CNG Fueling: Getting into the Game

Who are We?
- Principal of Marcel Moreau Associates
- BA Geology
- MS Oceanography
- 31 years in petroleum storage systems
- CNG for 2 years – Consultant for RP1500

Marcel Moreau

Who are We?
- VP Commercial Sales
- BS in Business
- 33 years in petroleum
- Some CNG in mid-90s
- CNG for last 4 years

Steve Bernstein

Who are We?
- CNG Engineer
- BS Electrical Engineering
- MS Business Administration
- CNG full time for 6 yrs

Eric Beavers

Who Are We?
- President & Founder of TGT
- Electronics degree
- Helped write ANSI/NGV codes for fueling equipment
- Gas station electrical contractor 30 yrs
- CNG for 25 years

Tom Sewell

A Few Words About RP 1500...
Target audiences:
- PEI distributors
- Owner operators
- Regulators

PEI RP 1500 Design, Installation, Operation and Maintenance of Compressed Natural Gas Vehicle-Fueling Facilities
A Few Words About RP 1500...

• Unlike other PEI RPs, written for the novice
• Assumes no prior knowledge of CNG

A Few Words About RP 1500...

Level of Effort:
• 14 members of Committee + 3 PEI staff + 1 Consultant
• 12.5 days of Committee meetings
• 111 pages
• 88 Drawings/Photos

A Small Sample of Contents...

Chapter 2: Definitions
• 108 definitions
• From anodeless riser through molecular sieve to X-purge

Chapter 4:
How a Vehicle is Filled with CNG
• GGE, DGE
• How fuel flows in CNG fueling system
• Time-fill, buffer fill, fast fill
• What is a “full fill”

Chapter 5:
Components of a CNG Fuel System
• From the meter set assembly to the nozzle
**Chapter 6: PLCs, Sensors, Flow Control & Flow Measurement**

- Pressure, temperature, methane, vibration sensors
- Remote & manual valves
- Pressure control
- Coriolis meters

**Chapter 12: Connecting the Components**

- Pipe, tube, hose
- Welding, flanges, nut and ferrule, O-ring face seal, SAE, NPT

**Chapter 15: Operation**

- Predictive, preventive, reactive maintenance
- Daily walk through
- Weekly tasks
- Monthly inspection

**If You Study RP 1500...**

You will be able to intelligently talk about CNG with:

- Engineers
- Equipment manufacturers
- Regulators
- Owners

**Even If You Study RP 1500...**

You will NOT instantly become a competent CNG installation and service contractor

**So When Can I Buy It?**

- Early in 2015
- Will be available in both hard copy and electronic pdf
SHOULD YOU EMBRACE CNG TECHNOLOGY?

About Jones & Frank

- Our market is the Atlantic Seaboard and Mid-West
- We provide distribution, service and also installation in select markets

Our History with CNG

- First involvement was early 1990's
- CNG was not successful in gaining traction in the market
- We exited – CNG work was no longer a significant part of operations

Today

- About 4 years ago, we re-entered the market
- Have built dozens of systems of various sizes, from small appliance & time-fill systems ...

...to large fast fill systems
Why Today?

• Cost of fuel is a big “driver” in the transportation sector
• CNG has a big cost advantage over liquid fuels

The Market Today

• Potential CNG owners need education:
  ▪ to understand what they are getting into
  ▪ to manage their expectations to avoid dissatisfaction

The Market Today

Our value proposition in today’s market basket of goods is as a turnkey provider offering ongoing service

The Market Today

• CNG is currently a small market
• Sales channels are not traditional PEI channels
• Competitors are not traditional competitors

The Market Today

• Margins are thin but we see potential for improvement over time
• CNG revenue at present is very small relative to liquid fuels

The Market Today

CNG is NOT easy money!
The Market Today

Our current success in winning projects due to:
- dedicating resources

Our current success in winning projects due to:
- identifying opportunities

The Market Today

Our current success in winning projects due to:
- providing solutions to CNG buyers

This has required a significant investment in people

The Question

SO, SHOULD YOU EMBRACE CNG TECHNOLOGY?
If you’re thinking YES, then...

Advice to Get in CNG Market

Buy PEI RP 1500 and study it!
- studying RP 1500 Will allow you to talk intelligently with CNG engineers, manufacturers, code officials and owners
Advice to Get in CNG Market

CNG is a BIG investment!

Advice to Get in CNG Market

Top-down commitment is required

Advice to Get in CNG Market

• Identify skill sets required...
• ...and people who can learn them

Advice to Get in CNG Market

• Workers must embrace new technology...
• ...and there's lots of new technology to learn!

Advice to Get in CNG Market

NEEDED!!

ALL-IN-ONE:
Mechanical-Electrical-Electronics Technicians

Advice to Get in CNG Market

• Expect significant training/education costs
• Be prepared to invest in specialty tools & equipment
Advice to Get in CNG Market

• Training Resources:
  • Trade Organizations
  • Equipment Manufacturers
  • Peer Mentoring
  • Job Shadowing

• It's a Continuous Process

Advice to Get in CNG Market

• Get over the “Sticker Shock”
  • Our training investment in past 2 years is close to six figures...
  • ...And still going up

Advice to Get in CNG Market

• Expect a slower ROI than liquid fuel
• CNG station development likely to be slow
• Geographically dispersed customer base dilutes ROI

The Question

SO, IF YOU DECIDE TO EMBRACE CNG TECHNOLOGY.....

The Answer

...BE PREPARED TO GO “ALL IN”!

THANK YOU!
Steve Bernstein
Jones & Frank
Background
- Family owned and operated for 3 generations
- Established in 1963
  - 51 years in petroleum
  - 26 years in CNG

Service Area
- Offering high quality installation and service in the North East
- Main office in Horseheads, NY

Our Intro to CNG
- 1988 - Binghamton and Horseheads locations

Our Intro to CNG
- Blanket contractor for NYS Electric & Gas

Our Intro to CNG
- Led to 35+ small to medium stations for NYS DOT
Our Intro to CNG

- 80+ major builds to date

Initially Hired on Basis of:

- Plumbing, mechanical and electrical experience

Initially Hired on Basis of:

- Understanding of underground conduit and piping installation

Initially Hired on Basis of:

- Willingness to work with utilities and learn codes from them

Current Fuel System Offerings

- Sizing
- Design/ Layout
- Full in-house construction
- Maintenance contracts
- Call out service

Outlook

- Ratio of liquid fuel to CNG work:
  - CNG was 15-20%
CNG Fueling – Getting into the Game

**Outlook**
- Ratio of liquid fuel to CNG work:
  - CNG was 15-20%
  - Over last 5 years CNG has increased to 90%

**Getting Started**
- Learn what it is you are getting into
  - Learn codes & work with code officials
  - Get training
  - Start small - Don’t get in over your head!

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**Past**
- CNG: 15%
- Petroleum: 85%

**Present**
- CNG: 90%
- Petroleum: 10%
Build on Your Experience

- Petroleum contracting
- Electrical
- Mechanical

Build on Your Experience

- Petroleum contracting
  - Site layout/ Traffic flow

Build on Your Experience

- Petroleum contracting
  - Site layout/ Traffic flow
  - Pouring concrete

Build on Your Experience

- Petroleum contracting
  - Site layout/ Traffic flow
  - Pouring concrete
  - Trenching

Build on Your Experience

- Electrical
Build on Your Experience

- **Electrical**
  - Running conduit

Build on Your Experience

- **Electrical**
  - Running conduit
  - Planning wiring layouts

Build on Your Experience

- **Electrical**
  - Running conduit
  - Planning wiring layouts
  - Safety around live circuits

Build on Your Experience

- **Mechanical**
  - Plumbing

Build on Your Experience

- **Mechanical**
  - Plumbing
  - Welding
**Build on Your Experience**
- Mechanical
  - Plumbing
  - Welding
  - Bending tube

**Gaining Projects**
- Bid and spec work
- Experienced customer
- Same engineers
- Team up
Gaining Projects
- Experienced customer
  - Multiple stations

Gaining Projects
- Experienced customer
  - Multiple stations
  - Already have a consultant

Gaining Projects
- Experienced customer
  - Multiple stations
  - Already have a consultant
  - Learn from their experience

Gaining Projects
- Develop customer and project
  - Most difficult

Gaining Projects
- Develop customer and project
  - Most difficult
  - Cover all aspects of transition
Gaining Projects
- Develop customer and project
  - Most difficult
  - Cover all aspects of transition
  - Play to your strengths

Gaining Experience
- Team with experience and learn from them

- Build a relationship with manufacturers

Gaining Experience
- Team with experience and learn from them
- Build a relationship with manufacturers
- Stay current

Gaining Experience
- Team with experience and learn from them
- Build a relationship with manufacturers

We learn something from every project

Thank You
For Your Attention
CNG Fueling – Getting into the Game

Tulsa Gas Technologies, Inc. (TGT)

TULSA, OKLAHOMA USA

TGT Background

- Involved in CNG fueling since 1989
- 500 facilities in US; 200 international

TGT Background

- Manufacturer of CNG dispensers (400 per year)
- Station integrator – helps select CNG equipment, perform CNG specific tasks

TGT Role in CNG Facility Construction

- Owner of three retail stations
- 20 rental compressors
- Total throughput of 1 million gallons/year

TGT Works Closely with a General Contractor (GC) to Build CNG Facilities

TGT Role in CNG Facility Construction

Set and anchor heavy equipment:
- compressors
- storage vessels
- dryers
TGT Role in CNG Facility Construction

- Secure materials
- Install CNG tubing
- Test for integrity
- Test for tightness

TGT Role in CNG Facility Construction

Provide and install communication software (CNG compressor, POS system, remote monitoring (SCADA))

TGT Role in CNG Facility Construction

Make or supervise all final connections (natural gas, electrical, mechanical)

TGT Role in CNG Facility Construction

When requested, train GC employees in CNG-specific tasks

GC Role in CNG Facility Construction

Pull permits

GC Role in CNG Facility Construction

Site preparation
GC Role in CNG Facility Construction

- **Trenching**

GC Role in CNG Facility Construction

- **Foundations and concrete work**

GC Role in CNG Facility Construction

- **Buildings & canopies**

GC Role in CNG Facility Construction

- **Provide electrical and plumbing contractor**

GC Role in CNG Facility Construction

- **Onsite supervision and coordination of construction activities**

GC Role in CNG Facility Construction

- **Integrate CNG with existing liquid fuel equipment**
How TGT Selects GC

Willingness to learn how to put CNG together

How TGT Selects GC

Familiarity with liquid fueling stations (piping, dispensers, canopies, driveways, etc.)

How TGT Selects GC

Familiarity with control systems (card readers, POS systems, backroom control boxes)

How TGT Selects GC

Familiarity with applicable codes (NFPA 30A, NFPA 52)

PEI Distributors Are Attractive GCs

Have relevant experience building fueling facilities
PEI Distributors Are Attractive GCs

Have relationship with fire marshal (crucial!)

PEI Distributors Are Attractive GCs

Are familiar with fire codes

PEI Distributors Are Attractive GCs

Have qualified service personnel who already maintain liquid-fueling facilities

PEI Distributors Are Attractive GCs

Have extensive experience with liquid vehicle-fueling technologies

PEI Distributors Are Attractive GCs

Are comfortable working with hazardous materials

PEI Distributors Are Attractive GCs

Have relationships with other customers who may have an interest in CNG fueling
PEI Distributors Must Learn

How to work with high pressure tubing

PEI Distributors Must Learn

• How to set heavy equipment

45,000 pounds

PEI Distributors Must Learn

• NFPA 52 inside and out
  (also IFC in some locations)

PEI Distributors Must Learn

• How to work with natural gas utilities

PEI Distributors Must Learn

How to work with electrical utilities

The basics of CNG fueling equipment (RP 1500 is a great start)
PEI Distributors Must Also

Build relationships with CNG equipment companies

PEI Distributors Must Also

Tell their insurance companies what they’re doing

Where the $$$$$ is in CNG

It’s not just construction…

Where the $$$$$ is in CNG

The real money is in service
- Service for 20 to 30 years (weekly or monthly service calls)

Where the $$$$$ is in CNG

The real money is in service
- Compressor oil is $11-18 a quart

Where the $$$$$ is in CNG

The real money is in service
- Dryers need regeneration annually
Where the $$$$$ is in CNG
The real money is in service
• Pressure-relief valves must be recertified every 3 years

Where the $$$$$ is in CNG
The real money is in service
• Filter replacement yearly

Where the $$$$$ is in CNG
The real money is in service
• Compressors need ongoing monitoring and maintenance

BUT...
Service calls require LOTS of equipment specific mechanical, electrical and electronic training

Tulsa Gas Technologies, Inc.
Thank You!
Tom Sewell
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www.tulsagastech.com

More Questions?
Come to our one-on-one session this noon!
Noon - Aisle #7100