



OMNIRA SOFTWARE

# **Reserves Reconciliation Automation** **March 6<sup>th</sup> 2024 – SPEE - Houston**

# Brenda Kurtz, P. Eng.

Brenda has worked in the oil and gas industry since the 80's. Her first 20 years of career were in producing companies, operations and production, reserves and evaluations, budgeting and capital management. Since 2007, she has focused on economics and reserves software as a client and in her current position at Omnira, which she has held since 2016.

Brenda enjoys cross-country skiing, curling, golfing, hiking, and reading in her spare time. She is the parent of three grown children and a grandmother. She and her husband have made Calgary their home since 1989, but they love to travel.

The journey from hand-plotted declines and fax machines has been a wild ride, and the innovation and dedication in the industry are a perpetual inspiration.

Brenda has been a member of the SPE since 1990, SPEE since 2021, and has registered as a professional engineer in Alberta since 1989.



# Agenda

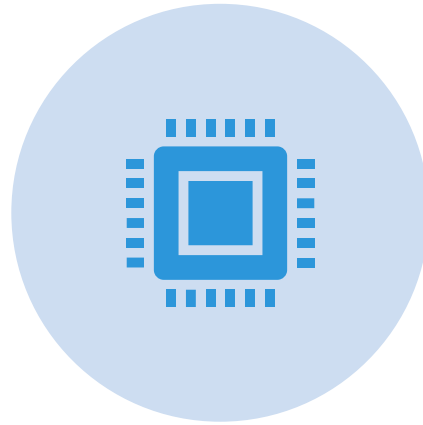
- 1. Reserves Past** – How did we manage?
- 2. Reserves Present** – Getting the job done.
- 3. Reserves Future** – What else could we be doing?

# Technology Shifts in Oil and Gas



## **In the office:**

Typewriters, binders, well files



## **In the field:**

SCADA, frac, monitoring, MWD



## **In economic and reserves analysis:**

Computer software, databases,  
BI tools, auto-forecasts, AI

The image features a large, dark silhouette of an oil pumpjack (jack-o'-lantern) against a bright blue sky. The pumpjack is the central focus on the right side of the frame. In the background, there is a line of trees and a smaller structure, possibly a wellhead or another piece of equipment. The overall scene is set in a rural or industrial landscape. The text 'Reserves Past TOOLS' is overlaid on the left side of the image in a white, bold, sans-serif font. 'Reserves Past' is in a regular weight, while 'TOOLS' is in a bold, italicized weight.

**Reserves Past**  
***TOOLS***



# Communication

**Urgent**

FOR \_\_\_\_\_

DATE \_\_\_\_\_ TIME \_\_\_\_\_

**While You Were Out**

M \_\_\_\_\_

OF \_\_\_\_\_

PHONE \_\_\_\_\_

CELL \_\_\_\_\_

FAX \_\_\_\_\_

**Message**

TELEPHONED  
 CAME TO SEE YOU  
 RETURNED  
 PLEASE CALL  
 WILL CALL  
 WANTS TO

A4711  
T3002

SIGNED \_\_\_\_\_

1

DEPARTAMENT / DEPARTAMENT

DATE \_\_\_\_\_

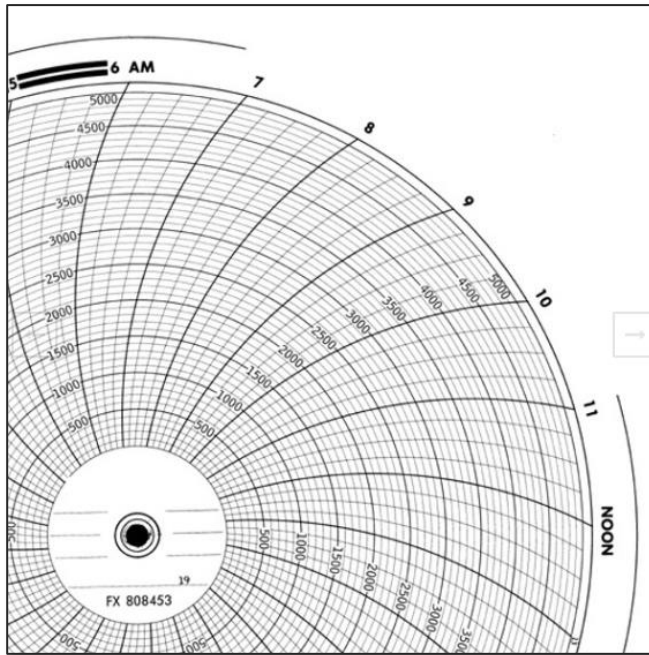
TEXT MESSAGES

MESSAGE

POUR REPRENDRE - CONSERVEZ LA COPIE UN ET RETOURNEZ LA COPIE TROIS  
TO REPLY - RETAIN FIRST COPY - RETURN THIRD COPY



# Field Data Capture

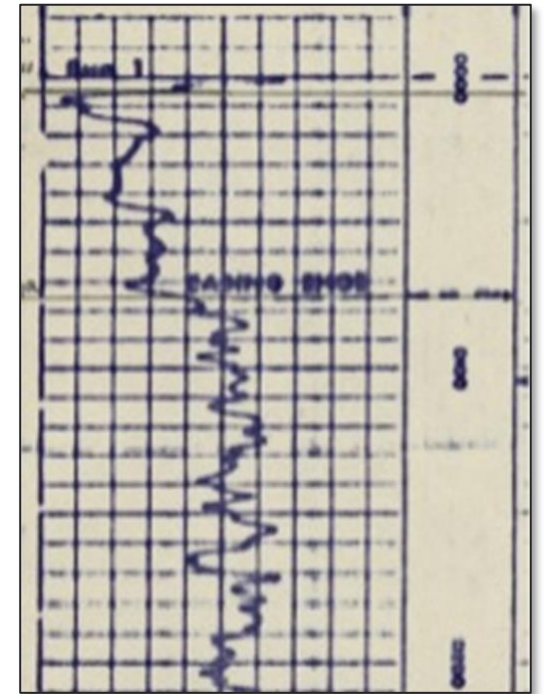


## 2T6 DAILY DRILLING REPORT

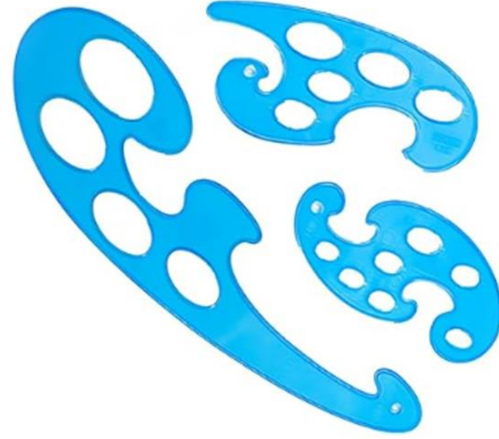
No. 9718190       DAILY DRILLING REPORT       REPORT NO.

LEAD		WELL NO.		AP/BELL NUMBER		WATER DEPTH		DATE			
OPERATOR				CONTRACTOR							
SIGNATURE OF OPERATOR REPRESENTATIVE				SIGNATURE OF CONTRACTOR'S TOOL PUSHER							
S.P. SIZE		WEIGHT	GRADE	TOOL JOINT	TYPE	THREAD	STRING NO.	PUMP NO.	PUMP MANUFACTURER	TYPE	THROAT SIZE
LAST USED IN LINE		SIZE		NAME	WEIGHT & GRADE	LENGTH	NO. TO TOOL JOINT	NO. AT	SIZE	LEAD	NO. TO TOOL JOINT

TIME DISTRIBUTION - HOURS		DRILLING ASSEMBLY (In and out of hole)			BIT RECORD		MUD RECORD		DEPTH INTERVAL		FORMATION		PRESSURE		PUMP	
1	RELAYING	NO.	FROM	LENGTH	BIT NO.	TIME			FROM	TO	DRILLER	CODE NO.	FORMER	DEPTH	DEV.	SEA. DIA.
2	DRILL ACTUAL				SIZE	WEIGHT										
3	HOISTING				MANUFACTURER	WEIGHT										
4	CONING				TYPE	WEIGHT										
5	CONCRETE BLD				SERIAL NO.	WEIGHT										
6	TRIPS				TYPE	WEIGHT										
7	WIPERIGHTING				DEPTH	WEIGHT										
8	REPAIRING				DEPTH	WEIGHT										
9	CONCRETE BLD				DEPTH	WEIGHT										
10	WIRELINE LOGS				TOTAL DRILLER	WEIGHT										
11	RUN DOWN				TOTAL HOURS	WEIGHT										
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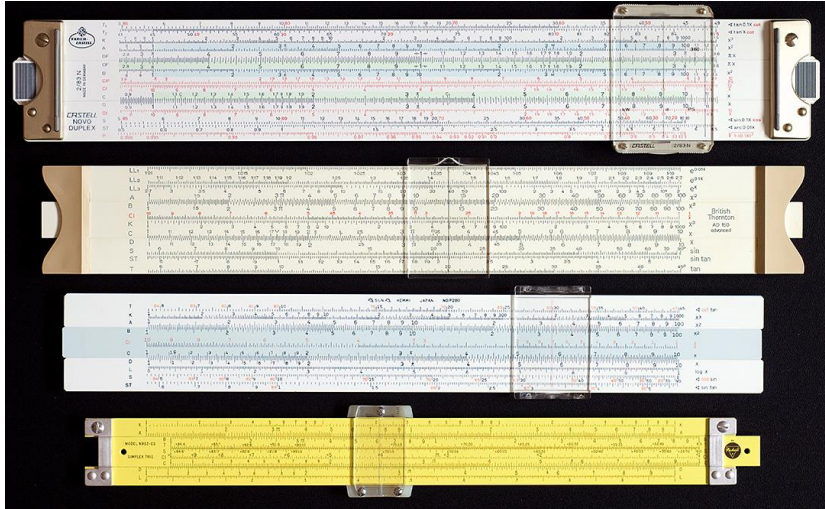


# Reserves Estimation





# Calculations



# Data



# How Did You Do?

Many of these tools still have a use.  
Expectations of technology has changed.

# Reserves Past *Timeline*





# Timeline of the Reserves Process

Decade	Reserves	Rock Music
1960s	Manual Processes	Turntables - The Beatles
1970s	Reserves Binders	8-Track Car Stereos – Bowie
1980s	Reserves Databases	MTV - Madonna
1990s	Reserves Calculation Software, Spreadsheets	CD's - Nirvana
2000s	RTA for Unconventional Reservoirs	LimeWire – Coldplay
2010s	Rise of Data Analytics	Spotify – Imagine Dragons
2020s	Automated Reserves Processes	Bluetooth Earbuds – Taylor Swift

The image features a large, dark silhouette of an oil pumpjack (jack-o'-lantern) against a bright blue sky. The pumpjack is the central focus, with its long, curved arm and complex mechanical structure clearly visible. To the right, a tall, thin vertical pole stands against the sky. In the background, a line of trees and a smaller piece of equipment are visible on the horizon. The overall scene is set in a field, possibly during dawn or dusk, given the lighting and color palette.

# Reserves Present *Processes in Use*

# Reserves Reporting Process

## Criteria for Optimized Reserves Reporting System

 Single Source for Reporting

 Distributed Workflow

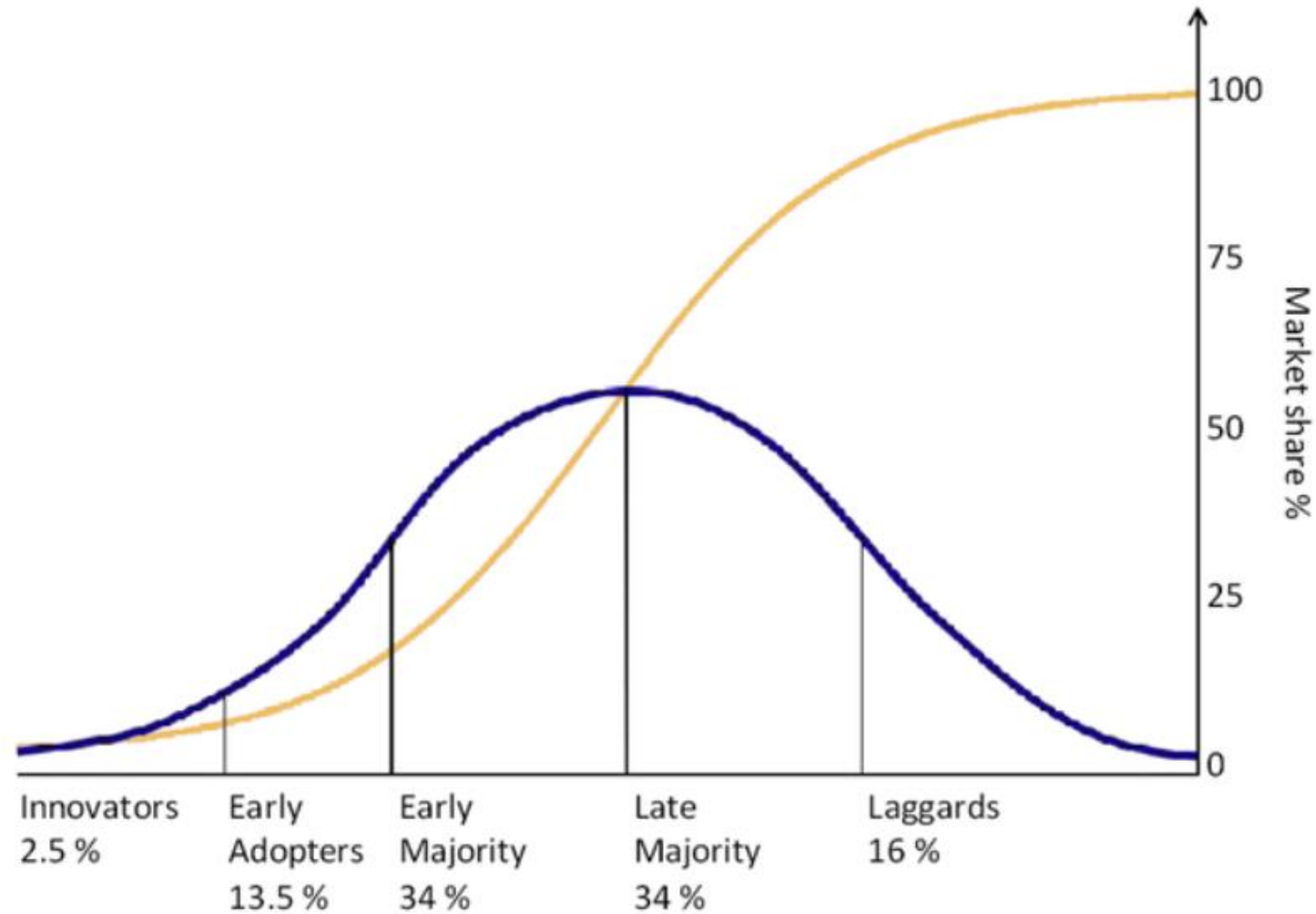
 Audit Trail

 Change Type Granularity

 Reduction of Errors

 Timing and Iteration Flexibility

# Automated Reconciliation - Innovation Adoption Curve





# Processes for Reserves Reporting

## Multiple Systems Collated in Master Spreadsheet



Allows for multiple reserves estimation systems



Allows for distributed workflow



Complicates audit trail



Restricts change types



Input or spreadsheet error

# Processes for Reserves Reporting

## Single Software Based with Serial Process Steps



Open and Close data held in one system



Reports from source system without intervention



Multiple change types



No iteration or backtracking



Strict timing requirements

# Processes for Reserves Reporting

## Single Software Based with Multiple Runs and Data Collation



Allows for multiple change types



Audit trail exists – but in multiple datasets



Multiple databases – one per change type



Some timing and workflow restrictions

# Reserves Reporting Process Report Card

	Master Spreadsheet	Serial Process	Multiple Databases
Single Source for Reporting	⊘	✓	⊘
Distributed Workflow	✓	⊘	⊘
Audit Trail	⊘	?	?
Change Type Granularity	⊘	✓	✓
Reduction of Errors	⊘	?	?
Timing & Iteration Flexibility	?	⊘	?

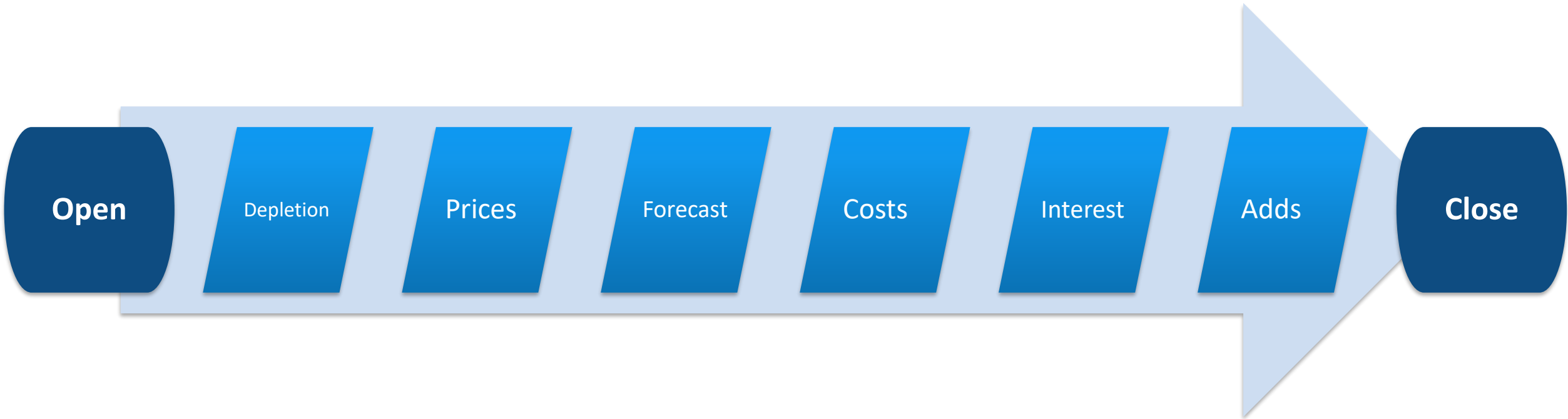


A large silhouette of an oil pumpjack (jack-o'-lantern) is the central focus on the right side of the image. It is set against a dark blue background with a bright light source behind it, creating a lens flare effect. In the background, there are other smaller silhouettes of industrial equipment and a tall chimney stack. The foreground shows a dark, flat landscape, possibly a field or a road, with some low-lying vegetation.

Reserves ~~Future~~ Reimagined  
*Automated Reconciliation*

# Processes for Reserves Reporting

## Automated Reconciliation



1000

-150

+50

+80

0


-5

+200

1175

# Processes for Reserves Reporting

## Automated Reserves Reconciliation


 One Database – Can hold several years of data

 Audit in Source Data

 Parallel Workflow

 Multiple Change Types

 Repeat and Multiple Reconciliations

 Error Reduction

# Reserves Reporting Process Report Card

	Master Spreadsheet	Serial Process	Multiple Databases	Automated Reconciliation
Single Source for Reporting	⊘	✓	⊘	✓
Distributed Workflow	✓	⊘	⊘	✓
Audit Trail	⊘	?	?	✓
Change Type Granularity	⊘	✓	✓	✓
Reduction of Errors	⊘	?	?	✓
Timing & Iteration Flexibility	?	⊘	?	✓



Why Automation?

Efficiency



# Why Automation?



Efficiency

Transparency

Why Automation?



Efficiency

Transparency

Why Automation?

Consistency

Efficiency

Transparency

Why Automation?

Consistency

Flexibility

# Unexpected Wins from Automation



## Tracking Reserves

- Track migration of reserves
- Year-over-year tracking
- Q to Q or Y to Y



## More Time for Analysis

- Quality control
- Data analytics integration
- Roll-up and drill-down



## Extend Use of the Data

- Look-aheads
- Lending, A&D, and budgeting
- Price scenarios

# Possible Concerns → Opportunities

Learning Curve → Consistency

Responsibility → Ownership

Process Revisit → Efficiency

Changes to Corporate Data → Transparency

Interruption to Workflow → Return on Investment

False Prophets → Track Record

# With Great Power Comes Great Responsibility

Fundamental understanding is still needed.

Review and QC of data is an important factor.

Algorithms do not apply to every situation.

“

**Computers do tasks.**

**People do jobs.**

”

# Quantifying Improvements – Where's the Value?



No “Unwritten Legacy Knowledge” Risk

Are processes documented?

Do key individuals hold intrinsic experiential process knowledge?



Focus Staff on Value Adding Activities

Move from reporting to analyzing.

Machines do routine tasks.



Reduce Crunch

Why does reserves reporting have to happen at Thanksgiving and Christmas?



Remove Risk of “Backout”

Usually happens in a panic when issue is discovered.

Do the files required still exist?



**Technology will March On**  
*Be Part of the Parade*



# Parting Thoughts...



What could my reserves data be doing for me that it's not?



How confident am I that we are optimizing our workflow?



Could I spend less time assembling and more time analyzing?



How can I be more prepared for the year end reserves rush?



Am I getting the level of detail that I need?



What can past reserves evaluations tell me about future development?



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Thank – you !

