utility's facilities. Delta agrees the additional requirement to visually inspect meters on a periodic basis helps to achieve that goal and can be performed simultaneously in connection with the system-wide

leak surveys Delta performs to comply with DOT inspection regulations. However, the requirement to verify readings does not help to ensure the safety or proper working condition of the utility's facilities.

In previous drafts of the proposed Regulations, Delta twice objected to the inclusion of a requirement to verify meter readings. Delta is uncertain if the inclusion of this requirement is an attempt to improve safety, as is the purpose of Section 26, or if there is concern over the accuracy of the meter reading technology utilized by the natural gas companies.

With respect to safety, it would be logical to assume that by verifying a meter reading you have personnel physically examining a meter to visually inspect the meter to ensure proper safety and working condition of the meter. However, these two tasks are mutually exclusive and often performed by completely different personnel. The personnel qualified to read a meter may not be qualified to inspect for leaks or corrosion and vice versa.

The ERT technology used by Delta has been tested by the manufacturer, Itron, on 3,000 natural gas meters since 1991 and with over 696 million counts on these meters have proven to be accurate 99.999396% of the time (see attached whitepaper from Itron).

The high degree of accuracy is because the mechanics of an ERT made for a natural gas meter is relatively simple. As the gas flows through the meter, the axle drive on the meter rotates the shaft of the ERT thus rotating the drive on the manual index. Upon one full revolution of the shaft, a magnet in the ERT registers a revolution. Most of Delta's residential meters are two-foot meters and therefore one revolution of the ERT equals two cubic feet of gas which is registered in the ERT as well as the manual index since the ERT drives the manual index. During meter reading the mobile collector gathers the readings from the ERT. There are two points of failure for an ERT. Both of these failures are easy to detect and do not impact the accuracy of the customer's bill. Either the battery or circuit board on an ERT can fail or the shaft which rotates the magnet can break. Both of these failures are easily detectable as the mobile collector will not gather a reading, customer usage will be less than historical usage or the reading will be the same as the prior month. Therefore, the ERT either transmits a reading or it does not, there is no room for it to transmit data different than what has registered on the manual index.

From our experience over the past fifteen years the only instance where customers have experienced incorrect consumption registering on an ERT is due to the ERT being programmed incorrectly when initially setup. When initially setup the ERT must be programmed with the beginning reading from the manual index, the foot drive, number of dials and pressure compensating factor (if applicable).

However, if an ERT fails, is misprogrammed or is one of the .0006% which could be inaccurate, Delta has controls in its billing process to identify the problem and ensure the customers consumption is adjusted accordingly (well before it would be required to manually verify the reading every three years). The following are some of Delta's controls surrounding a customer's consumption:

- If the mobile collector failed to get the reading from the ERT, a service call will be generated and the meter will be manually read,

- each month customer usage is reviewed and high and low use based on history will generate a service call to inspect and verify the meter reading and
- during the winter months, customers with zero use will have a service call generated for the meter to be manually read.

In addition to the billing controls which require a manual meter reading, other service calls performed by Delta require a manual meter reading to be obtained. These service orders include meter rotations, customer turn-offs, and customer turn-ons. For the twelve months ended June 30, 2012, we performed 16,825 service calls which required a manual reading and represent 45% of our meters.

In order to manually verify meter reading as part of an inspection, Delta will be required to hire additional personnel to comply with this regulation. Having to manually verify readings will erode the savings that have been realized by Delta's customers over the past fifteen years from the automation of the meter reading process. The customer receives no benefit from the addition of this requirement as the meter reading process uses technology which is 99.99% accurate, meters are randomly tested for accuracy, billing controls identify usage concerns and a significant percent of customers already have their meters manually read through routine service calls. For the foregoing reasons, Delta respectfully requests the Commission to remove the requirement to manually verify meter readings from the proposed regulations. However, if the Commission does not agree with Delta's position, Delta requests the Commission to allow Delta and the other utility companies the opportunity to recover in rates through a rider the increased costs of complying with the revised regulations until its next general rate case.

807 KAR 5:001 Section 13

The Commission proposes to amend 807 KAR 5:001, Section 13, to include subsection 10 (a) which states

> Unless the Commission orders otherwise, confidential treatment shall be afforded to material for no more than two (2) years. At the end of this period, the person who sought confidential treatment for the material shall request that the material continue to be treated as confidential and shall demonstrate that the material still falls within the exclusions from the disclosure requirements set forth in KRS 61.878. Absent any showing, the material shall be placed in the public record without notice to the person who requested the confidential treatment

Delta opposes any change to the regulations where information that has been granted confidential treatment can be automatically made public or the burden of proof to maintain confidentially rests upon the utility. As written, this regulation places a large burden both on the Commission, its staff and the utility to maintain a process to monitor for the expiration of the confidential treatment.

In many instances, the reasons for which confidentiality was granted do not expire. Delta has requested confidential treatment of certain contracts when necessary. Also, within the context of general rate cases, confidential treatment has been sought by Delta, and granted, for items such as income tax returns, five-year capital projections, board minutes and other insider information whose non-

confidential disclosure would risk sensitive information not otherwise required to be made available becoming available to the public. Disclosure by the Commission of information after two years would potentially provide some non-public, material information to the members of the public who might track Commission records closely while such information would remain practically unavailable to many existing and potential investors in Delta common stock who are not aware of such information's public disclosure. Depending on the type of information being made available, this process could present selective disclosure problems for Delta under the securities laws.

Moreover, some information might remain sensitive after two years have expired although not material to members of the public.

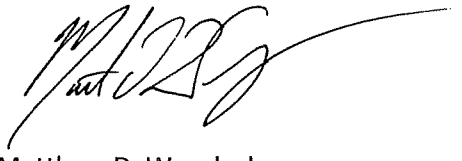
To properly handle delayed release of information determined confidential at the time of submission, utilities would need to expend additional resources to identify on a rolling two-year basis what information was coming available, assess its materiality and impact on its availability and make redundant confidentiality requests.

Additionally, this requirement will certainly have the unintended consequence of creating additional workload for the Commission and its staff. Two years from the effective date of these regulations the Commission will receive its first wave of petitions to maintain confidentiality. With the passage of time, as more requests for confidential treatment are granted, the petitions to maintain confidentiality will increase.

Delta requests the Commission to maintain the confidentiality of information unless specifically petitioned to make the information public and in doing so the burden of proof should rest on the petitioner.

Thank you for the opportunity to submit these written comments on the proposed Regulations. Delta looks forward to providing oral comment at the August 27 hearing.

Sincerely,



Matthew D. Wesolosky
Vice President – Controller

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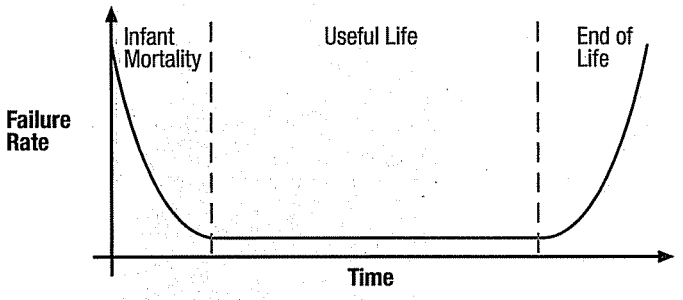
Predicting ERT Module Life

How long does a gas ERT module last? This is a complex question without an easy answer, however life expectancy in an electronic hardware product can be predicted and represented by Mean Time Between Failures (MTBF) -calculated statistically & by analyzing field performance data.

Reasons for Failure

Hardware failures are typically illustrated by a bathtub curve such as the one shown below. The chance of failure is high during the infant life of the module. The failure rate during the rated useful life of the product is fairly low. Once the end of the life is reached, failure rate of modules increases again.



Failures during an ERT module's life can usually be attributed to the following causes:

Design failures

This class of failures takes place due to inherent flaws in an electronic design. In an Itron's gas ERT module, this class of failure is practically non-existent. Itron's enormous field experience of millions of ERTs are a testimony to Itron's efforts to design a truly world class product.

Infant Mortality

This class of failure includes newly manufactured hardware and can be attributed to manufacturing issues. Itron's state of the art manufacturing facilities and its best in the class manufacturing practices helps ensure that any infant mortality failures rarely occur, in our products that are shipped to customers.

Random Failures

Random failures can occur at any point during the life of an ERT module. Redundancy in design and several Accelerated Life Tests (ALT) conducted by Itron's product development group, ensures that these failures are very rare in Itron's Gas ERT modules.

Wear Out

Once an ERT module has reached the end of its useful life, general degradation of components may cause the modules to fail. It is usually prudent, before this stage arrives, to analyze if any maintenance, including changing the battery, would be useful. It is important that this analysis is done before an ERT module reaches this stage so that system and performance degradation are avoided. A comparison of a battery change program vs. an ERT change out program with extended life will determine the best solution from both an operational and a financial standpoint.

Predicting Future Failures

Mean Time Between Failure calculations are done using two different methodologies: statistical and field data.

Statistical MTBF: This is the process used to determine the MTBF of a product based upon its design, choice and behavior of components, their layout, and the design threshold levels. This is achieved by performing a prediction analysis based upon the performance of the product in simulated accelerated test environments and temperature cycling. Itron has one of the best-equipped test facilities in the nation and follows one of the most stringent testing regimens of any industrial electronics designer and manufacturer.

Itron's test facility in Minnesota is a dedicated test laboratory. Design Verification Testing (DVT) is performed on all new products and anytime a significant change is made to the design, materials or manufacturing process of an existing product. Some of the tests performed during DVT assess the product's conformance to customer requirements, design requirements and regulatory agency requirements (UL, ANSI, FCC, etc.). At the same time, the new or significantly changed products are subjected to several types of accelerated life tests. These tests include temperature cycling (with or without added humidity), steady-state elevated temperature and humidity testing, and multivariate, highly accelerated life testing (HALT). Most programs include controlled samples of existing product to verify the validity of the tests.

Itron's Gas ERT modules are designed for a useful life of 20 years. Various DVT ensures that these products meet these criteria.

Statistical MTBF analysis is a useful tool to evaluate whether the product is adequately designed to meet the requisite performance criteria.

Field MTBF. The real proof of reliability is the analysis of field performance data. Field MTBF is the result of determining the reliability of a product based upon its operational performance in the field in real life conditions. Itron has proven track record of exceptional, ever improving high field performance over last two decades. It has a well-established process, designed to collect regular field data and perform regression analysis of the failure data of ERT modules.

As a part of the field MTBF analysis, Itron Quality Assurance in Minnesota analyzes a sample of ERT modules returned under warranty. The analysis of returned modules is used to track and report the annual failure rate of early-life units. Reliability models and predictions are developed from this data. Itron performs complete, root-cause failure analysis of the first thirty (30) units returned from each customer and product combination and 5% of all subsequent returns.

Using these two MTBF methodologies, Itron calculates an expected return estimate for its current Gas ERT modules.

The field data shows that current ERT failure rate continues to be well within 0.5% per year.

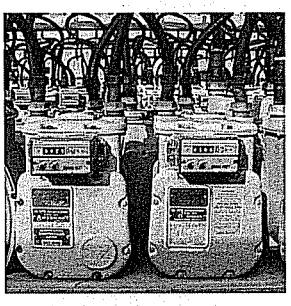
It is clear from this analysis that Itron's Gas ERT modules consistently perform in the field and are designed to work reliably, without failure for years. This is backed up by solid field analysis data.

Ensuring Quality Products

At Itron, statistical & field MTBF analysis is coupled by a strong, in-house, long term continuous product testing in real life conditions.

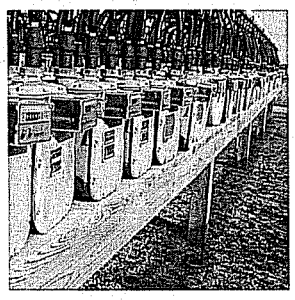
In order to monitor the quality of ERT modules, Itron field-tests endpoints during the product development process and through out the product life .

Outside of Itron's manufacturing facility in Minnesota there is a huge collection of gas meters and other meters that is referred to as the "Meter Farm". The Meter Farm serves a vital testing ground for Itron's ERT Modules. ERT modules are taken off the production line, at a rate of one gas module per shift and one electric module per week, and placed on these meters – exposed to real life conditions.



The meters are then read periodically and the ERTs checked for accuracy, providing a near real-world indication of how they will perform over time. Some of these ERT Modules have been part of these tests since 1991. If an inaccuracy or failure is detected, technicians immediately investigate the cause of the inaccuracy or failure.

Since the introduction of the Meter Farm in August of 1991, 3,005 40G ERTs have been installed and monitored. These 3,005 meter/ERT combinations have accumulated a total usage of over 696 million counts.



The modules were read quarterly, with only 12 units identified as being inaccurate. Inaccurate, for the purpose of this stringent testing, is defined as a discrepancy of 2 or more counts regardless of the total consumption measured by the meter/ERT combination.

The 12 units identified as inaccurate exhibit a total inaccuracy of 4,208 counts (absolute value of deltas), therefore the overall inaccuracy of the AMR test site population is approximately 0.000604%, or approximately 6 counts per million. The demonstrated accuracy of 40G ERTs on the AMR test site can thus be reported as 99.999396%, using the absolute inaccuracy of the entire population

Operational Considerations

Because Itron is able to predict the life of an ERT module with a fairly high degree of accuracy, our customers can make informed operational and financial decisions regarding their AMR system.

Our data indicates that the first generation of ERT modules, the 25G, had a life expectancy (including the life of the battery) of about 9 years. When the first generation 40G was introduced in 1992, it was expected to have a useful life (including the life of the battery) of about 14 years. Our current generation 40G has a predicted life (including the life of the battery) of 17 to 20 years. Of course Itron's reliability data and life expectancy predictions must be balanced with the specific customer environment. Batteries tend to last longer in colder climates; therefore, if ERT modules are deployed in a warmer climate or on an indoor meter, the battery in the module may last at the lower range of the life expectancy range. If ERT modules are deployed in colder regions they are likely to last at the higher end of the range. The important thing is to use Itron's data to develop an operational program that ensures continued high performance of your AMR system. You must consider your individual installed base profile and determine if and when a battery change out program is applicable or an ERT replacement program may be more cost-effective to ensure performance. Itron representatives will be able to help develop a program to meet your needs.

Conclusion

Very few industrial electronic products in the world have a 20 year designed life. To ensure that Itron's ERT modules continue to perform at a reliable rate for their useful life we design, develop, manufacture and monitor our products carefully. In addition, we field test our products and continue to monitor them in real world weather conditions. All of this quality design and testing ensures our customers that they are purchasing quality products that have proven reliability and can be sure that Itron ERT modules and batteries are the most thoroughly tested and durable in the industry. A fact that has been proven through years of field experience, with millions of ERT modules installed in some of the toughest real-world conditions for almost two decades.

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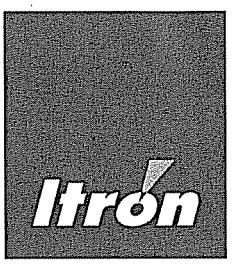


40 Series Gas ERT® Module Replacement

Jonathan Mueller
Itron R&D Engineering Manager

Contents

Introduction

This white paper provides a high level overview of the advantages gained by replacing 40G and 40GB (40 series) gas ERT® modules with 100G Datalogging Fixed Network (DLN) ERT® modules.

About 40 Series ERT Modules

The 40 series gas ERT module was the foundation of the Itron AMR gas solution. A low-power, (less than 1 milliwatt) radio device, the 40 series ERT module provided cost effective RF reads for mobile and handheld meter reading. Originally introduced in 1991 as the 40G, the model evolved over a 20 year lifespan to the 40GB in 2005, and included improvements in battery life and reliability.

When the first generation 40G was introduced, expectations were to have a useful battery life of about 14.6 years. Through Itron's ongoing battery field monitoring program, our initial battery life calculations were shown to be conservative. Battery data, based on ERT performance, is detailed throughout this report.

Itron's reliability data and life expectancy predictions must be balanced with the specific customer environment. Data proves batteries tend to last longer in colder climates. ERT modules deployed in warmer climates or on indoor meters result in battery life lasting to the lower range of the life expectancy range. ERT modules deployed in colder regions result in battery-life lasting to the higher end of the life expectancy range.

Improvements in the 40 series gas ERT include:

- a change from silver to palladium silver circuit traces in 1999 for improved reliability in humid situations.
- the introduction of a mercury-free tilt tamper sensor in 2003.
- progressively increasing battery capacity improvements throughout the 40 series ERT module production history.

Over the life of the 40 series ERT module, one thing did not change; quality. The 40G ERT module began with a total 20 year electronic and mechanical design life.

The 40GB reached end of new sales on December 31, 2011, over 20 years since its introduction. During its long production run, over 29 million 40G series ERTs shipped from the Waseca MN Itron factory.

Itron ERT Module Longevity, a 20-Year Design Life

Itron extensively tests all gas ERT modules for system/RF requirements, firmware processes, and mechanical functionality. All modules boast an accuracy of 99.999 percent with that accuracy maintained over the full environmental operating range of the ERT lasting over the 20-year life of the product. An ERT module reliability plan was developed and executed to support the goal for the gas ERT module failure rate not to exceed .5% per year over 20 years.

To better understand ERT module battery life, Itron completed an extensive amount of analysis. The battery is very important component, but the battery is just one component of an ERT module to consider when the decision is made to extend the 40 series ERT module life by replacing the battery.

The 40 series gas ERT mechanical design was tested for 20 years of operation. Itron is confident that the housing, clear cover, shaft and wriggler will function reliably for the intended period of time (20 years). However, UV exposure, hot and cold temperatures, humidity, and time, all have an impact on the integrity of the mechanical parts. Tests substantiate this in 40 series ERT module accelerated life testing.

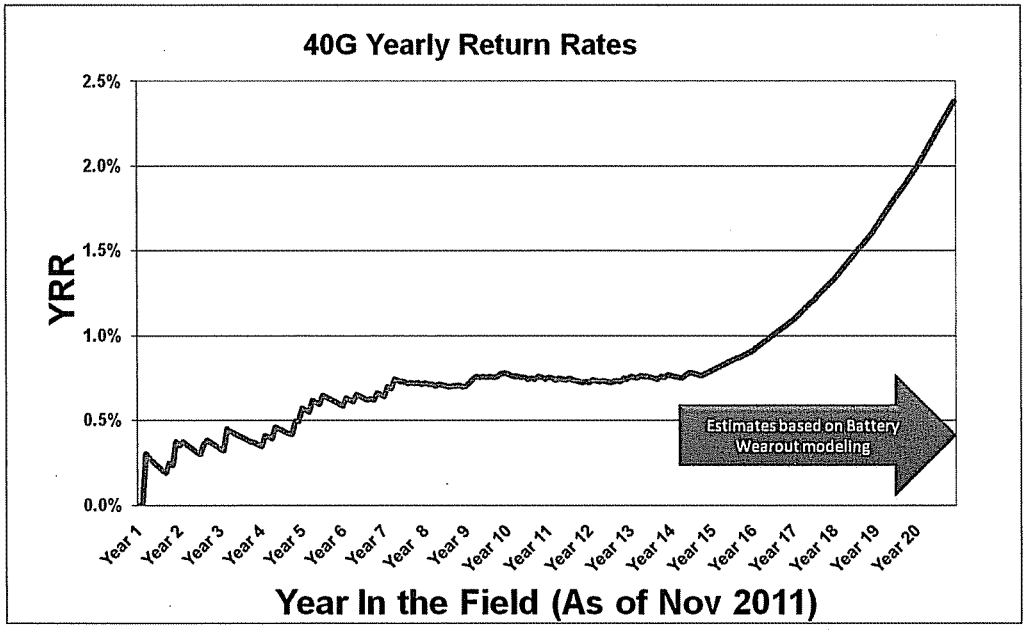
The previously mentioned factors impact other ERT module components:

- Electronic components can begin to leak (consume more electrical current)
- Clear covers can lose transparency.
- Mounting holes in the housing can crack as a result of being under load for many years and exposed to the factors. ERT module removal and re-installation can increase cracking.

The decision to extend the life of the 40 series ERT module should take all factors affecting the product into consideration, not just the life of the battery in the application.

40 Series Reliability Field Data

The 40G gas ERT Yearly Return Rates chart show is a return rate based on an Itron-managed customer population of about 200,000 gas ERT modules. Currently, Itron sees about a 0.8% return rate on the ERT module population. Typically, 25% of the returns are not related to product failure bringing the constant failure rate to about 0.6% per year. Almost all the population is over 12 years old. The projection (over the next few years) is based on what we know about battery failure rates during those periods.



40G/40GB Replacement Drivers

Although the 40 series is considered to be the proverbial workhorse of the AMR world, Itron recommends the utility give consideration to upgrading to the 100G DLN rather than replacing the battery and returning the 40G/GB ERT to field service.

Reasons to consider upgrading include:

- 40Gs manufactured between 1991 and 2003 employ a mercury switch for tilt detection. While the switch contains a miniscule amount of mercury, retirement from the field and proper disposal reduce the chance that mercury could be released into the environment.
- Modules manufactured before 6/24/99 contain silver substrate circuitry on the ceramic printed circuit board which can be susceptible to failure in a hot, humid environment.
- Battery replacement in a 14 year old ERT results in the projected battery life exceeding the 20 year design life of the module's mechanical and electronic components.
- Field replacement of batteries results in the loss of the Class I, Div I ERT module rating.
- A small percentage of reworked ERTs fail when they are returned to service due strictly to handling. This occurs even with new units.

40 series ERT modules are limited to one index read only.

The following table illustrates feature and functionality differences between the 40G, 40GB, and 100G DLN gas ERT modules.

Year Introduced	**1991**	**2005**	**2011**
Feature/Function	**40G**	**40GB**	**100G DLN**
Bubble Up Mode		X	X
Mobile High Power Mode			X
Hard to Read Mode			X
Fixed Network mode		X[1]	X
Datalogging			X
20 Year Nominal Battery Life		X[2]	X[3]
20 Year Design Life	X	X	X
Field Replaceable Battery	X	X	X
Wave Wriggler			X
Overmolded Gasket			X
Mercury-free Tilt Sensor		X[4]	X
Substrate Improvements	X[5]	X	X

X[1] Low Power Limits Network Effectiveness

X[2] Battery Life = 13 Years in Network Mode

X[3] Battery Life = 15 Years in Hard to Read Mode

X[4] Mercury-free Tilt Sensor Introduced in 2003

X[5] Palladium Silver Substituted for Silver Substrate in 1999

Benefits of Replacing 40 Series ERT Modules with 100G DLN ERT Modules

While the 100G DLN maintains the fundamental magnet and reed switch design of the 40 series, the 100G DLN offers more efficient mobile reads and an economical migration path to Fixed Network operations.

Increased transmit power allows a Mobile Collector to skip streets along the route and still maintain a read rate similar to that achieved with the 40 series.

Built-in capability for migration to a Fixed Network system allows deployment of the 100G DLN module in bubble-up mode in a mixed environment with 40G series ERTs. The 100G DLN ERT module can be reconfigured in the future to connect to a Fixed Network system. In a Fixed Network, reads can be requested at the time the module bubbles-up allowing collection of same day and move-in/move-out readings. Network communication reduces the need for truck rolls and provides better customer billing accuracy.

Network connectivity also allows near real-time tamper event reporting from the module. This functionality can help in the effective investigation and reduction of energy diversion.

The 100G DLN has data logging capabilities which allows it to store the most recent 40 days of hourly interval data. This makes the 100G DLN gas modules valuable in providing an additional data source to assist in the investigative process following a major incident. The utility can analyze hourly volume data from the gas module as part of the event origin and cause analysis associated with the incident. 100G Datalogging module data availability has already reduced several utilities' exposure to litigation and liability costs.

From a mechanical perspective, the 100G DLN offers a mechanical, electronic, and battery design-life of 20 years. Other significant mechanical improvements over the 40G ERT include:

- long-lasting molded Santoprene gaskets replace cork gaskets
- improved wriggler design on all residential direct mount ERT modules.

100G DLN deployment does not require an FCC license. The 100G DLN operates in bubble-up mode in the unlicensed ISM band.

Note: As long as 40 series ERTs are being read in any route, the wake-up signal requires an FCC license. In any mixed system (40G series and 100G DLN ERT modules), the utility must keep the required FCC licenses up-to-date.

Summary

Consideration should be given to replacing aging 40 series ERT modules with 100G DLN ERT modules since the latter provides increased functionality which will reduce operating expenses and improve efficiencies. Its datalogging functionality, effectively making it a "black box" for incident investigation, has been used by utilities to reduce the "deep pocket" effect commonly encountered following a natural gas related incident.

Utilities should also follow proactive programs in ERT replacement to assure that sudden decreases in meter reading rates are not experienced and should always keep in mind that the design life of the electronics for all 40 and 100 Series ERT modules is a total of 20 years.

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