Program Overview

Asset Lifecycle Tracking & Traceability

New England Council of Public Utility Commissions
June 9, 2015
By: Paul Armstrong
GTI Overview

ESTABLISHED 1941

> Independent, not-for-profit company established by natural gas industry

> Providing natural gas research, development and technology deployment services to industry and government clients and gas consumers

> Performing contract research, program management, consulting, and training

> Facilities
  – 18 acre laboratory near Chicago
  – 200,000 ft² with 28 labs

> Staff of 250

> Wellhead to the burner tip including energy conversion technologies
Motivation

> Distribution Integrity Regulations
  – System Knowledge
  – Threat Identification
  – Risk Mitigation

> Pipeline Integrity Regulations
  – Traceable, Verifiable and Complete Records

> Industry Standards
  – ASTM F2897

> Technology
  – Mobile GIS, tablets, GPS, barcode scanning, cloud computing
Mobile GIS for Mapping, Tracking & Traceability

> Objectives

- Develop **mobile GIS** technology that creates **digital as-builts** with complete **tracking and traceability** information of pipes, fittings, and fusions

- **Eliminate back-office** post-processing and GIS integration as well as traditional mapping functions

- Utilize recent advances in GIS, tablet computers, high accuracy GPS, barcode scanning, and cloud computing to **improve the quality and efficiency** of data collection
Natural Gas Distribution

> Algorithm and ASTM Standard

- Unique identifier for distribution asset tracking and traceability
- ASTM F2897-11a
- Manufacturer implementation through barcoding
- ~50% vendor compliance

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Purchasing Specification Guidelines

> Purchasing Specification Guidelines for Barcode Marking of PE Gas System Components
  – Marking techniques (ink, labels, tags, etc)
  – Marking format (1-D, 2-D)
  – Readability (barcode and alphanumeric code)
  – Durability
  – Placement (longitudinal and circumferential spacing)
  – Quality control

> Developed by a working group of manufacturers and utility companies
Mobile GIS Technology

Technology for tracking and traceability with ASTM F2897:

- Tablet with mobile GIS data collection software
- High accuracy GPS receiver
- Barcode scanner
- Application to convert barcodes into asset attributes to auto populate the GIS
- Disconnected editing capability
- Fusion tracking and traceability
High Accuracy GPS

> Integrated external high accuracy GPS receivers with tablet computers
  - Sub-foot quality data in real time
  - Various correction techniques (satellite, internet, RTK)
  - GPS hardware agnostic (Trimble, Navcom, Geneq . . . )
GTI’s Fusion Traceability Technology

- Captures operational information for QA/QC
  - Fusion operator and OQ status
  - Interfacial pressure, heat plate temperature, soak time, other essential parameters
- Integrates with automated machines to extract select fusion parameter data via Bluetooth
- Manual data entry when necessary
- Converts parameter data into a barcode
- Print barcode label with 50 year life
- Data archived in GIS along with field label
Asset Lifecycle Tracking & Traceability

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<th>Information</th>
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Create GIS Features in the Field

Post to Enterprise GIS

Integrate Data into GIS System of Record
Value

> Enables component level traceability with high accuracy GPS to locate specific fittings (manufacturer & lot #)

> Captures critical fusion parameters

> Captures pictures and other relevant installation data for complex configurations

> Streamlines operations
  – Gets data back into the GIS in real-time to eliminate mapping backlogs
  – Eliminates GPS post-processing

> Enables regulatory compliance
  – “Know Your System”
  – Traceable, Verifiable, Complete Records
Supporting Implementation

- GTI spinout, LocusView Solutions, created to provide implementation services for advanced geospatial technologies
- Provides field tested, customer validated, commercial products
- Turn-key implementation services including hardware, software, hosting, training, and IT support
Implementation Path

> Pilot projects and production implementations ongoing …
GTI is a company that solves important energy challenges, a company that truly has…

Contact information

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…“the Energy to Lead”