



# *Geophysical Society of Pittsburgh*



*Proudly Presents Tuesday, Dec. 5th, 2017*

*At*

*Cefalo's Restaurant, Carnegie, PA*

## **Effective Constraint of RTA Models Utilizing Microseismicity Derived Flow Attributes**

**Ted Urbancic**

ESG Solutions

**Abstract:** Common approaches based on event locations have not been able to effectively identify the connected volume leading to production. Utilizing the collective statistical behavior of seismicity, including their source characteristics, the underlying dynamic response of the reservoir through their spatial-temporal interaction during stimulation can be identified. We have successfully been able to descriptively identify the role of interacting rock properties, fracture state, and stress state, and how they can be used to construct reservoir descriptions that specify where flow and production volumes are most likely to be located relative to the treatment wellbore. By utilizing production data for a multi-well pad program in the Duvernay formation, a calibration of the dynamic parameters with RTA has been established which reduces the uncertainty of possible reservoir descriptions for model-based production forecasting. The synchronization of these data, coupled with production logs, geologic information, and fracture state, lead to an understanding of the effective, non-uniform fracture properties across the lateral of a horizontal well. The coupling of these techniques demonstrates a practical and transparent approach to enhancing reservoir characterization and improving decisions for field development design and adaptations to in-field stimulations in near real-time. A workflow for production and microseismic data integration is presented. The case studied examined provides definitive locations of stimulated reservoir volume (SRV) from dynamic parameter analysis (DPA), which corroborates the observed well performance data behavior; namely well interference effects and relative performance differences between wells.



**Biography:** Dr. Ted Urbancic, a founder and current Chief Technology Officer at ESG Solutions, has over 30 years of experience examining and interpreting microseismicity associated with mining and petroleum applications. He is a pioneer in the development of microseismic monitoring in industrial applications, authoring over 150 publications ranging from understanding the fundamental aspects of microseismicity to characterizing rock and reservoir behavior by integrating microseismic data with numerical modeling, engineering and geomechanical data. Over the past 15 years, Ted has been integral in building ESG's microseismic hydraulic fracture monitoring capabilities and in promoting microseismic tools for enhanced reservoir characterization. Currently, Ted oversees work by ESG's Innovation and Technology Group, which spearheads all R&D related to microseismic analysis in the mining and oil & gas sectors. Ted holds a Ph.D. in Seismology from Queen's University, Kingston Canada. He is a member of numerous professional societies, including SPE, SEG, AGU, SSA, and EAGE and was recently on the organizing committees for the 2014 and 2016 EAGE Passive Seismic Workshop.

Please RSVP using the PayPal link on the Geophysical Society of Pittsburgh website at: [www.thegsp.org](http://www.thegsp.org) Cost: \$35 Members, \$40 Non-members (\$20 for Students), FREE for displaced employees. Meeting Location: 428 Washington Ave, Carnegie, PA 15106 (412) 276-6600.

## *Tuesday, December 5th, 2017 Agenda:*

*5:00 pm Social Hour (Beer and Wine) sponsored by:*



**THE Onshore Seismic Data Company**

*6:00 pm Dinner Buffet*

*7:00 pm Lecture sponsored by:*

# Spectraseis



# esg

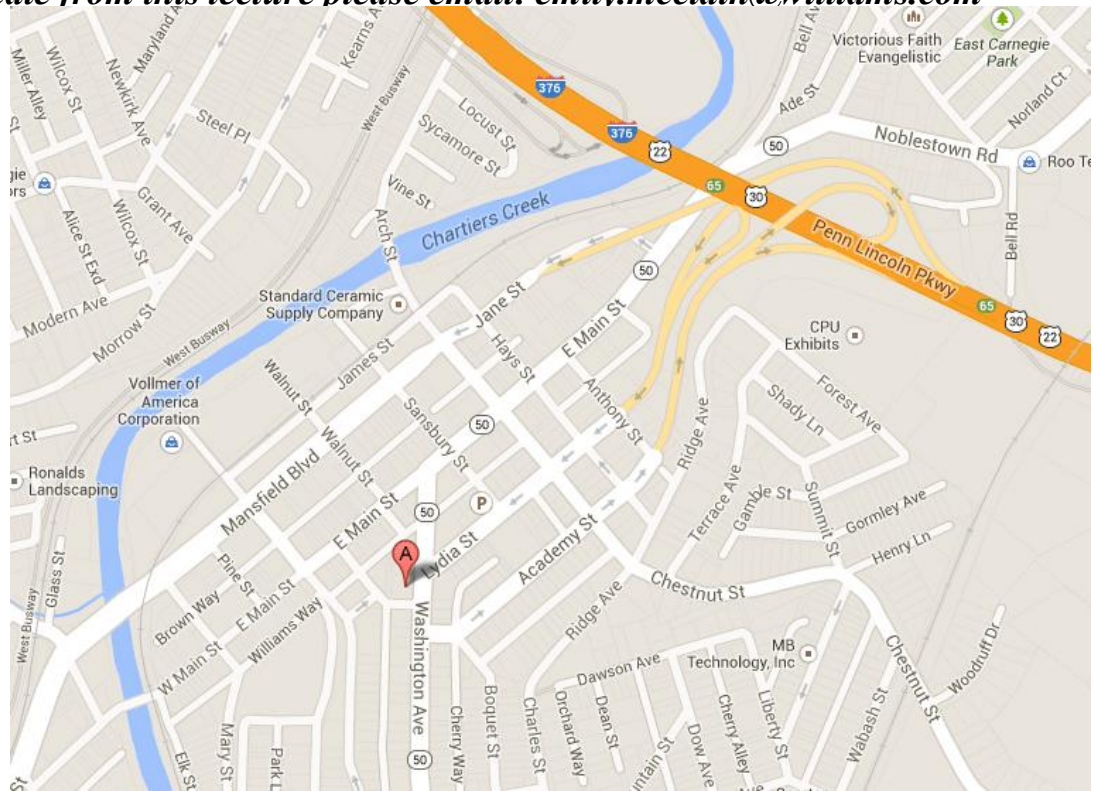
a spectris company

*To receive CEU certificate from this lecture please email: [emily.mcclain@williams.com](mailto:emily.mcclain@williams.com)*

*This months lecture will be held at :*

[Cefalo's](#)

**Banquet & Event Center**  
428 Washington Ave.  
Carnegie, PA 15106  
412.276.6600



*We would like to thank our 2017-2018 Corporate Sponsors. Please contact Tom Donahoe if you are interested in sponsoring GSP (tom@tdgeologic.com):*

**GOLD**



**RANGE** RESOURCES



*THE Onshore Seismic Data Company*



**SILVER**



**BRONZE**



Passion for Geoscience



~~~~~

## 2017-2018 GSP OFFICERS

|                        |               |                                                                            |                    |
|------------------------|---------------|----------------------------------------------------------------------------|--------------------|
| <i>President:</i>      | Tom Donahoe   | <a href="mailto:tom@tdgeologic.com">tom@tdgeologic.com</a>                 | TD Geologic        |
| <i>Vice President:</i> | Travis Duran  | <a href="mailto:durant@srcx.com">durant@srcx.com</a>                       | Seneca Resources   |
| <i>Treasurer:</i>      | Erich Zorn    | <a href="mailto:erich.zorn@gmail.com">erich.zorn@gmail.com</a>             | DiGioia Gray, Inc. |
| <i>Secretary:</i>      | Emily McClain | <a href="mailto:emily.mcclain@williams.com">emily.mcclain@williams.com</a> | Williams           |



~~~~~

**Your Dues and Sponsorship in Geophysical Society of Pittsburgh go toward:**

- *Outstanding Monthly Lecture Series*
- *SEG Distinguished Lecturers*
- *Annual Scholarship Awards*
- *Annual Golf Outing*
- *Short Courses*

Please contact Tom Donahoe  
([tom@tdgeologic.com](mailto:tom@tdgeologic.com)) for Sponsorship  
Opportunities.

~~~~~