MDMS *UPDATE*

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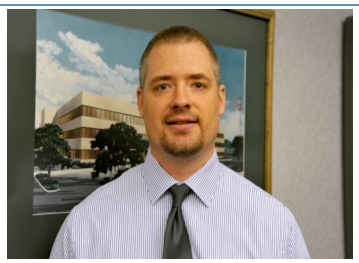
FROM THE PROGRAM MANAGER

By Michael Ott, MDMS Project Manager, USACE—Huntsville Center

Welcome to our April – May 2017 issue of the *MDMS Update*. Our planned implementation of the new database architecture for MDMS was anticipated to begin before the end of March. That has been pushed back to the June-July time frame. It was determined that MDMS was too large and too transactional to be accommodated by a virtual server architecture. DISA now plans to provision a dedicated hardware architecture for hosting the expanded MDMS database. This will ensure that the MDMS will quickly render reports while handling ever increasing amounts of data. The MDMS will continue operating in its current configuration until cut-over to the new architecture in the February–March 2018 time frame. Future improvements to the MDMS await the availability of this new architecture, as we have outgrown the current database structure.

The Army Metering Program continues to focus on improving meter data reliability. Note the article on "Automating Meter Data Validation" that describes the quality control measures used when adding meters to the MDMS. Training is also being emphasized as indicated in the article on the recent Army National Guard I&E Training. Troubleshooting tips are provided when encountering abnormal usage calculations in the Quick Reference Usage Report. See "Troubleshooting Faulty Meter Readings" and "Meter Data Success: Texas Army National Guard." Also, new sites now reporting to MDMS are highlighted on page 4.

As always your input is valuable, and we welcome your feedback at: usarmy.coehuntsville.cehnc.mbx.armymeterhelp@mail.mil



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ARMY NATIONAL GUARD I&E TRAINING REPORT

The General Dynamics Information Technology (GDIT) Team delivered in-person training during the Army National Guard's Installation and Environment (I&E) training session at Camp Robinson, North Little Rock, Arkansas, April 3-5. The training session briefed and demonstrated the MDMS to the approximately 50 Facility/ Energy Managers representing ARNG activities from all over the US.

The two sessions conducted during the week included much dialog and feedback. After a brief overview of the MDMS mission (Prioritize-Validate-Motivate) and the best uses of the MDMS, the GDIT Team discussed some of the challenges associated with meter data reliability. Energy Managers must know how to recognize and deal with the occasional, but inevitable faulty meter data. Demonstration of MDMS by Mr. Christian Robeson, MDMS Systems Analyst, explained the two different methods and metrics used to capture and qualify meter data, i.e., the percent of time capture and the percent of total 15-minute interval data capture. Both metrics serve as indicators of the reliability and completeness of the meter data used to produce an MDMS report. By having these metrics displayed within the report, MDMS users can make informed decisions as to the reliability of the usage calculation or other findings as presented.

A demonstration showing the new and enhanced reporting options within MDMS followed the discussion on meter reliability. Many of those in attendance had not seen the new reports and agreed that the processing speed was much improved. The attendees appreciated the disclosure of contextual information about each metered building, e.g., total SF, year built, etc., revealed by hovering the mouse over a building's bar chart graph.

The demonstration of these reports brought to light an issue: duplicate ARNG building ID numbers. This prevents Facility/Energy Managers from differentiating among their armories and readiness centers within certain MDMS reports. The root cause of this inconvenience is how the real property records for these facilities were entered into the Army Real Property Inventory (RPI). The MDMS imports the building ID number from the RPI which happens to be the same for all Armories and Readiness Centers across each State. There are other differentiating data fields within the RPI such as the building address.
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MDMS UPDATE

TROUBLESHOOTING FAULTY METER READINGS

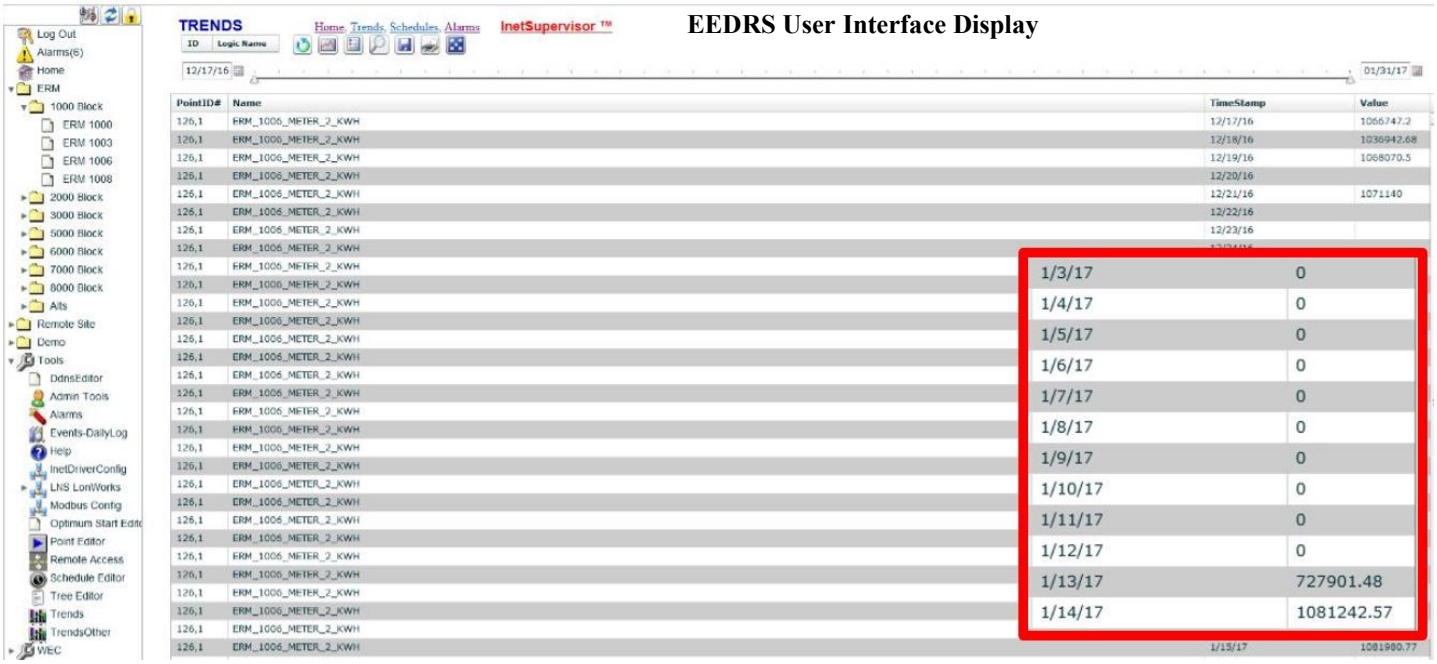
Cynthia Ray, Energy Manager, USACE Engineer Research and Development Center, Vicksburg, Mississippi, reported to the Army Meter Service Desk (AMSD) that the usage stated on the Quick Reference Usage Report (QRUR) within MDMS for January 2017 was over 1,000,000 KWH for a building that consumed only 32,300 KWH the month before.

Further investigation by the AMSD included looking at the raw meter values on the MDMS Meter Data report. This report showed two electric meters connected to this building, with a gas meter and three water meters reporting through pulse kits (confirmed by Ms. Ray). The first meter appears to have accurate readings. Whereas all commodities reporting through the second meter showed a raw meter reading value of "0" for the first 15-minute interval in January, but all started reporting again mid-month. When the QRUR did its calculation of the last meter reading minus the first meter reading of 0, this resulted in over 1,000,000 KWH for January. (See Meter Data Report below)

Meter	Commodity	Timestamp	Initial Raw reading	Last Raw reading	Units
VICK_ERM_1006_METER_1	Electricity	2017-01-03 09:00	205634.00	208716.00	kWh
VICK_ERM_1006_METER_1_GAS1	Gas	2017-01-03 09:15	7919110.00	8031680.00	cf
VICK_ERM_1006_METER_1_WATER1	Potable Water	2017-01-03 09:15	134832.32	139902.22	gal
VICK_ERM_1006_METER_2	Electricity	2017-01-03 09:15	0.00	1106416.00	kWh
VICK_ERM_1006_METER_2_WATER1	Potable Water	2017-01-03 09:15	0.00	396342.42	gal
VICK_ERM_1006_METER_2_WATER2	Potable Water	2017-01-03 09:15	0.00	198530.73	gal
VICK_ERM_1006_METER_2_WATER3	Potable Water	2017-01-03 09:15	0.00	40580.75	gal

During network outages, the EEDRS database typically show null values (blanks) for each affected 15-minute interval. MDMS recognizes meters with null values as being off-line and reports accordingly. So, the perplexing question is what is providing the "0" number in place of the null value for the off-line meter? The AMSD team asked Ms. Ray to check the EEDRS for the raw meter reading and the "0" reading was indeed showing up within the EEDRS. (See EEDRS Interface screenshot below.)

The obvious next question is what is generating the zero? AMSD believes the EEDRS is processing the data correctly from the BPOC(s). Therefore it's not an issue with the EEDRS. Further investigation is underway to determine if the issue is with the individual meter or at the BPOC. More to follow ...



EEDRS User Interface Display

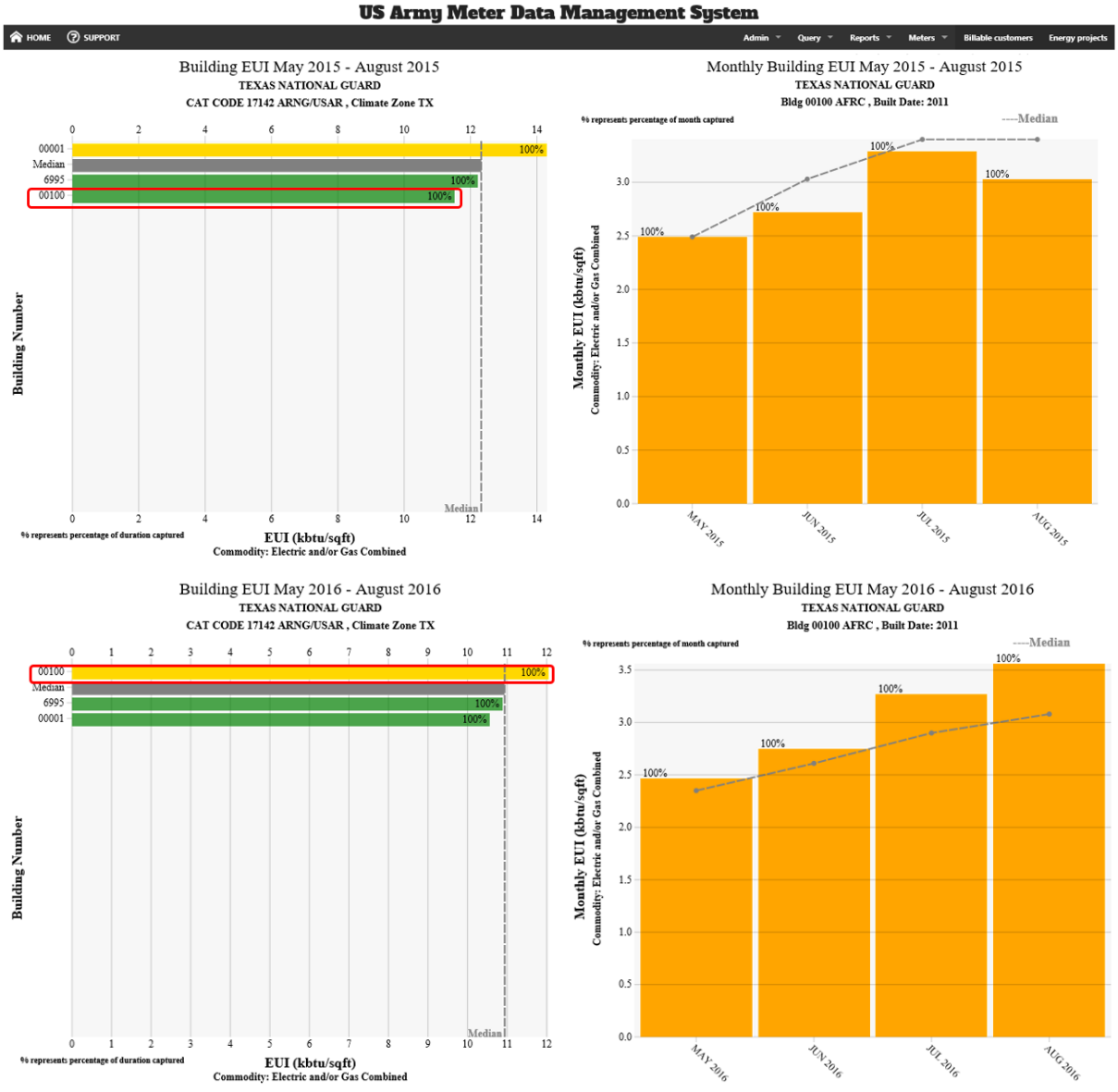
METER DATA SUCCESS: TEXAS ARMY NATIONAL GUARD

During an energy audit exercise, Brian Stevens, director of Energy Programs, Construction and Facilities Management Office, Texas Military Department, Austin, noticed that trending meter data showed an increase in utility consumption by the Armed Forces Readiness Centers during last summer as compared to the previous year's summer months. These are large buildings of 100,000 square feet or more.

Having responsibility for more than 700 facilities, Mr. Stevens uses “Energy Manager Program” software to assist his energy management and utility cost accounting efforts. MDMS allows him to import meter interval data into his tool of choice. Upon further investigation of the MDMS supplied meter interval data, Mr. Stevens could determine that the building's HVAC schedule was not set correctly for its corresponding activities. The data showed that the building was not reverting to an unoccupied state over the non-training weekends and in fact was set to occupied state indefinitely. This meant that the utilities ran fulltime over the weekends, including both the Memorial Day and Fourth of July weekends during that summer.

Mr. Stevens used this data, as well as the billing information, to work with the Facility Managers to not only set the appropriate schedule for the buildings' activities, but also to show them the cost of keeping those buildings on for those unoccupied weekends. Mr. Stevens indicated that he was only able to determine the root cause of the difference by having access to meter interval data.

The below screenshots show what those summer months look like in the MDMS EUI report for summer 2015 and 2016.



AUTOMATING METER DATA VALIDATION

The GDIT MDMS Program Team has been diligently performing data validation of new meters that are added each week to MDMS. Occasionally, meters identified as gas meters are found to report KWH; electric meters reporting gallons, etc., but more than just checking for obvious meter classification errors, meter readings, usage calculations and reported values for power factor, average and peak demand are visually scrutinized for proper ranges and trending. Anomalies are reported to the responsible USACE PM for corrective action. This has been a useful and productive effort that has resolved numerous meter data validity issues.

In version 2 of MDMS, the meter data vetting process will be automated not just for new meters, but will continuously validate all incoming meter data. Suspected faulty data will be flagged and isolated to prevent detected invalid meter data from being incorporated into multiple building usage reports pending review and action by the responsible Energy Manager. For each meter, the indicators for data reliability will be set based upon a comparison of the current and previous meter reading. The calculated interval usage will be flagged with one or more of the following indicators, which will be set to true or false, depending on the results:

- Calculated usage is zero
- Calculated usage is negative (meter roll-over)
- Calculated usage exceeds the spike threshold

In addition, there will be indicators for the following individually reported meter data values set to true or false:

- Power Factor is between 0 and 1 (valid)
- Meter reading is null/blank
- Meter reading is zero

Detection of a meter having the wrong applied multiplier is impractical to automate at this time. This includes detecting a change in the meter multiplier. Knowing the normal monthly usage for a particular building is needed for that task. Please notify the AMSD help desk if you have meters consistently reporting invalid data.

NEW INSTALLATIONS ONLINE

Fort Lee. We now have 120 new meters reporting data to the MDMS Enterprise system—electric, gas and water—from Fort Lee, Virginia. Connection of the meters to MDMS was definitely a team effort. Kudos to all who supported the EEDRS and MDMS gateway integration, with special thanks to Mr. Francis Sullivan, Enterprise Systems Administrator, Network Enterprise Center, Fort Lee, who provided a tremendous level of support and patience to ensure success was achieved. Thanks also to Mr. Jerome Boyd, chief, Network Infrastructure Division, Network Enterprise Center, Fort Lee, for overseeing this effort and making sure the entire effort had the resources it needed.

Fort Riley is now online in MDMS with more meters expected in the coming months. The site worked with the GDIT MDMS team to establish meter names (meter ID stings) that conform to the "MDMS Standard Naming Convention" An example of a proper naming convention is RILEY_BLDG_1234_EM_1. "EM" indicates electric meter; "1" indicates there are at least 2 electric meters installed on Building 1234. Adherence to this standard is crucial for proper meter association with facility data downloaded from the Real Property Inventory. Because of this cooperation, the integration of Ft. Riley's meters into MDMS was seamless. Appreciate the efforts and contributions of Walter Moeller, NEC, and Fred Mundell, JCI.

ARMY NATIONAL GUARD I&E TRAINING REPORT (CONT. FROM PG. 1)

The MDMS team is working on the problem. The interim solution would be to add the building address to the information displayed by mouse hover over each listed Armory or Readiness Center.

The GDIT team found the face-to-face training session with the ARNG to be very effective. There was good engagement from the participants. The GDIT Team gained an appreciation of the needs and challenges facing this community of MDMS users. Also good to finally see the faces of those with whom previous communications had all been via email and telephone.

If your Command has any upcoming training assemblies where it would be beneficial for the MDMS team to provide similar training, please contact the AMSD. We will forward the request to the appropriate POC at the Huntsville Center, Army Corps of Engineers for approval.

Future training webinars via DCS are planned for May, July and September. If you would like to participate but are not a registered MDMS user, log onto mdms.army.mil and click on the link, "MDMS Access Request (CAC Required)." Fill out the short form request and we will take it from there.