

## **Technical Paper List with All Authors**

San Antonio, Texas, USA: 2-3 October 2023

Author(s)	Organization(s)	Title
James Bae, PMP; Dean Checkai, P.E.; Federico Tablada; Aaron Chenevert; Robert Murray, P.G.; Jeff Knippa	FLUOR Federal Petroleum Operations	Cavern Pressure Management During Site Outage. Planning, Execution, and Results for Bryan Mound & Bayou Choctaw Outages
Ken Beckman	Beckman and Associates, Consultants, Inc.	An Alternative Cavern Gas Storage Design Offers a New Service Profile
Shuvajit Bhattacharya; Leandro Melani; Ander Martinez-Donate; Nur Schuba; Lorena G. Moscardelli	Bureau of Economic Geology, University of Texas at Austin	Petrophysical challenges in salt characterization and their implications on hydrogen storage: A case study from the Castile-Salado bedded salt interval in the Permian Basin, United States
Joe Brinton P.G.; Tim Lynn; Brandon Lampe PhD.; Ian Gray PhD."	Agapito Associates, Inc.	Novel In-situ Stress Measurement Technique for Cavern Design
René Buzogany; Fritz Crotogino	DEEP.KBB	The Increasing Importance of Hydrogen Derivatives – Evaluation of Ammonia Storage in Salt Caverns
Jesper Culmsee; Haofei Guo; Lars Storm Pedersen	SaltPower	Worlds first osmotic energy plant for solution mining in operation
Jai Duhan; Samuel Voegeli	RESPEC	Hydrogen Storage in Salt Caverns: Subsurface Facility Development Blueprint
Lisa Eldredge	FLUOR Federal Petroleum Operations	Crude Blending at the SPR to Meet Environmental and Safety Standards During the CY221 Million barrel/day Emergency Deliveries
Daniel Frazier, P.E.; David Fabian, P.E.; Robert Murray P.G.; Dean Checkai, P.E.; James Perry	FLUOR Federal Petroleum Operations	Cavern Well Conversion to Fiber Optic Strain Monitoring Well
Murielle Grange <sup>1</sup> ; Gregoire Hevin <sup>1</sup> ; Hippolyte Djizanne <sup>2</sup>	Storengy (1) Ineris (2)	HyPSTER: 1st Demonstrator for Green Hydrogen Storage in France
R. Coleman Hale; Colten Long; Latasha McMullen; Joshua Bradley	Lonquist & Co.	Rapid Salt Neck Closure: Observation, Remediation, and Prevention
Bastian Leuger; Dirk Zapf; Lukas Baumgartel; Feline Korner	IGtH-IUB	Laboratory investigations of fracture propagation in rock salt in hollow test specimens - LARISSA research project
Paul Oonk <sup>1</sup> ; Marinus den Hartogh <sup>1</sup> ; Matthew Norgate <sup>2</sup> ; Stephen Murphy <sup>2</sup> ; Jesse Tolley <sup>2</sup>	Nobian Industrial Chemicals B.V (1) Acoustic Data Wireless Well Technology (2)	Utilizing Wireless Acoustic Monitoring for Optimising Brine Extraction Operations
S. Patzer <sup>1</sup> ; C. Reekers <sup>2</sup>	ESK GmbH (1) Storag Etzel GmbH (2)	Recompletion of oil caverns to create a monitoring annulus at the Etzel cavern storage facility
Bhavesh Ranka, P.E.; John Hatteberg	CUDD Well Control	Well Control Challenges and Risks in Hydrogen Wells: A Technical Overview
Arnaud Réveillère	Geostock	Review of the Main Mechanical Integrity Test (MIT, Tightness Tests) Techniques and Comparison of Their Uncertainties
Michael Rucker; John Lommler	WSP USA Environmental & Infrastructure, Inc.	Observations and Experience Learned from Remediation to Prevent Collapse of I&W Brine Cavity in Carlsbad, New Mexico
Leopoldo M. Ruiz Maraggi Lorena G. Moscardelli	Bureau of Economic Geology, University of Texas at Austin	The GeoH2 Web App: An Integrated Engineering and Geoscience Tool for Modeling Hydrogen Storage Within Salt Formations
Christopher J. Thompson; Charles R. Chabannes	4C Exploration Ltd United Brine Services	Application of Passive Seismic Imaging to a Gulf Coast Salt Dome
Lin Yuan; Hassan Dehghanpour	University of Alberta	Assessment of Possible Geochemical Reactions During Hydrogen Storage in Salt Caverns-A Lotsberg Case Study
Todd R. Zeitler; Tonya S.A. Ross; David B. Hart	Sandia National Laboratories	Comparison of Post-Drawdown Sonars with SANSMIC Model Predictions Following the Recent Unprecedented Oil Volume Movements at the SPR



## Hydrogen Cavern Storage Considerations Sunday, 1 October 2023

Instructor	Title	Objectives
Olaf Kruck (Socon)	Overview Hydrogen gas	Understanding Hydrogen, properties, safety considerations and detection, similarities to and differentiation from Natural Gas for Storage
Anna Lord (Sandia)	Hydrogen Industry/governmental drivers/regulatory issues (North America Perspective)	Understand the drivers for the hydrogen push and specific business drivers and regulatory environment. (Gov. incentives, hydrogen hubs, overview/outlook for current/future projects)
Yvan Charnavel (Storengy)	Hydrogen Industry/governmental drivers/regulatory issues (European/other Perspective)	Understand the drivers for the hydrogen push and specific business drivers and regulatory environment. (Gov. incentives, hydrogen hubs, overview/outlook for current/future projects)
Sophie Minas (WSP)	ACES Project	Overview of Hydrogen Project in progress in UTAH
Gregoire Hevin/Patrick Roordink (Storengy/Gasunie)	HyPSTER project	Overview of pilot of hydrogen storage in a salt cavern
Paul Munsterman (LINDE)	LINDE Moss Bluff H2 Cavern	Overview of and lessons from Existing Cavern
Kurt Looff/Anna Lord (Texas Brine/Sandia) combined	Geological Considerations for Hydrogen Caverns	Potential geological influences for hydrogen vs nat gas service
Sam Vogeli RESPEC	Geomechanical Considerations for Hydrogen Service	Potential geomechanical considerations for hydrogen vs nat gas service
Joel Nieland/Benoit Brouard (RESPEC/Brouard) combined	Cavern Operations/ Thermodynamics	Modeling of cavern thermodynamics, gas nominations (Differentiation from Natural Gas) Software examples
Hippolyte Djizanne (INERIS)	Blowout Modeling	The modeling of the subterraneous and aerial parts of a blowout from a hydrogen storage cavern
Dr. Brennan Domec (Expro)	Casing and welding concerns	Considerations for casing specifications, material, welding for hydrogen service
Barry Roberts (Sandia)	Sealing (Cement, Elastomers, Threaded connections)	Overview of current status of cementing technologies, elastomer concerns and suitable material selections, threaded connections
Brandon Lampe/Rene Schneider (Agapito/DEEP/KBB) combined	Regulations (North America/Europe)	Overview of regulations for Hydrogen caverns, including safety requirements
Joel Warneke/Arnaud Reveillere (CSI/Geostock) combined	Completions/conversions/MIT (North American/European Perspective)	North American/European typical completions, MIT considerations, regulatory considerations (Plus microbial considerations[CSI])
Heike Bernhardt (DEEP/KBB)	Repurpose of Existing Caverns	Evaluation of deciding factors for repurposing existing caverns for hydrogen service