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SUMMARY

Gardner W. Walkup, Jr. is an expert for law firms, industry clients, and governmental agencies and trusted advisor to corporate management and boards. Mr. Walkup is a recognized expert in the valuation of oil and gas assets, field development planning of major projects and unconventional plays, and decision analysis. He has a deep understanding of the energy value-chain, from land acquisition and exploration through distribution and marketing. He brings a keen understanding of economic, geopolitical, commercial, operational, and technical risks, as well as experience in over 30 countries representing capital investments of more than \$200 billion.

Mr. Walkup has provided expert opinions and testimony in international bilateral investment treaty and commercial arbitrations, domestic civil arbitrations and litigations, international criminal fraud and corruption cases heard before ICSID, UNCITRAL, ICC, AAA/ICDR, LCIA, and US federal and district courts. Matters include natural gas supply, mega-project development, offshore and onshore operations, operating/non-operating party industry best practices and industry practices in unconventional field development.

As a corporate executive (CSO), Mr. Walkup has chaired an Investment Committee directing overall corporate capital allocation, led the development of a new corporate strategy that drastically narrowed investment focus and reduced costs including the design and implementation of culture change and capability building efforts in response to new strategies and major acquisitions.

Mr. Walkup co-founded the valuation practice at ADA that was acquired by the Corporate Valuation Consulting business of PwC that specialized in the valuation of long-lived, risky energy assets using advanced stochastic and real option approaches.

Mr. Walkup started his career at Chevron, where he was a senior reservoir engineer for a 250,000-barrel-a-day oil field in Indonesia, led strategic planning and petroleum engineering for a major offshore Gulf of Mexico development, led corporate efforts to improve economic valuation methodologies of large capital projects, and developed novel reservoir-characterization approaches.

EDUCATION

M.S., Petroleum Engineering
B.S., Chemical Engineering

Stanford University
University of California, Davis

PRESENT EMPLOYMENT

Managing Director, Berkeley Research Group, Washington, DC

PREVIOUS POSITIONS

Bridge Energy Partners, Alexandria, VA
President, 2013–2014

The AES Corporation, Arlington, VA
Senior Vice President – Corporate Strategy, 2010–2013
Board Member of Dayton Power & Light (a wholly-owned subsidiary of AES)

IHS CERA, Palo Alto, CA
Vice President and Global Managing Director of Consulting, 2007–2010

Strategic Decisions Group, Palo Alto, CA (SDG's Energy practice was acquired by IHS CERA)
Principal, 2001–2007

PricewaterhouseCoopers, Menlo Park, CA
Principal, 1999–2001

Applied Decision Analysis, Menlo Park, CA (ADA was acquired by PwC)
Principal, 1997–1999

Chevron Corp., New Orleans, LA; Sumatra, Indonesia; La Habra, CA
Senior Petroleum Engineer, 1984–1997

PROFESSIONAL MEMBERSHIPS

Society of Petroleum Engineers (SPE)
American Association of Professional Landmen (AAPL)

PROFESSIONAL EXPERIENCE

Energy Industry And Quantum Expert For International Dispute Resolution

- Confidential Ongoing Matter, Superior Court of the State of California
 - Expected to provide expert opinion and testimony regarding the causes of lost production and the associated lost profits and damages in an oil field undergoing cyclic-steam stimulation operations.
- Confidential Ongoing Matter, Superior Court of the State of California

- Expected to provide expert opinion and testimony regarding claims of force majeure and the quantum of lost profits and damages in an oil field undergoing steamflood and cyclic-steam operations stimulation.
- Confidential Ongoing Matter, District Court of Harris County, Texas
 - Expected to provide expert opinion and testimony regarding the valuation of net-profit-interests (“NPIs”) of certain unconventional oil assets in the Powder River Basin.
- Confidential Ongoing Matter, International Court of Arbitration (Singapore)
 - Expected to provide expert opinion and testimony regarding claims of force majeure in a natural gas supply agreement for an offshore field in Indonesia.
- Winfield Resources, LLC. v. PennEnergy Resources, LLC., American Arbitration Association (Pittsburgh).
 - Provided expert opinion and testimony regarding whether the operator’s production decisions during periods of low natural gas prices were reasonable and prudent, whether the operator’s practices of sharing information with the non-operating working interest owner were consistent with industry practice and whether the quantum of claimed damages were reasonable.
- Jason Searcy, Litigation Trustee for the Saratoga Litigation Trust v. Thomas F. Cooke and Andrew C. Clifford, American Arbitration Association (Houston)
 - Provided expert opinion and testimony regarding whether decisions made by the CEO and CFO of a bankrupt oil and gas company with operations in the Gulf of Mexico were reasonable. Also provided opinion regarding the quantum of associated damages.
- BP Exploration and Production, Inc. v. BHP Billiton Petroleum (Deepwater), Inc., American Arbitration Association (Houston)
 - Provided expert opinion and testimony regarding project management and development of E&P projects.
- Petrohawk Energy Corporation and BHP Billiton Petroleum (Fayetteville) LLC v. Cameron International Corporation, American Arbitration Association (Houston)
 - Provided expert opinion and testimony regarding industry standard practices in E&P operations.
- United States of America v. Raheem J. Brennerman, US District Court, Southern District of New York
 - Provided testimony regarding defendant’s operatorship in global oil and gas fields
- Lisas Nitrogen Limited v. The National Gas Company of Trinidad and Tobago Limited, UNCITRAL Arbitration (London).
 - Provided expert opinion and testimony regarding evaluation of historical natural gas supply and expectations for future nature gas supply
- Unión Fenosa Gas, S.A. v. Arab Republic of Egypt, International Centre for Settlement of Investment Disputes (Washington, DC)
 - Provided expert opinion and testimony regarding shortfall in natural gas supply and claims of force majeure.

- Unión Fenosa Gas, S.A. v. Egyptian Natural Gas Holding Company, Cairo Regional Centre for International Commercial Arbitration, Case No. 896/2013 (New York City)
 - Provided expert opinion and testimony regarding shortfall in natural gas supply and claims of force majeure.
- Etablissements Maurel & Prom S.A. v. Dominion Oil & Gas Limited and Dominion Petroleum Limited, International Chamber of Commerce International Court of Arbitration (Paris)
 - Provided expert opinion and testimony regarding the performance of the operator of exploration activities in Tanzania and the associated costs of these operations.
- United States of America v. B.P. Exploration & Production, Incorporated and Anadarko Petroleum Corporation, In Re: Oil Spill by the Oil Rig “Deepwater Horizon” in the Gulf of Mexico on April 20, 2010, US District Court, Eastern District of Louisiana.
 - Provided expert opinion and testimony regarding roles of operators and non-operating working interest owner in E&P activities and the likely impacts of penalties imposed on non-operating working interest under the Clean Water Act

Selected Energy And Nature Resource Project Experience

Global M&A

- Led the buy-side valuation of one the largest global gold mining companies: short and long-term market analysis and the development of mine plans for assets in Africa, South America, Australia and North America

Africa

- Angola: LNG, oil export and multiple deepwater developments
- Cameroon: Exploration, oil field development
- Equatorial Guinea: Offshore gas field development, LNG development
- Nigeria: Multiple deepwater developments, LNG development, gas monetization and flare reduction; oil reservoir characterization and management
- South Africa: Market analysis in support of power (coal-fired, wind) business development
- Tanzania: Expert services for dispute between operator and non-operator regarding exploration drilling operations and costs

Asia

- China: Market analysis in support of power generation (coal, hydro, wind) investments; Deepwater exploration and development; expert services for unconventional E&P dispute
- India: Market analysis in support of power (coal, wind, solar) and LNG investments
- Indonesia: Geothermal E&P and portfolio valuation, oil field reservoir management (primary and EOR); deepwater field development, LNG development, mature field revitalization,
- Iraq (KRG): Expert services for dispute regarding oil field development
- Jordan: Market analysis for power generation (gas, wind) investments
- Kazakhstan: Sour gas field development (reservoir management and project development), Electricity market analysis.
- Malaysia: Gas field development, LNG development

- Philippines: Geothermal transaction valuation and project development, market analysis for power generation (coal)
- Russia: Onshore gas field development
- Saudi Arabia: Onshore oil field development; reservoir characterization
- Turkey: Market analysis for power (hydro, gas, coal) business development

Australia/Oceania

- Australia: LNG project development (Northwest Shelf and Queensland), CBM reservoir development (Queensland)
- New Zealand: Geothermal development
- Papua New Guinea: Exploration and reservoir characterization

Europe

- France: Market analysis for power generation (solar) investments
- Norway: Offshore field developments; Reservoir characterization and management
- Poland: Market analysis for power generation (wind) investments
- UK: Market analysis for power (natural gas, wind) investments, Offshore field developments, Onshore unconventional gas (CBM) development

North America

- Canada: CBM field development optimization and valuation (Alberta); Reservoir characterization and management (primary & EOR); Shale gas field developments (British Columbia, Alberta); oil sands field developments, onshore gas field developments (Alberta), offshore gas field development (Nova Scotia), pipeline developments
- Central America and the Caribbean: Market analysis for power generation (hydro, natural gas) & distribution investments
- Mexico: Market analysis for power generation (gas, wind) investments, geothermal development
- United States: Buy-side transaction support and valuation, reservoir characterization and management (primary & EOR); unconventional gas (shale, CBM, tight) field developments (Barnett, Haynesville, Marcellus, Piceance, Uinta, & Utica); shale/tight oil field developments (Bakken & Monterey); multiple offshore California field developments, multiple deepwater Gulf of Mexico field developments; multiple EOR field developments; Arctic field developments; Market analysis and integrated generation resource planning (PJM, MISO, ERCOT, California); geothermal valuation and development planning (California, Nevada)

South America

- Argentina: Market analysis for power generation (coal, natural gas) and LNG investments
- Brazil: Market analysis for power generation (natural gas, hydro, wind) investments, Multiple deepwater field developments
- Chile: Market analysis for power generation (coal, natural gas, hydro) and LNG investments
- Colombia: Market analysis for power generation (natural gas, hydro) and LNG investments
- Nicaragua: Geothermal investment analysis
- Venezuela: Heavy oil field development

SELECTED PUBLICATIONS AND PRESENTATIONS

- “Oil and Gas Industry Moving Forward”, Oil & Gas Monitor, December 2015
- “Hooking Up: Emerging Collaboration Trends in Oil and Gas”, Oil & Gas Monitor, May 2015
- “Regulated Utilities Investing in Natural Gas Reserves and Production: Recommendations on How to Avoid the Risks and Capture the Prize” BRG White Paper, April 2015
- “Play to Win: Management Lessons From Silicon Valley Applied to the Unconventional Hydrocarbon Revolution”, BRG White Paper, April 2015
- “Oil Prices: How Did We Get Here and Where Are We Going”, Oil & Gas Monitor, Jan 2015
- “The Unconventional Revolution”, Oil & Gas Monitor, Sept 2015
- “The Role of Natural Gas for Central American Power Sector,” presentation at *LNG and Natural Gas in Central America*, Institute of the Americas, Panama City, September 2012
- “Global Reach,” *Platts Global Power Markets Conference*, Las Vegas, April 2011
- “Growing Unconventional Gas Outside of North America: Keys to Success,” presentation at CERAWeek, Houston, 2010
- “CSG Outside of Queensland”, Presentation to QUPEX, Brisbane, Apr 2009
- “Stage-Gate Project Management Process in the Oil and Gas Industry,” *Journal of Petroleum Technology*, December 2006
- “The Good, the Bad, and the Ugly of the Stage-Gate Project Management Process in the Oil and Gas Industry” (with Bob Ligon), *SPE 102926 2006 Annual Technical Conference*
- “Choosing an International Strategy,” *Oil and Gas Investor*, Hart Energy Publishing, January 2006
- “Realizing the Potential of Real Options Valuation – Keys to Successful Implementation,” *Proceedings of Real Options Valuation Conference*, IQPC, September 2003
- “ROV from A to Z,” *Proceedings of Real Options Conference*, IQPC, October 2001
- “Case Studies of a Real Option Approach to Asset Valuation in the Petroleum Industry,” *SPE 52952 Proceedings of Hydrocarbon Economics and Evaluation Symposium*, March 1999
- “Discovering Real Options in Oil Field Exploration and Development” (with J. Claeys), *SPE 52956 Proceedings of Hydrocarbon Economics and Evaluation Symposium*, March 1999
- “Screening a Reservoir for Horizontal Well Application: A Case Study of the Minas Field” *Proceedings of the International Symposium on Horizontal Well Technology*, 1994
- “Analysis of Pressure Transient Tests for Composite Naturally Fractured Reservoirs” (with J. Kikani), *SPE Formation Evaluation Journal*, June 1991
- “Improving Polymer Injectivity at West Coyote Field” (with P.J. Shuler et al.), *SPE Reservoir Engineering*, August 1987
- “Application of the Parallel Resistance Concept to Well Test Analysis of Multilayered Reservoirs” (with M.J. Mavor), *SPE 15117 Proceedings of the Annual California Regional Meetings*, April 1986
- “Characterization of Tracer Retention Processes and Their Effect on Tracer Transport in Fractured Geothermal Reservoirs” (with R. Horne), *SPE 13610* March 1985
- “Forecasting Thermal Breakthrough of Reinjecting Water Using a Dispersion-Retention Model for Tracer Test Interpretation” (with R. Horne), *Proceedings International Symposium on Geothermal Energy*, Geothermal Resource Council, August 1985

SELECTED TECHNICAL AND PROFESSIONAL CONTRIBUTIONS

- 2011-2012 USA-Brazil CEO Forum: Energy Committee Member
- 2009 SPE Forum Series: Frontiers of Technology – “Offshore EOR: It’s About Time,” October 26–31, 2009, La Romana, Dominican Republic
 - Organizing Committee and Session co-chair
- 2007 SPE Annual Technical Conference and Exhibition, November 11–14, 2007, Anaheim, CA
 - Program Committee member and Management Section Committee member
- 2006 SPE Annual Technical Conference and Exhibition, September 24–27, 2006, San Antonio, TX
 - Program Committee member and Management Section chairperson
- 2003-2007 SPE Management Committee (Chair in 2006)
- 2003 SPE Annual Technical Conference and Exhibition, October 5–8, 2003, Denver, CO
 - Program Committee member and Management Section Committee member
- 2003 SPE ATW (Advanced Technical Workshop) – “The Theory and Art of Asset Valuation: Building a Case for Change,” September 14–17, 2003
 - Technical Committee member and Session chair
- 2002 SPE Annual Technical Conference and Exhibition
 - Program Committee member, Education and Professionalism Section Committee member, Session co-chair “Distance Learning and Processes for Technology Transfer”
- 2002 SPE Forum Series: Decision-Driven Asset Development and Management, July 14–19, 2002, Park City, UT
 - Steering Committee and Session chair
- 1990-1992 – SPE Education and Professionalism Technical Committee
- 1987-1990 – SPE Reservoir Monitoring and Testing Technical Committee