



# COMPLIANCE



RULES & REGULATIONS



POLICIES REQUIREMENTS



TRANSPARENCY & STANDARDS



BUSINESS & LAW

## INTEGRITY COMPLIANCE REPORTING

by WILLARD PUFFER, Director of Enterprise Information, Performance Measures and Forecasting @ Binkley & Barfield, Inc.

### Are You Really Ready?

- Has your organization been fined for non-compliance?
- How many fines will it take before your senior management acts?
- How many "accidental" pipe breaks due to digging or failing components will your organization allow before action is taken to change the organizational mind set?
- Will it take a disaster to initiate true proactive risk management?

The network's integrity is compromised by lack of enforced data standards throughout the plan, design, construction, and maintenance stages. "How is that possible," you ask? The devil is truly in the details. Today, most organizations have old paper drawings that represent the network in the field. Yes, some organizations have scanned those old paper drawings. Some organizations have created "GIS" shapefiles to "map" the network utilizing engineering drawings. All these measures fail to address the basics. Paper drawings, PDF representations, GIS shapefiles, and mapping systems in almost every case today fail to address the gap between "believed location and actual field location."

#### What procedure will *really* work to fill in the gaps?

The Pipeline and Hazardous Materials Safety Administration (PHMSA) Form 22 - Knowledge of the System, Question # 2 asks: Does the plan contain procedures to identify additional information that is needed to fill gaps due to missing, inaccurate, or incomplete records (GDIM, RA, GAPS, P)? There is a straight forward best practice procedure available to address this question that covers the 2.8 million miles of existing transmission and distribution pipelines.

Kevin Hecht of Bay City Gas states "The overall visualization procedure allows us to quickly identify the incorrectly located or missing distribution lines and mismatches of pipe lines across gridlines." Kevin Hecht further states "We can easily visualize data as map layers that are needed to better manage the network (examples CP test pits, CP stations, pipe line crossings, railroad crossings, meter locations, header locations, etc.)."

#### FOR NEW TRANSMISSION AND DISTRIBUTION LINES: WHAT IS THE VISUALIZATION PROCEDURE?

True and accurate "As-Built" engineering drawings represent the best source of network location and component bill of materials. The best practice for new transmission and distribution lines should require accurate field As-Built engineering drawings be the source of the "GIS" shapefiles to create maps to accurately show the network. Cloud (Web) Distributed Computer Assisted Drafting (CAD) control set of commands allow for the desired precise bill of materials spatially to be extracted from CAD and shown correctly on a web available map.

Accurate maps displaying network location and component inventory significantly lower the number of unintended damage incidents, allow for effective component recall management and better reporting compliance, and save significant resources and monies. Seeing in a map everyday workflow patterns allows management to make key proactive organizational changes. Risk is thus greatly reduced.



***This visualization procedure allowed for real payback from a dedicated effort. Work crews are where they are needed not looking for records. Answers are minutes away not days away. It's all about payback and reducing risk exposure."***

- Kevin Hecht  
Bay City Gas

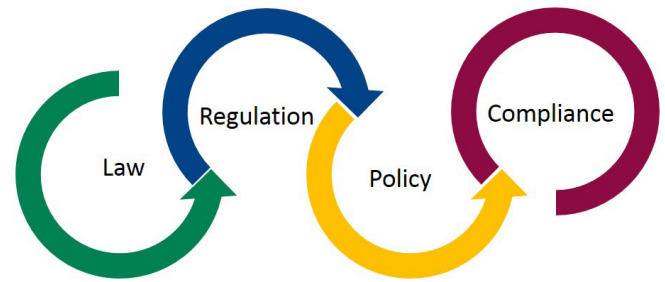


## FOR EXISTING TRANSMISSION AND DISTRIBUTION LINES: WHAT IS THE VISUALIZATION PROCEDURE?

The best procedure to address PHMSA's requirement of filling the gaps due to missing, inaccurate, or incomplete records starts with migrating old paper reference drawings to far more reliable maps. The migration process starts in the engineering drawing process known as Computer Assisted Drawing (CAD). *Figure 1* represents old paper hand drawings 30 years and older.

Most of the existing transmission and distribution network was built at a time that little attention was given to maintaining "true and accurate" field As-Built network drawings. Digital CAD network drawings were often left on discs with no enforced "true" mark-up process strictly followed to insure accurate field location and inventory mapping occurred. The reporting compliance now required simply did not exist when the vast majority of the transmission and distribution network was designed and subsequently built. Today however, exact field location and detailed network knowledge is needed to meet the reporting requirements.

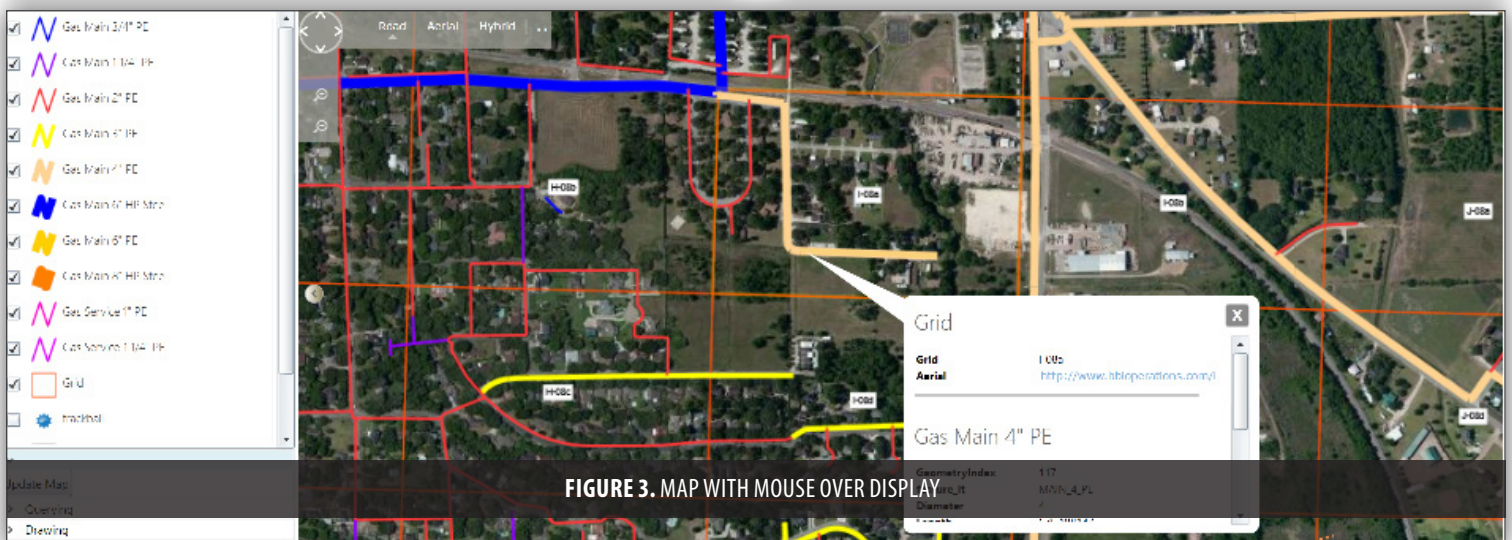
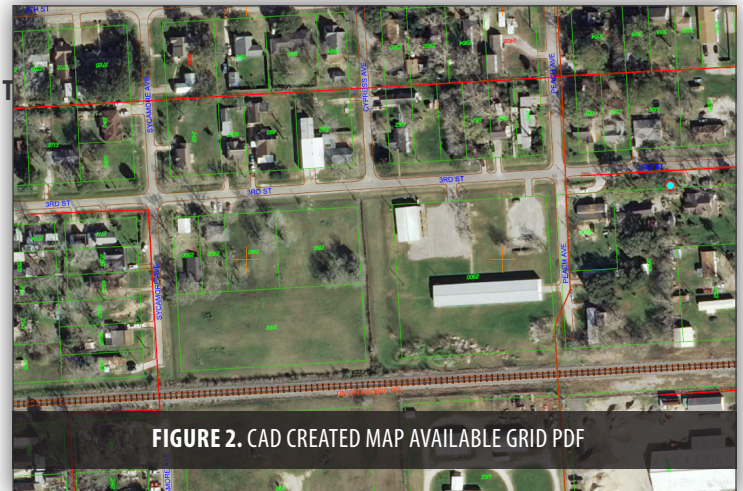
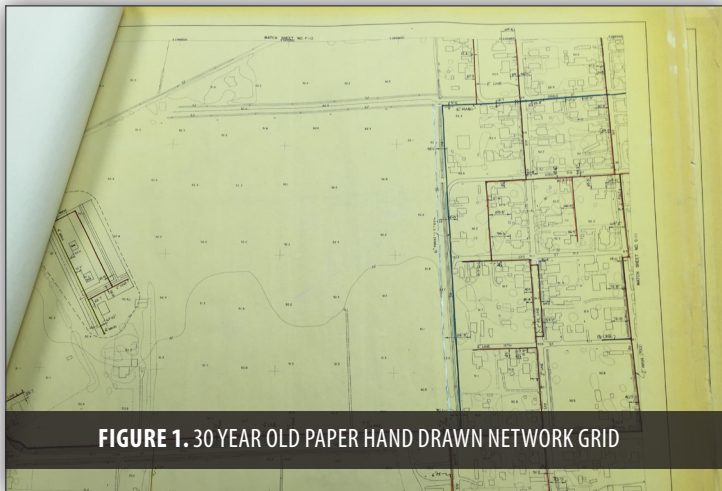
To close the gap between the past and now, a Cloud (Web) based CAD control solution allows the transformation of paper drawings to surface coordinate map compliant representations. The transformation of legacy drawings is a process that fortunately can be focused on the network's most risky portion first. *Figure 2* illustrates the Web available GRID with the aerial that was at one time only



available in paper. *Figure 3* illustrates simple on demand map link access to the GRID PDF created in accordance with the CAD Web distributed standards. The GRID PDF link is displayed in blue letters as seen in the mouse over located in the center of the map in *Figure 3*.

Field crews and supervisors alike can mark-up PDFs to identify network location contradictions. The underlying CAD maps can subsequently be corrected to show the best known field location. Moving toward better network maps is an effective giant first step in bringing the entire organization workflow within a True Risk Management Solution.

*Figure 4* illustrates an easily used map to query updated network location information. One can see a spreadsheet in the lower portion of *Figure 4*. The user can easily export the map query as a spreadsheet for risk evaluation. The map allows access to dashboards that drill deep within the data. *Figure 5* illustrates one such dashboard.





**Field crews and supervisors alike can mark-up PDFs to identify network location contradictions.**

#### PHMSA questions:

1. Do the procedures require a consideration of information gained from past design, operations, and maintenance? (Exactly what information is gained, how, where, by whom, and when?)
2. Does the plan contain procedures that specify the means to collect the additional information needed to fill the gap due to missing, inaccurate, or incomplete records? (What specific means and gaps?)
3. Does the plan list the additional information needed to fill the gaps due to missing, inaccurate, or incomplete records? (In what precise process is the missing, inaccurate, or incomplete records corrected?)
4. Does the plan require the capture and retention of data on any new pipeline installed? (In what precise process is the data captured and retained?)
5. Does the data required for capture and retention include, at a minimum, the location where the new pipeline is installed and the material from which is constructed? (Lot, manufacturer, etc.)
6. Do records demonstrate implementation of the element "Knowledge of the System"?

#### The overall network integrity solution can address these additional questions:

- How will your organization identify threats?
- How will your organization evaluate and rank risk?
- What are the preventive and mitigative actions?
- How is performance measured and effectiveness evaluated?
- What is the periodic evaluation process?
- What is exactly the reporting procedure?
- How are mechanical fitting failures reported?
- What and how are required reports kept?

These questions and more need to be answered within one network integrity platform that spans all the data silos of an organization (design, construction, maintenance, safety, operations, compliance reporting, training, inter-organizational communication, traceability compliance, workflow, transparency, and strategic planning).

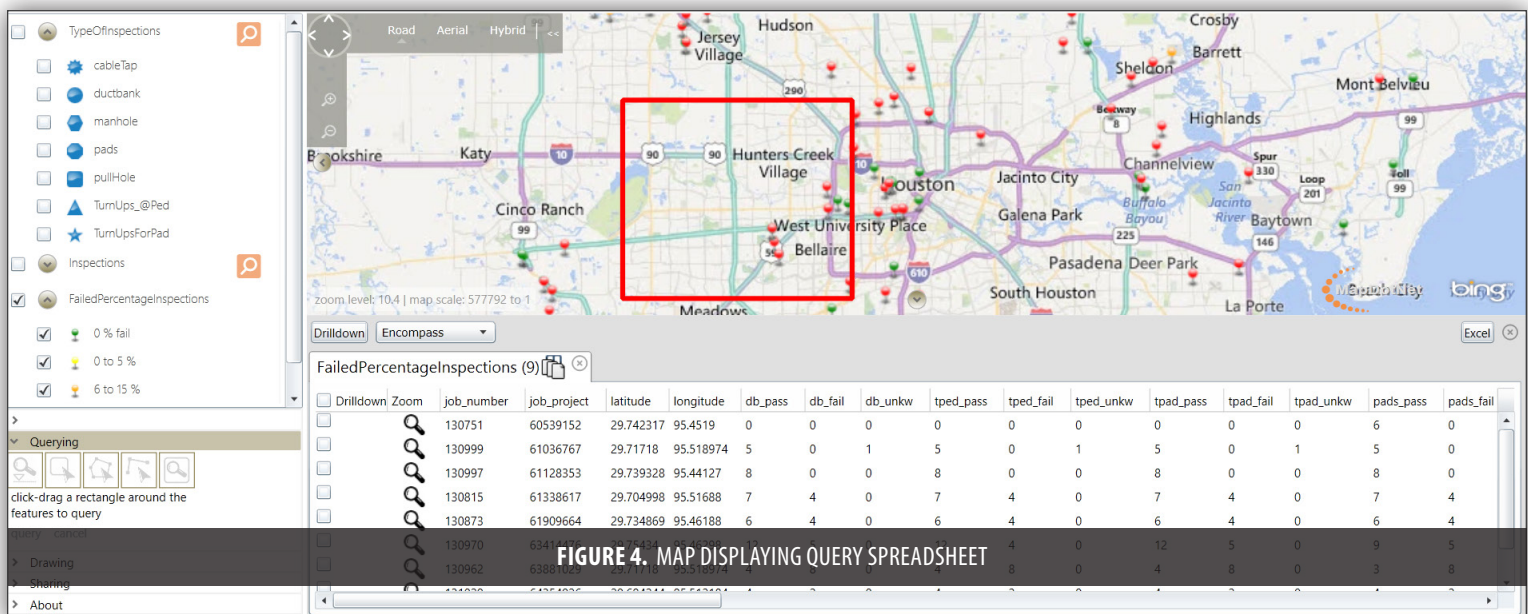


FIGURE 4. MAP DISPLAYING QUERY SPREADSHEET

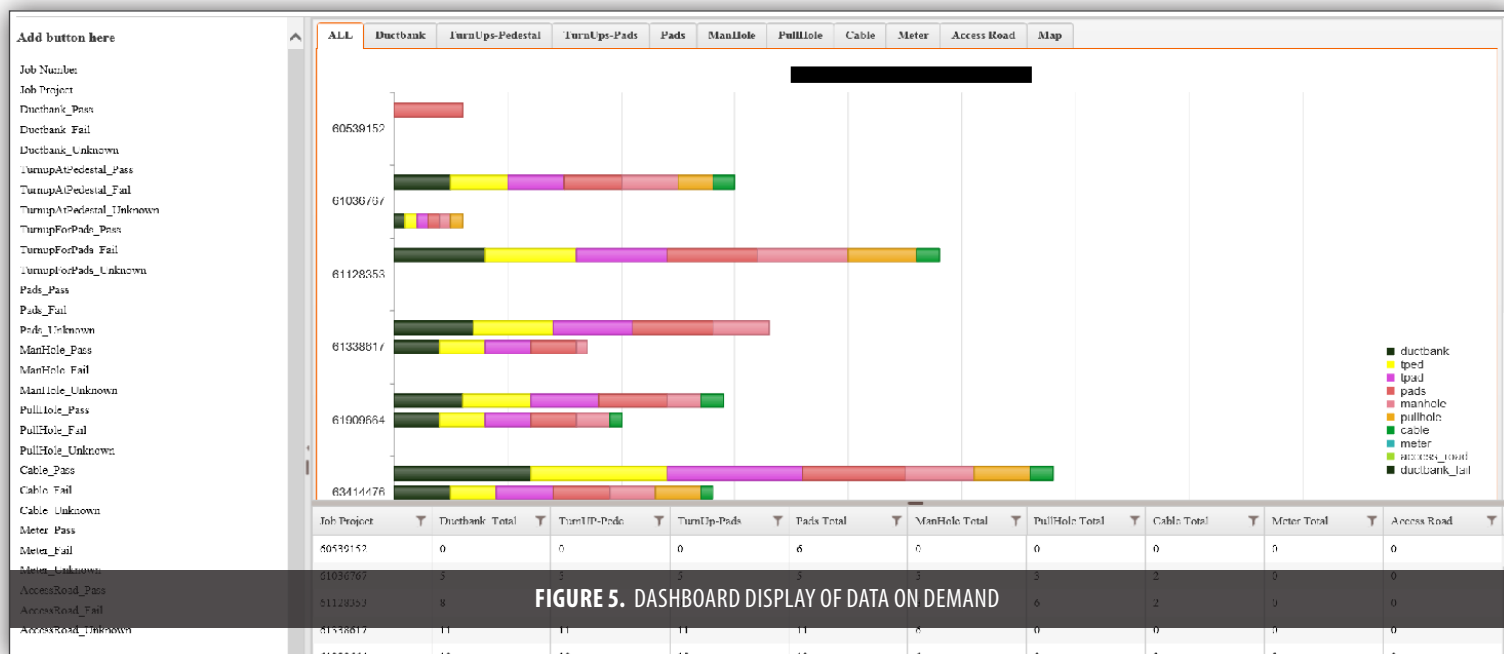


FIGURE 5. DASHBOARD DISPLAY OF DATA ON DEMAND

***This visualization procedure allowed for real payback from a dedicated effort. Work crews are where they are needed not looking for records. Answers are minutes away not days away. It's all about payback and reducing risk exposure.*** - Kevin Hecht, Bay City Gas

Answers to these many questions need to reference exact network locations and impacted components. Additionally, the ability to “chart” historical trends and evaluate scenarios is vital for implementing a “Risk Based Network Solution”.

PHMSA's Form F 7100 Incident Report – Gas Distribution System requires the latitude and longitude of the incident (PART A – 5.f). The form continues on for 17 pages. PHMSA's Form F 7100 Incident Report covers consequence, facility, operational, drug and alcohol, corrosion failure, natural force damage, excavation damage, other outside force damage, pipe, weld, or joint damage, equipment failure, incorrect operation, and other incident causes. **The failure to monitor all the identified by Form F 7100 ahead of any incident will prove costly, very costly.**

Mistakes in reporting, non-reporting, not learning from prior work patterns, and not knowing when the data was really there but not seen will cost. Legal and social costs will mount beyond the repair bill.

#### Kevin Hecht offers these three important observations:

1. “The procedure utilizes off the shelf software we already own.”
2. “The procedure emphasizes integration of current software and work procedures from work orders to billings.”
3. “Network Integrity is all about knowing. The more we visualize, the more we know.”

“Work orders, new construction, change outs, etc... every activity needs to be seen in the map... not lost to a paper file or on a server unseen.” Kevin further emphasizes “This visualization procedure allowed for real payback from a dedicated effort. Work crews are where they are needed not looking for records. Answers are minutes away not days away. It's all about payback and reducing risk exposure.”

**Every Gas Distribution Company should utilize a risk-based map oriented solution that monitors all its workflows to meet the challenges ahead.**



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