

The Outlook for Oil and Gas Production in the Permian and SCOOP/STACK

Wednesday, November 29, 2017
9:30 a.m. – 1:30 p.m.

Agenda

U.S. drilling operations have increasingly become concentrated across several major shale plays. Of these plays, the Permian in South-West Texas and the South-Central Oklahoma Oil Province (SCOOP) along with the Sooner Trend, Anadarko, and Canadian and Kingfisher (STACK) in the Anadarko Basin in Oklahoma are displaying some of the most promising signs of growth.

This workshop is designed to explore in detail the various perspectives on both the resource potential and possible production profile outlooks for the Permian and SCOOP/STACK. In addition, we will also address some of the challenges (e.g., water availability, work crews, takeaway capacity, storage, the role of associated gas) and the role that government could play in the outlook for production.

9:30 a.m. | Welcome & Overview

featuring **FRANK VERRASTRO**
Senior Vice President and Trustee Fellow,
CSIS

9:45 a.m. | Perspectives on Production in the Permian Basin

featuring **MARK BERG**
Executive Vice President, Corporate/Vertically
Integrated Operations, Pioneer Natural
Resources

JOE CARDENAS
Engineering Manager, Permian Basin, XTO
Energy

ROBERT CLARKE
Research Director, Lower 48 Upstream, Wood
Mackenzie

moderated by **ADAM SIEMINSKI**
James R. Schlesinger Chair for Energy &
Geopolitics, CSIS

11:00 a.m. | The SCOOP and the STACK in the Anadarko Basin

featuring **DEBRA HIGLEY**
Research Geologist, U.S. Geological Survey

JOHN STAUB
Director, Petroleum and Natural Gas Analysis,
U.S. Energy Information Administration

STEPHEN INGRAM
Vice President, Technology Solutions and
Innovation, North American Operations,
Halliburton

moderated by **SARAH LADISLAW**
Director and Senior Fellow, Energy & National
Security Program, CSIS

12:15 p.m. | Lunch

12:30 p.m. | Infrastructure and Other Considerations

featuring **RUSTY BRAZIEL**
President, RBN Energy

moderated by **FRANK VERRASTRO**
Senior Vice President and Trustee Fellow,
CSIS

1:30 p.m. | Concluding Remarks

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Biographies

Mark Berg joined Pioneer Natural Resources in April 2005 to serve as Executive Vice President & General Counsel. He was promoted to Executive Vice President, Corporate/Vertically Integrated Operations in August 2015. Mark is responsible for Pioneer's vertically integrated service companies: Pioneer Pumping Services, Pioneer Sands and Pioneer Well Services. His corporate responsibilities include oversight of Land, Regulatory Affairs, Government Affairs and Corporate Communications. Berg began his career in 1983 with the Houston-based law firm of Vinson & Elkins L.L.P. and served as a partner from 1990 through 1997. He served as Executive Vice President, General Counsel and Secretary of American General Corporation, a Fortune 200 diversified financial services company, from 1997 through 2001. Subsequent to the sale of American General to American International Group, Berg was appointed Senior Vice President, General Counsel and Secretary of Hanover Compressor Company, a NYSE company specializing in natural gas compression and processing.

Joe Cardenas has worked in the oil and gas industry for over 25 years. He began his career in 1992 as a subsurface engineer for Exxon Company USA. In 1996, Joe went to work for XTO Energy Inc. (formerly Cross Timbers Oil Co.) in Midland, Texas. At XTO, Joe worked a variety of jobs including Operations Engineer, Engineering Manager Barnett Shale and Engineering Manager Marcellus Shale. In 2010, ExxonMobil acquired XTO Energy and Joe became the Stimulation Technical Manager developing company strategies around the technology of hydraulic fracturing including chemical make-up, water utilization, wellbore integrity and public messaging. In 2014, Joe was promoted to Engineering Manager for the South Permian assets in Midland Texas which oversees development of the Wolfcamp Shale in the Midland Basin. Currently, Joe is the Operations Manager for the Delaware Basin. Joe Holds a B.S. degree in Mechanical Engineering from Texas A&M University.

Robert Clarke is a Research Director in Wood Mackenzie's Lower 48 Upstream team where he works specifically with E&Ps, service companies, and investors in the North Texas market. He has widespread experience analyzing exploratory shale formations around the world, as well as conducting detailed asset benchmarking studies and building shale valuation models. Robert has worked on upstream consulting projects, ranging from asset opportunity screening and analogue-based forecasting for E&Ps, to due diligence work for private equity M&A. He holds a Bachelor's Degree in Geology from Texas A&M University and an MBA from the Eller College of Management at the University of Arizona.

Debra Higley is a Research Geologist with the USGS Central Energy Resources Science Center of the U.S. Geological Survey in Denver, Colorado. She was a uranium exploration geologist for 5 years prior to her 35 years at the USGS. The USGS research integrates conventional and continuous (unconventional) oil and gas resource assessments with 1-D through 4-D petroleum system modeling. She has authored 126 papers on basins in North and South America. Debra has formed cooperative agreements with industry, state, and foreign scientific organizations, which allows the USGS to better receive and share data and resources. Debra served as President of the Rocky Mountain Association of Geologists (RMAG) in 2013; her 2015 RMAG Honorary Membership recognized almost 20 years of RMAG committee, officer, and scientific contributions. Her M.S. in geochemistry and Ph.D. in geology are from the Colorado School of Mines.

John Staub is the Director of the Office of Petroleum, Natural Gas and Biofuels Analysis at the U.S. Energy Information Administration. John leads analysis and modeling of domestic and international petroleum and natural gas resources, production, refining, and logistics for both short and long-term outlooks. His office produces outlooks for a range of issues including: long-term oil prices, LNG exports, shale gas, tight oil, biofuels and technology change. He previously worked in the U.S. Department of Energy's Office of Policy and International Affairs and has served detail assignments at the White House Council of Economic Advisers and the

International Energy Agency (IEA). He received an undergraduate degree in physics from Concordia College, Moorhead, Minn., and a master's degree in public policy from the University of Chicago.

Stephen Ingram is Vice President for technology solutions and innovation for North America operations at Halliburton. In this position, Mr. Ingram is responsible for executing the available and soon to be available technologies, solutions and innovations to maximize customer assets, across exploration, drilling, completion and production domains. Halliburton targets Unconventional, Deepwater and Mature Fields within the North America operation. Mr. Ingram obtained a BS in Chemical Engineering from the University of Missouri-Rolla, and MS degrees from the University of Oklahoma; in both Natural Gas Engineering & Business Administration.

Rusty Braziel is President & Principal Energy Markets Consultant for RBN Energy. RBN provides energy market advisory services specializing in strategy, acquisitions and divestures. The company works with companies engaged in trading, marketing or purchasing of energy commodities, purchase and sale of energy related assets and E&P for oil and gas. Rusty focuses on hydrocarbon markets, primarily natural gas, natural gas liquids and crude oil. His expertise is primarily in the production, transportation, storage and demand for physical energy commodities, and the impact of physical market developments on price.

Frank Verrastro is Senior Vice President and Trustee Fellow at CSIS. From 2012 to 2017, he held the James R. Schlesinger Chair for Energy and Geopolitics. Prior to that (2003 to 2012), he served as director of the CSIS Energy and National Security Program. His extensive energy and management experience spans over four decades in energy policy, operations, and project management positions in both the U.S. government and the private sector. His government service has included staff positions in the White House and the Departments of Interior and Energy, including serving as deputy assistant secretary for international energy resources. In the private sector, he has served as director of refinery policy and crude oil planning for the nation's largest independent refiner, TOSCO Corporation, and more recently as senior vice president for Pennzoil.

Adam Sieminski holds the James R. Schlesinger Chair for Energy and Geopolitics at CSIS. Prior to joining the Center, he served as administrator of the U.S. Energy Information Administration (EIA). From March through May 2012, he was senior director for energy and environment with the National Security Council at the White House. He was previously Deutsche Bank's chief energy economist, where he forecast energy market trends and wrote on a variety of topics involving energy economics, climate change, geopolitics, and commodity prices. He is a senior fellow and former president of the U.S. Association for Energy Economics and served as president of the National Association of Petroleum Investment Analysts.

Sarah Ladislav is Director and Senior Fellow at the Energy and National Security Program, where she leads CSIS's work in energy policy, market, and technology analysis. Ladislav is an expert in U.S. energy policy, global oil and natural gas markets, and climate change. She has authored numerous publications on the geopolitics of energy, energy security and climate change, low-carbon pathways, and a wide variety of issues on U.S. energy policy, regulation, and market dynamics. Her regional energy work includes publications on Chinese, European, African, and Western Hemisphere energy issues. She has spearheaded new work at CSIS on climate change, the electricity sector, and energy technology development.