

# **PE Fusion Accountability**

**Continue on the  
same Path?**



**Change Direction?**



## **Continue on the same Path?**

- Worked for many years
- Comfortable practice
- Procedures are written
- It Works





# Change Direction?

- Additional Joint Info
- Lower Costs
- Higher level of Success
- Instant QC





**What are we currently  
doing?**

# Procedures and Standards



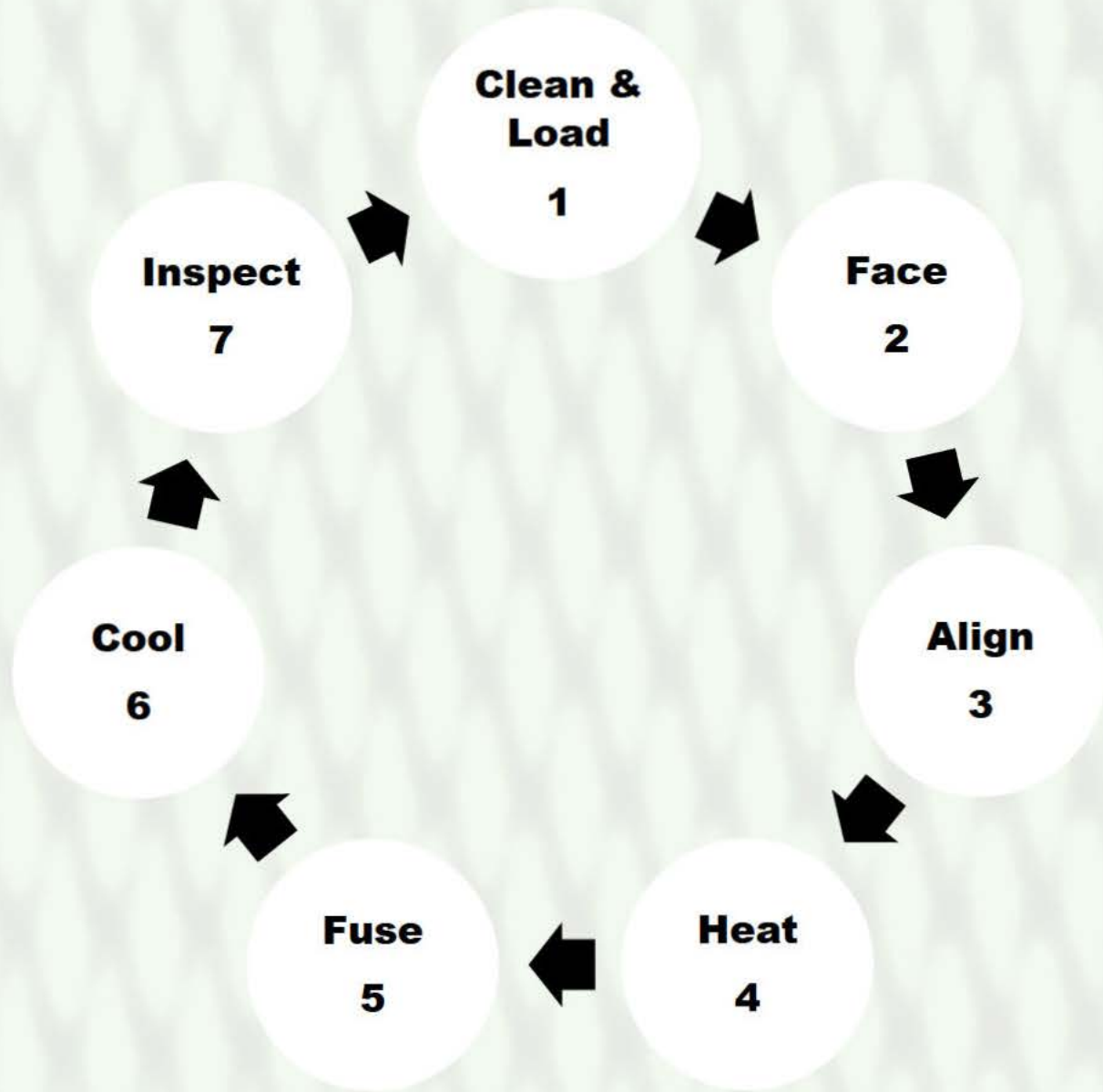


**TR-33**



**F2620**

Standard Procedures for Butt Fusion Joining of  
Polyethylene Pipe





## **Inspect The Joint**



## **Inspect The Joint**



## **Test The Joint**



**The Current way of doing  
things!**



**The Newest way of doing  
things!**

# Qualified Fusion Joint



**Qualified Procedure**



**Qualified Operator**



**Qualified Equipment**



**Quality Control**

## **Qualified Procedure**



**TR-33**



**F2620**

Standard Procedures for Butt Fusion Joining of  
Polyethylene Pipe

# Qualified Procedure

## Industry Standards Established

- Temperature
- Pressure
- Heat Soak Time
- Cool Time



# Qualified Operator

## Certified Training Program

- Test based
- Time based
- Proven

# Qualified Equipment

## Fusion Machines

- Built to meet a standard
- Ability to adapt
- Service and support

## **Test The Joint**



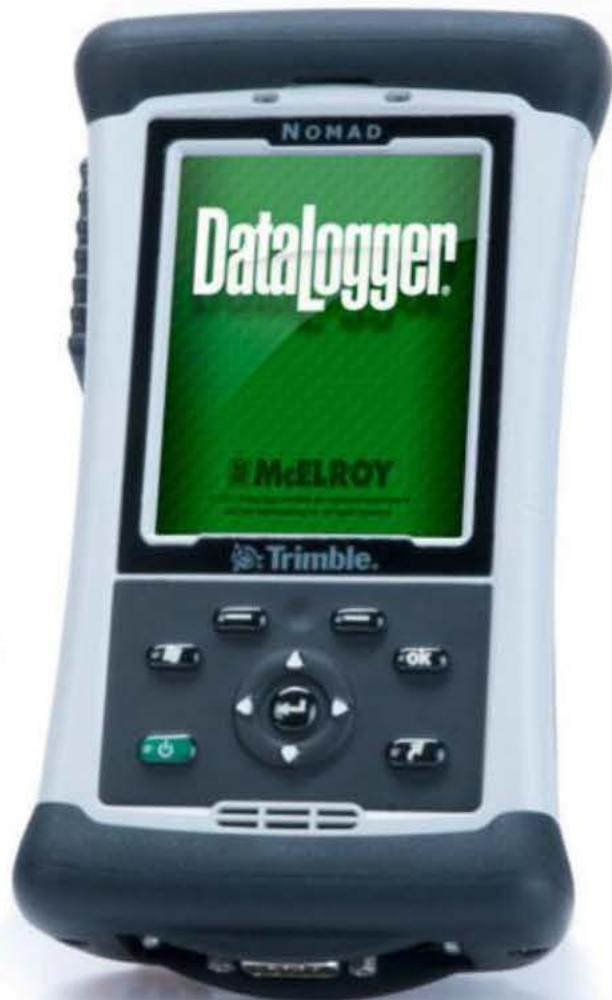
**Quality Control**

**Can we have assurance  
without destructive testing!**

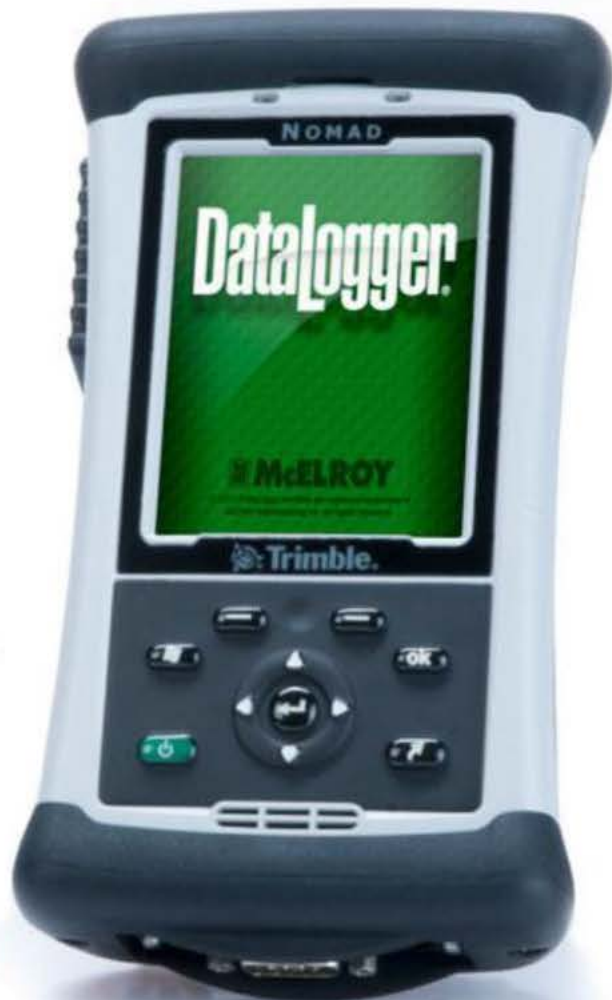


# Data Collection



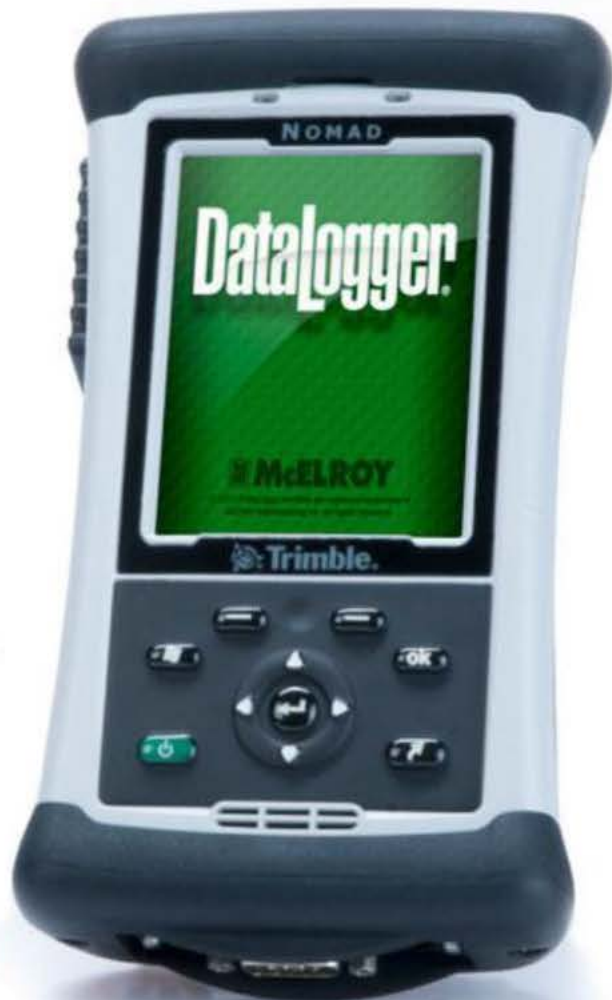


- Multiple fusion standards support
- Butt fusion, sidewall fusion & dual containment fusion
- On-screen coaching



- GPS receiver
- Bar code laser scanner
- 5mp camera with geo-tagging
- Wireless data support via Wi-Fi &/or Cellular Network





- FusionGuide™ visual graph interpretation
- Up to 3000 PSI
- Multilingual support
- Use your own pyrometer

**JOB EFFICIENCY**

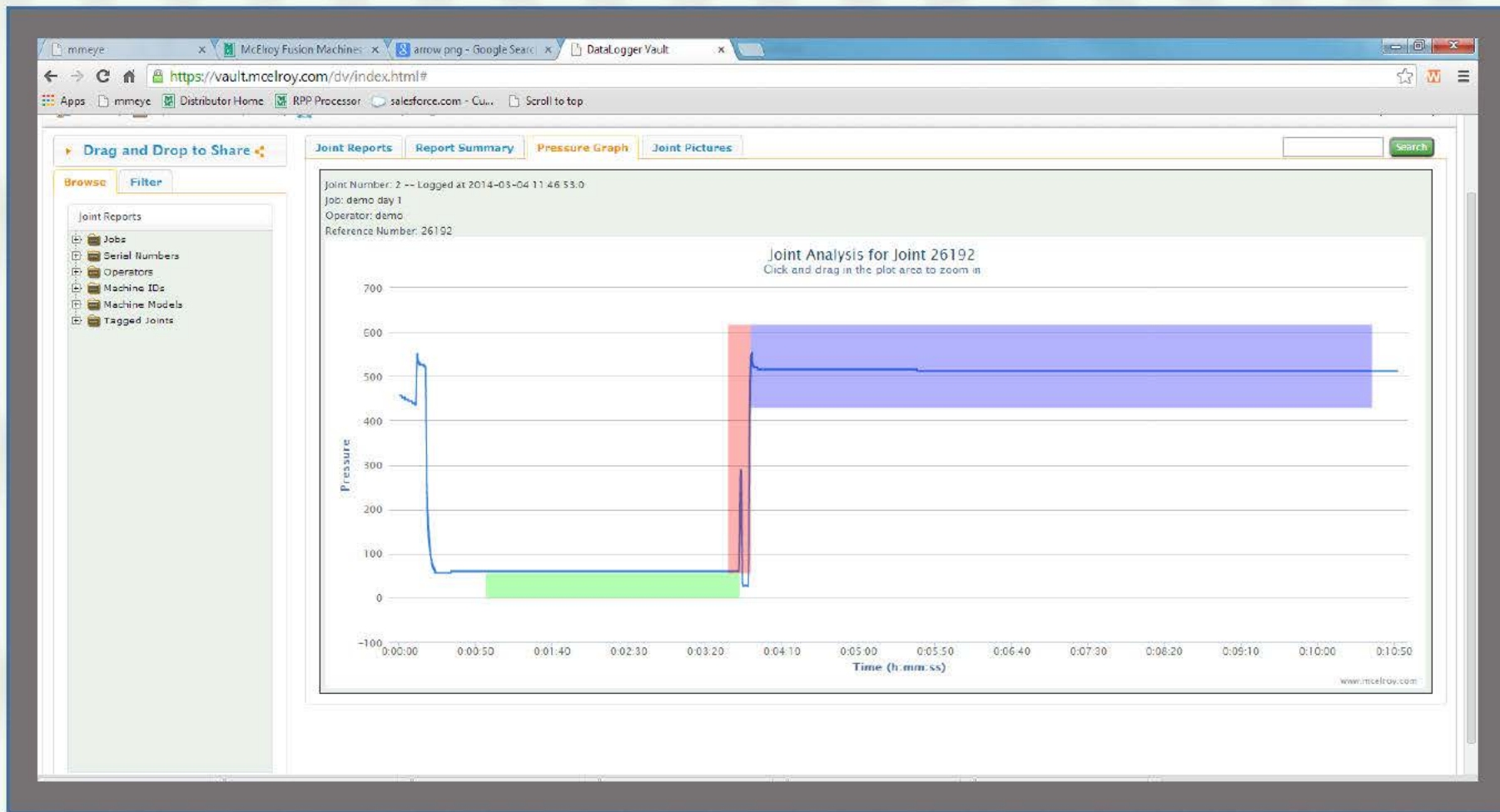
**OPERATOR EFFICIENCY**

**JOINT INTEGRITY**

**LOCATION TAGGING**

**REAL-TIME JOINT  
ANALYSIS**

**SPECIAL REPORT  
FEATURES**



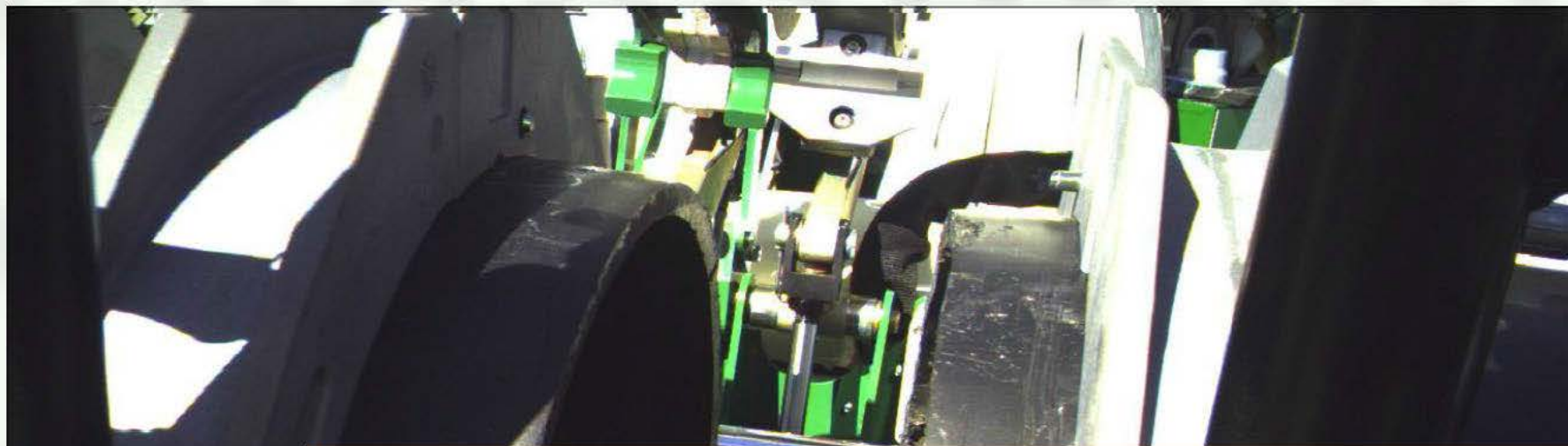
# JOINT INTEGRITY

**Quality Control**



# **LOCATION TAGGING**





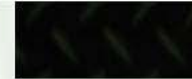
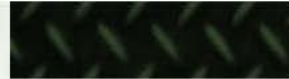
**Lat: 36° 7' 43.75" N**  
**Lon: 115° 9' 15.31" W**

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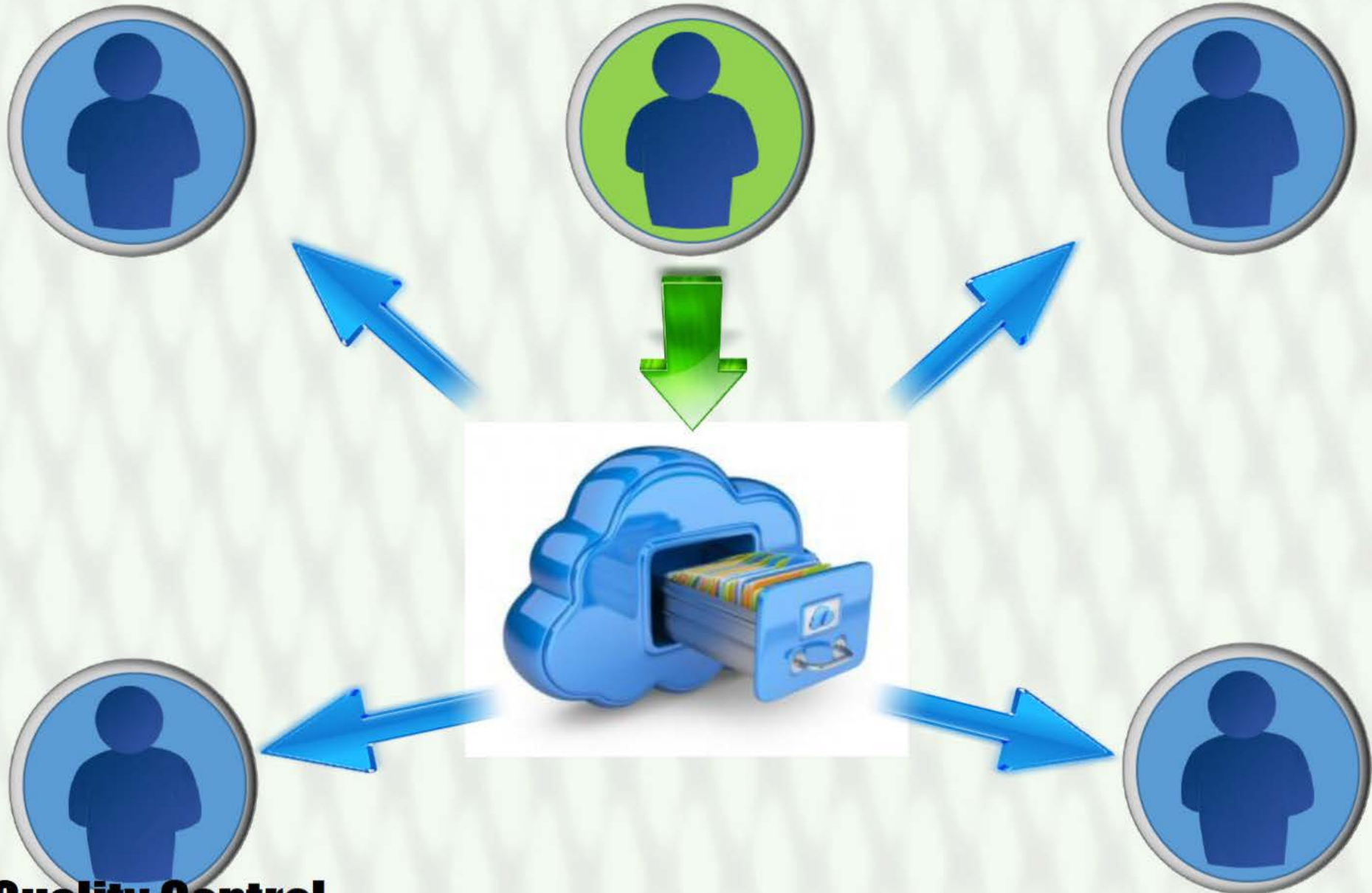
**Quality Control**





# REAL-TIME JOINT ANALYSIS

**Quality Control**



**Quality Control**





# Data Storage

- SECURE SERVER
- DATALOGGER 3, 4 and 5
- ARCHIVE & FUTURE DATA
- WEB INTERFACE



# Data Storage

## SORT AND LOCATE

- JOB
- OPERATOR
- MACHINE
- TAG
- ANY-ACCESS DEVICE





# Data Storage

## USER ACCOUNTS

- PERMANENT
- SECURE
- UNLIMITED
- ANY-ACCESS



## DataLogger VAULT

[Home](#) | [Upload Joint Reports](#) | [Connections](#) | [Log Off](#)▶ [Drag and Drop to Share](#)[Browse](#)[Filter](#)

## Joint Reports

- Jobs
- Serial Numbers
- Operators
- Machine IDs
- Machine Models
- Tagged Joints

[Joint Reports](#)[Report Summary](#)[Pressure Graph](#)[Joint Pictures](#)

Listing all 4 Records found

<u>Ref#</u>	<u>Serial Number</u>	<u>Operator</u>	<u>Job</u>	<u>Joint Number</u>
<a href="#">24839</a>		Demo Operator	ConExpo PreShow	20
<a href="#">25049</a>		Demo Operator	ConExpo PreShow	21
<a href="#">25050</a>		Demo Operator	ConExpo PreShow	22
<a href="#">25501</a>		Demo Operator	ConExpo PreShow	15

Joint Reports

Report Summary

Pressure Graph

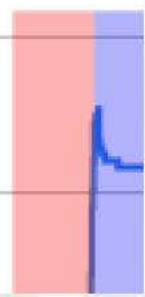
Joint Pictures

Joint Number: 2 -- Location: at 2014-03-04 11:00  
Job: demo day 1  
Operator: demo  
Reference Number: 26192

700

600

500



### Fusion Type

Fusion Type	Butt Fusion	
Fusion Specification	ASTM F2620	
Specification Parameters:		
Bead Size	3/8"	
Heat/Soak Time	166 seconds	
Fuse Time	406 seconds	
Open/Close Time	15 seconds	
Specification Pressures:	Minimum	Maximum
Bead-up	429 psi	616 psi
Heat Soak	0 psi	55 psi
Fuse	429 psi	616 psi
Cool	0 psi	0 psi

### External Heater Temperatures

Location:	One	Two	Three	Four
Side A	425 °F			425 °F
Side B	425 °F	425 °F		

### GPS Location

Coordinates:	Latitude	Longitude	Time Recorded
	36°7'43.5"N	115°9'15.4"W	2014/03/04 17:51:31 UTC

### Logged Data Summary

Number of Data Points	220
Total Fusion Time	0:10:52 (h:mm:ss)
Maximum Recorded Pressure (psi)	557

### Device Information

DataLogger Serial Number	MDL5-0183
Calibration Date	2014-02-17
Firmware Version	v5.1
Software Version	b140213
Software Product Name	DL5m



Joint Reports

Report Summary

Pressure Graph

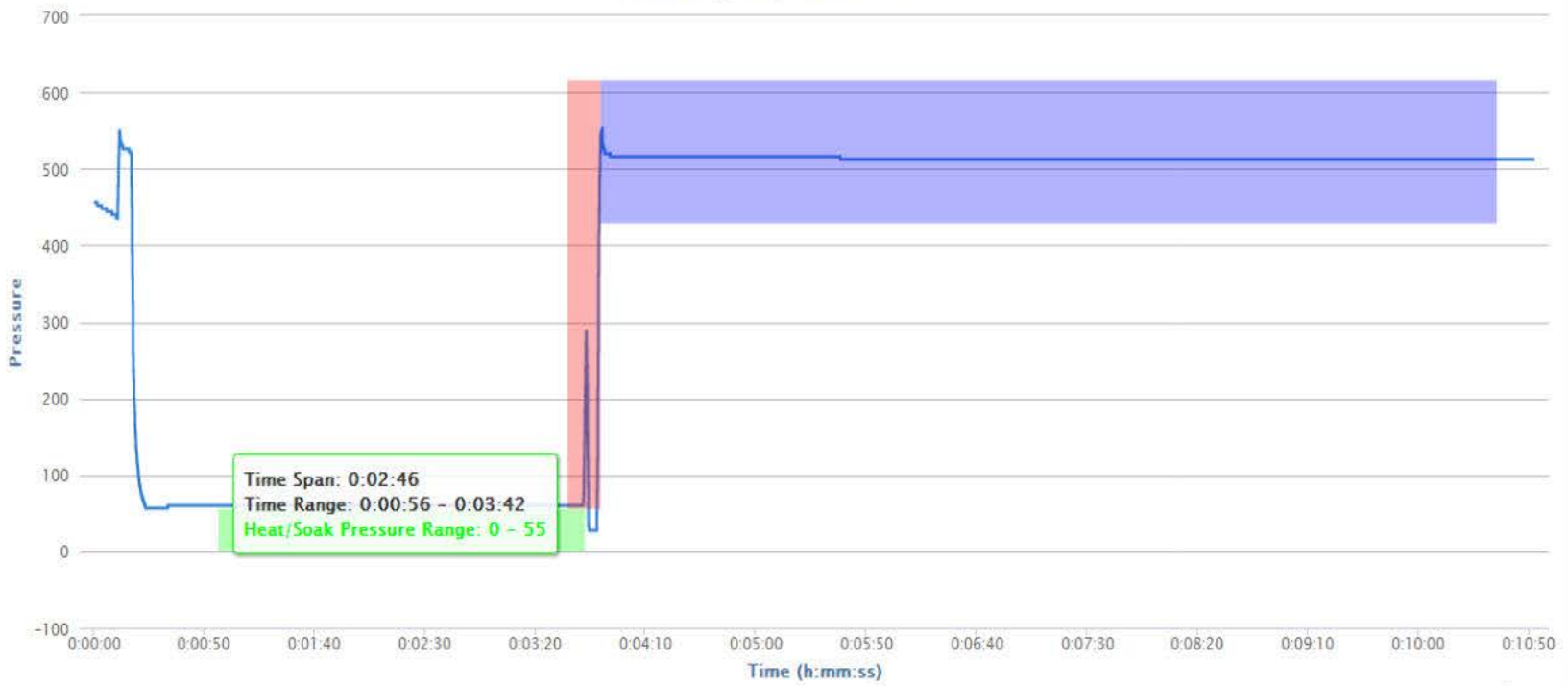
Joint Pictures

Search

Joint Number: 2 -- Logged at 2014-03-04 11:46:53.0  
Job: demo day 1  
Operator: demo  
Reference Number: 26192

### Joint Analysis for Joint 26192

Click and drag in the plot area to zoom in



www.mcelroy.com





Lat: 36° 7' 43.75" N  
Lon: 115° 9' 15.31" W

## What can we do with this data?

- Quality Control
- Track Productivity
- Store Data for future accountability

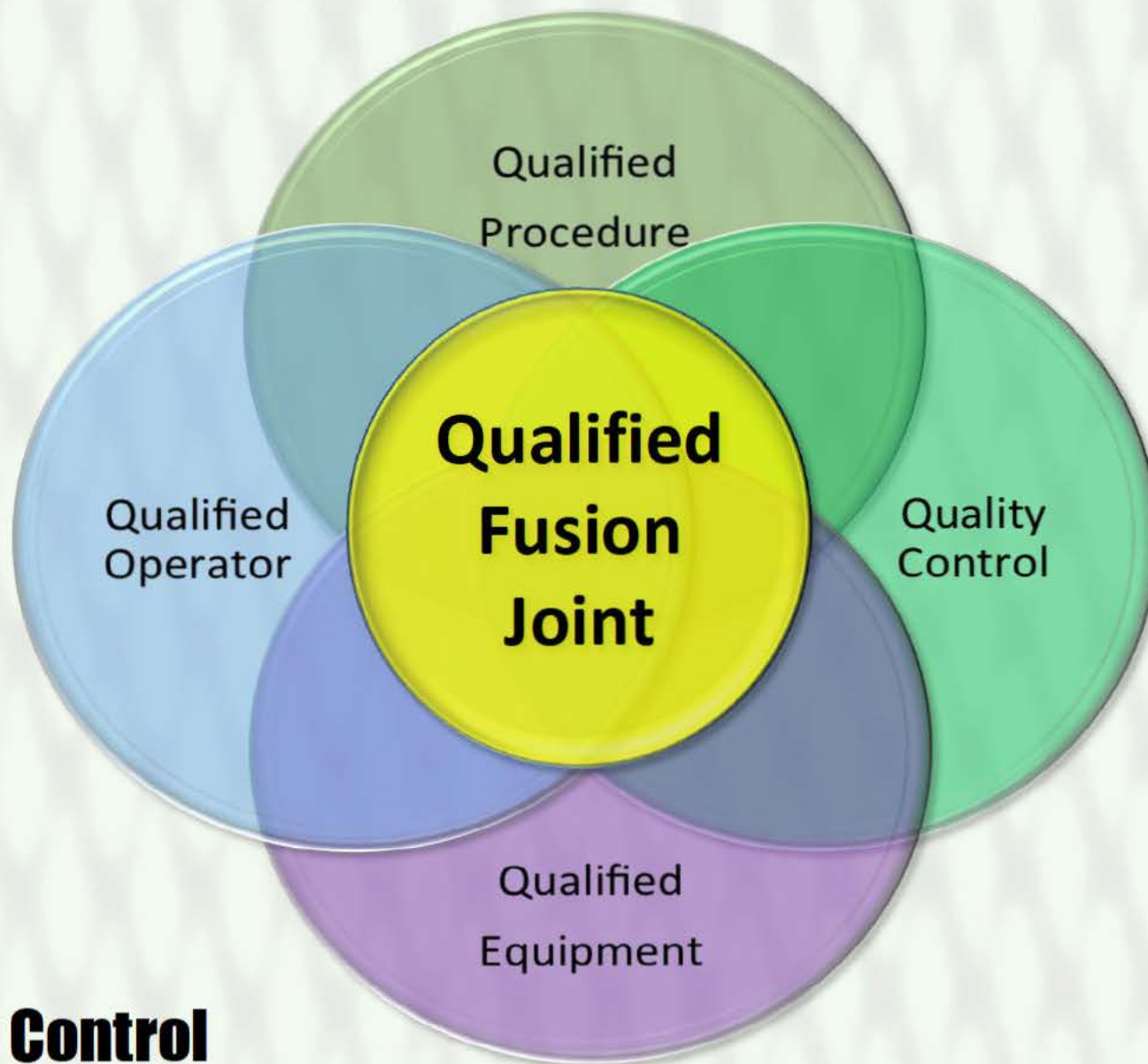


# Change Direction?

- Additional Joint Info
- Lower Costs
- Higher level of Success
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# Accountability





# Case Study



# Hangingsstone Waterline Project



## Factors for using HDPE

- Material selection
- Quality
- Efficiency
- Integrity
- Savings to the client



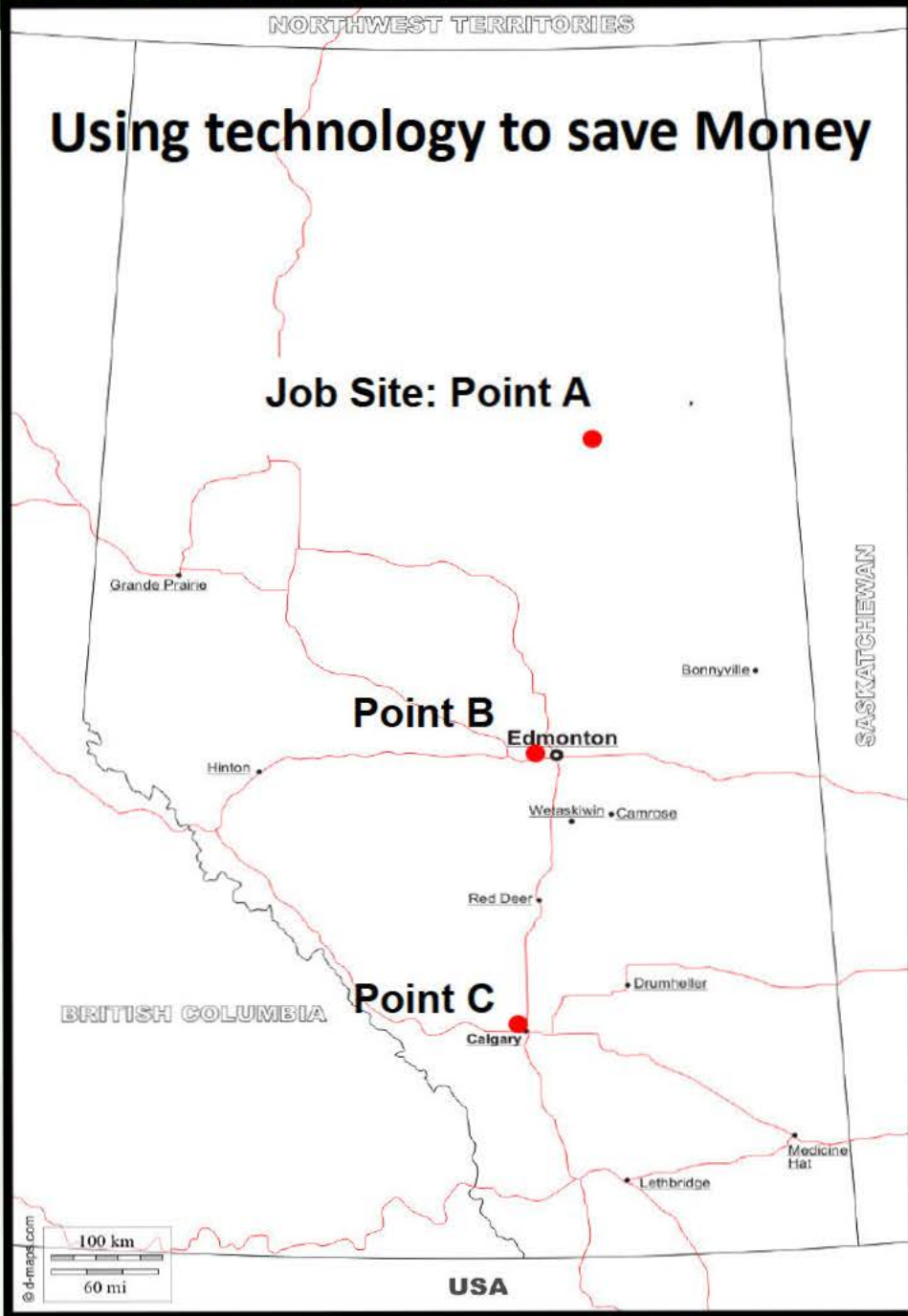
Jobsite



## On The Jobsite

- 16,373m – 10” DR9 PE4710 – 895 lengths of 950 fusions with fittings
- 4 Fusion Machines with accompanying pipe rollers and hydraulic pipe loaders
- 4 DataLogger5’s
- 8 Fusion Technicians
- Vault user account





## Using technology to save Money

**Job Site: Point A**

**Point A to Hangingstone River**

432 km / 268 miles

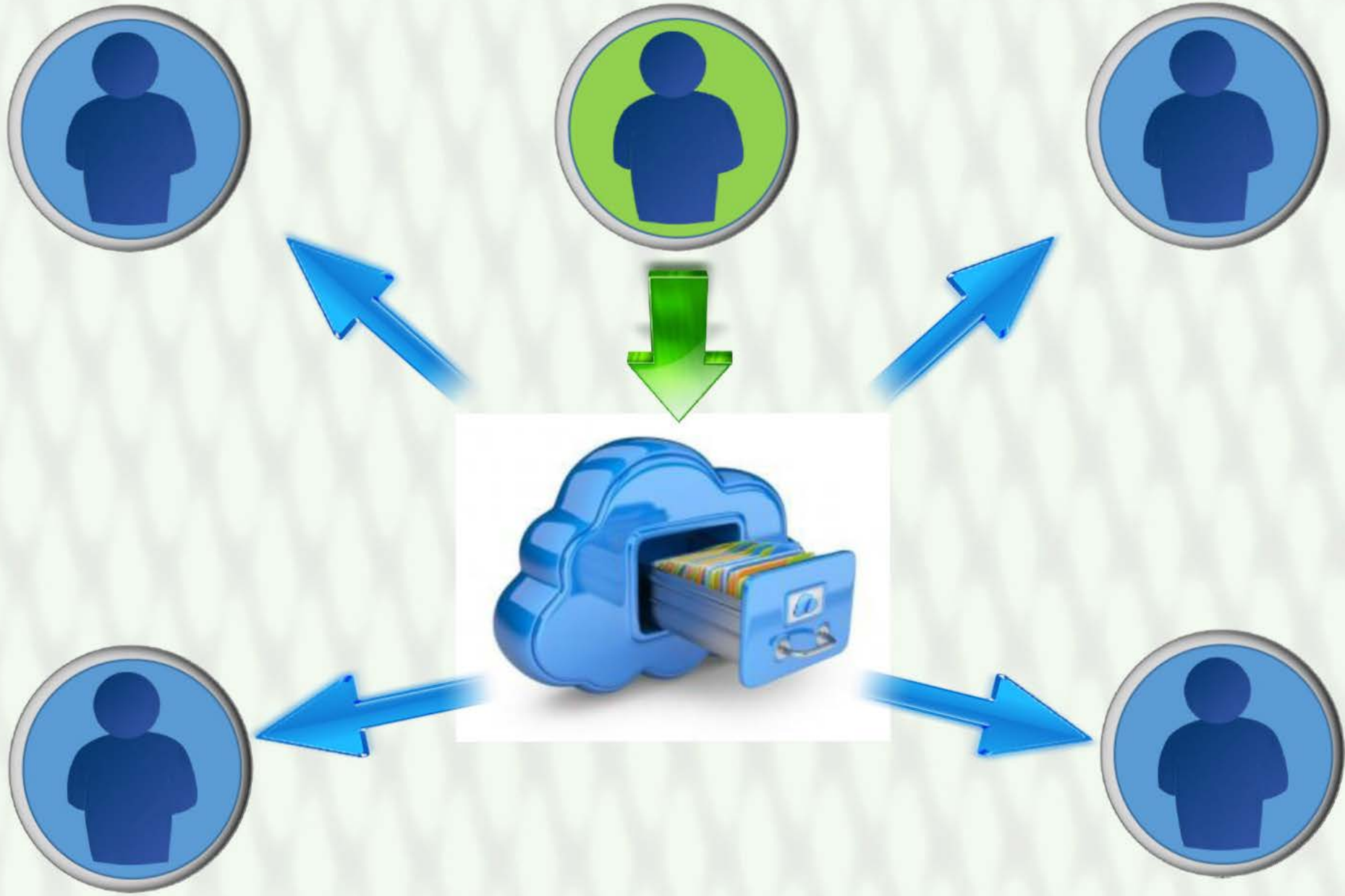
Approx: **\$640**/person roundtrip

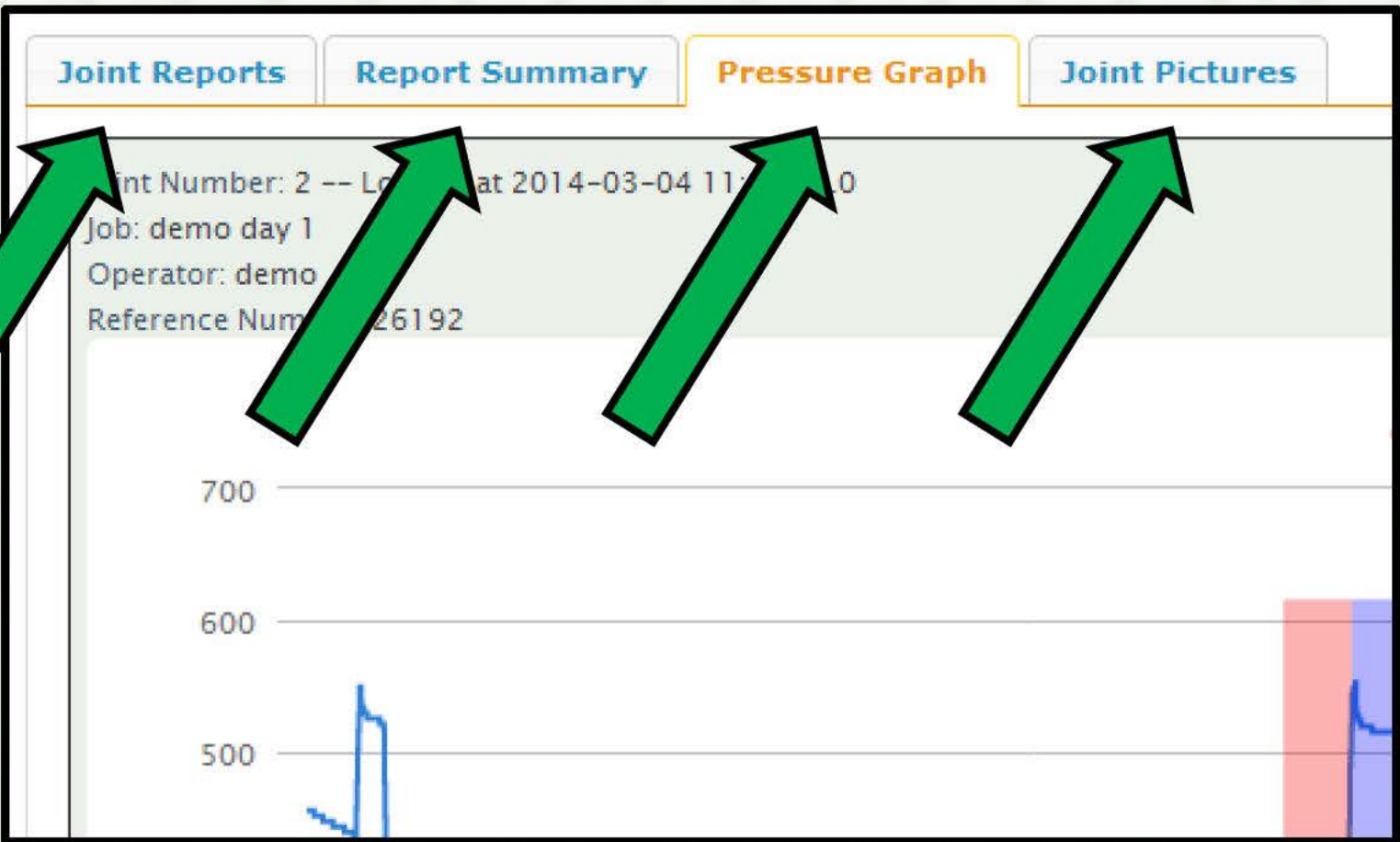
**Point C to Hangingstone River**

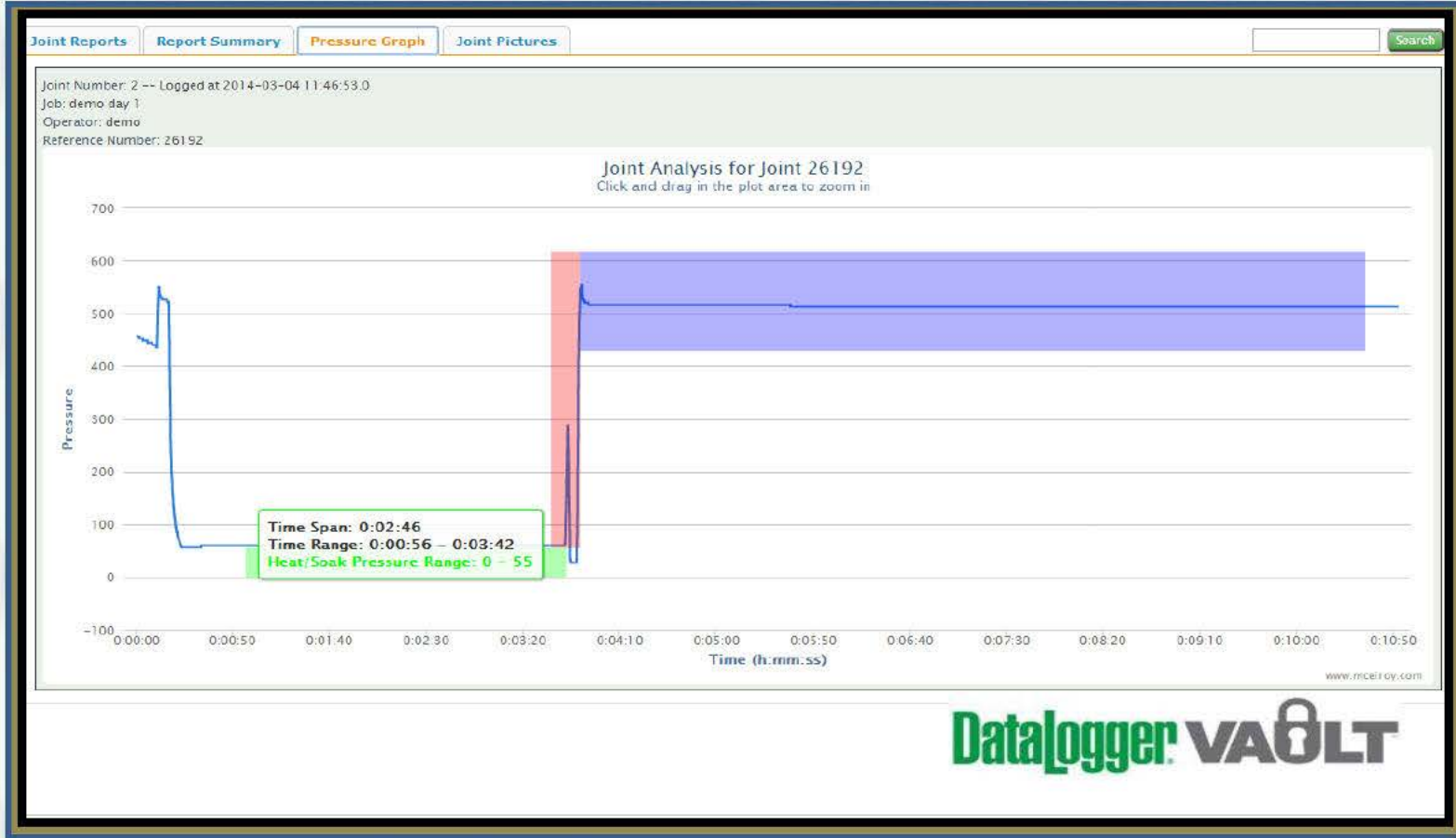
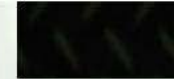
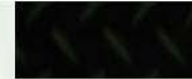
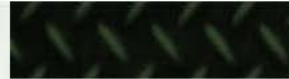
746 km / 464 miles

Approx: **\$720**/person roundtrip









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Software Version	b140213			
Software Product Name	DL5m			



## ***Efficiency = Productivity Gains***

What normally could have taken weeks to inspect, fusion joint parameters and pictures were reviewed in minutes from multiple locations across Canada via an Internet connection.

# In Conclusion...

The butt fusion portion of this phase of the project was completed on time with all the aforementioned benefits being realized by all parties involved in the project. Electrical data collection, wireless transmission, and cloud based storage with advanced analytics have become part of standard QA/QC procedure for this project and countless others to follow.

- Money Saved
- Traceability
- Instant Assurance
- Engineering Firm, Contractor and Jobsite Owner  
all able to see joint data in real time
- Maximum Time Savings



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