

Robert N. Erlich

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EXECUTIVE SUMMARY

- Proven and demonstrable track record as an oil finder, and a builder and leader of E&P companies.
- Well-established technical reputation as a geologist (Ph.D. from Vrije Universiteit, The Netherlands) with extensive knowledge of Latin American, Caribbean, Equatorial African, and Gulf of Mexico petroleum systems.
- C-suite experience as President and CEO, as well as extensive experience in other executive-level positions (SVP, VP, GM).
- Good working relationships with BOD's in two companies.
- High-level consulting relationships with major investors and E&P companies such as Elliott Management, Mitsubishi Corp., ION E&P Advisors, and Santa Elena Minerals IV
- Created value through the drill bit with major multi-national and large and small independent companies (BP, Amoco, Burlington Resources, Petrolifera Petroleum, and PanAtlantic Exploration).
- Extensive experience building multi-disciplinary teams.
- Good working relationships with key Private Equity firms and major banks through multi-year M&A evaluations.
- Leadership experience in planning, budgeting, managing, and execution of multi \$100 MM exploration programs.
- Built key relationships across Latin America (Spanish language, cultural skills) and the Caribbean, especially Colombia, Peru, Trinidad, and Suriname.
- Native of Miami Beach, Florida

PROFESSIONAL EXPERIENCE

African Energy Chamber

July 2020 – Present

Advisory Board Member, Investment and Exploration Committees

As a member of the Investment and Exploration Committees, I work directly with other committee members, the Director of Strategy, and the Chairman of the Chamber to evaluate and recommend investment and financing options for energy development in Africa. I am also tasked with the technical aspects of exploration for the Board, assisting NOCs with developing options to promote oil and gas exploration in Africa. These committees are uncompensated, voluntary positions.

Cayo Energy L.P. (www.cayoenergy.com)

March 2016 – Present

Partner and Executive Director, Upstream

As Partner and Executive Director for Upstream Dr. Erlich works directly with Cayo Energy's clients to deliver high quality technical, organizational, and strategic planning advice. Cayo Energy's upstream consulting practice focuses on providing sound technical guidance and advice on investment opportunities in the upstream oil and gas sector to financial institutions, private equity, hedge funds, high net worth individuals, government institutions, international service companies, and selected operators. With over 50 years of hands-on experience, Cayo has a proven track record of providing organic growth and value to E&P companies through efficient deployment of capital and focused program management. Cayo's extensive leadership experience in top-level management and technical roles allows the company to customize and build fit for purpose strategic plans, create and align organizations for optimum efficiency, assess and develop country risk profiles, and provide qualitative basin-play-prospect risk assessments for its clients. Cayo Energy also has strong links to providers of world-class negotiations and HSSE services, and can provide evaluations of additional upstream services on an as-needed basis. Cayo Energy's list of clients includes Mitsubishi Americas, Elliott Management, ION E&P Advisors, Enerflex International, SOL Petroleum, Santa Elena Minerals, and others. Dr. Erlich was elected to the Board of Directors of Colombian junior oil Selva Energy (www.selvaenergy.com) in January, 2019.

PanAtlantic Exploration Company

November 2012 – March 2016

President and Chief Executive Officer

As President and CEO Dr. Erlich reported directly to the Group Chairperson. He was directly accountable for developing and delivering on strategic, financial, and operational goals in cooperation with the Group Chairperson and the Board of Directors, as well as overseeing all aspects of PanAtlantic's business. From PanAtlantic's Houston office Dr. Erlich's Executive Leadership Team (SVP Operations, VP Legal, Manager HR, and Corporate Controller) coordinated PanAtlantic's business activities and offices in Equatorial Guinea (Malabo office), Côte d'Ivoire (Abidjan office), and Colombia (Bogotá office). Dr. Erlich provided oversight and guidance to the Operations team as they appraised a high-potential discovery in Colombia for future development. In September 2015, Dr. Erlich led a multi-disciplinary team in partnership with Bank of America Merrill Lynch through the proposed sale of The Company to a major multi-national buyer.

Senior Vice President, Exploration and New Ventures

As Senior Vice President, Exploration and New Ventures Dr. Erlich reported directly to the President and CEO with additional reporting responsibilities to the Group Chairperson. He worked as a key member of the Executive Committee and collaborated on goal setting and decision making with the leadership of Operations, Legal, Accounting, IT, and HR. Dr. Erlich communicated regularly with the group Chairperson and Board on M&A and corporate strategy issues. He was ultimately responsible for the quality, quantity, context, and content of all technical work done within the company; all economic and commercial work; all strategic and business planning;

and all exploration planning. Dr. Erlich managed and was accountable for the spending of annual capital budgets frequently exceeding \$150 MM and worked with the Exploration and Commercial leadership team to help prioritize exploration projects and spending for the company. Dr. Erlich guided the leadership team to coordinate and advance project work to the point where clear decisions could be made, and in that capacity, he led all meetings designed for final review and approval of that work by the Executive Committee. Dr. Erlich directly and indirectly supervised 18 employees, four of which were Exploration Managers. He led all business development activities through the New Ventures team, which generated, coordinated, and pursued new opportunities. In this regard, Dr. Erlich directed the evaluation of those opportunities, which included extensive M&A evaluations of companies and producing assets in the \$150 MM - \$2.8 billion range. PanAtlantic teams captured a high-value exploration portfolio in West Africa and Colombia with an estimated value of >\$200 MM.

Hess Corporation

May 2011 – May 2012

Senior Advisor

As Senior Advisor Dr. Erlich reported directly to the SVP of Exploration and New Business for Hess Corporation. He advised on technical and business-related matters covering the world but specialized in the Americas, ensuring that all new opportunities were in proper strategic alignment with Corporate and sector goals. Dr. Erlich quality controlled technical work and mentored less experienced staff as part of the Senior Advisor role. He led a diverse technical team with assets and activities in four countries. During this period, his teams successfully led the drilling and completion of a \$110 MM exploration program in Peru and recommended project sanction and development, as well as co-leading the M&A evaluation of producing assets in Brazil.

Petrolifera Petroleum Limited

October 2008 – March 2011

Corporate Vice President, Exploration and New Ventures

As VP and as a Corporate Officer, Dr. Erlich directly planned and managed a diverse exploration portfolio through a large staff in four countries. He had direct accountability for exploration and new business, and regularly attended and made presentations at BOD and investor meetings. Dr. Erlich had direct oversight of all exploration operations and made key decisions involving strategic and operational plans for Petrolifera's activities in Colombia and Peru. He also worked on the corporate transition team during the acquisition of Petrolifera by Gran Tierra Energy and facilitated the handover of all projects to GTE's Colombian, Peruvian, and Corporate offices. In the 2.5 years under his direction at Petrolifera, Dr. Erlich's teams discovered oil and natural gas in Colombia at La Pinta-1X (30 MMBOE) and natural gas and condensate at Brillante SE-1X (110 BCFE), both of which were produced commercially.

BP America Exploration

May 2006 – October 2008

New Ventures Director, Latin America/Caribbean

In this role, Dr. Erlich was responsible for developing a New Ventures Exploration investment portfolio for all countries within the region (primarily Colombia, Peru, Trinidad), with the exception of offshore Brazil and Mexico, and for developing and maintaining excellent government relations throughout the region. He reported directly to the SVP for E&P and had a dotted line reporting relationship with the Group VP for Worldwide Exploration & New Ventures. Dr. Erlich managed, allocated, and planned budgets, which at project sanction involved staff assignments on individual projects as high as 30 people with CAPEX budgets exceeding \$20 MM. In nearly three years under his direction at BP, Dr. Erlich's teams captured BP's first new exploration blocks in Colombia (RC4, RC5 offshore) in 20 years; at the time the blocks had risked P50 resources of >18 TCF.

Burlington Resources International

March 1999 – April 2006

General Manager, Peru and Colombia

In this role, Dr. Erlich utilized his technical skills (basin/play/prospect evaluation, stratigraphy, sedimentology, seismic stratigraphy) and management skills (project planning, budgeting, execution, and government and partner relations) to create substantial value by acquiring new opportunities, executing exploration programs,

and adding to the Company's prospect inventory. During his Burlington career, Dr. Erlich and his teams created value through the technical analyses, negotiation, and capture of new assets in Peru and Colombia. 3P reserves and resources added via the drill bit in Peru exceed 1130 MMBOE; discovered fields directly credited to the Burlington-Repsol exploration program include Raya (170 MMBOE), Buena Vista (110 MMBOE), Delfin (125 MMBOE), Kinteroni (380 MMBOE), and Sagari Fields (350 MMBOE); estimated undiscounted value of the latter two fields is currently estimated to be >\$2 billion.

Amoco Production Company

December 1980 – January 1999

Senior Technical Advisor and Northern South America Regional Geologist

Dr. Erlich held various global technical leadership positions Amoco's Worldwide New Ventures team and several Amoco operating affiliates (Amoco Orient Petroleum Company, Amoco Trinidad Oil Company, and Amoco Venezuela Oil Company). Dr. Erlich's areas of expertise included the US (Gulf of Mexico on- and offshore; US East Coast OCS), Latin America (specifically Trinidad, Venezuela, Central America and the greater Caribbean), and the People's Republic of China.

EDUCATION

- PhD in Paleooceanography and Paleoclimatology, Vrije Universiteit of Amsterdam, The Netherlands (Area of Focus: Upper Cretaceous Petroleum Systems)
- MS in Geology, University of North Carolina at Chapel Hill (Area of Focus: Siliciclastic Sedimentology and Stratigraphy)
- BS in Geology, University of Miami, Florida (Area of Focus: Marine Geology and Low Temperature Carbonate Geochemistry)

PROFESSIONAL ORGANIZATIONS

- AAPG - Certified Petroleum Geologist #4317
- (Associate Editor of AAPG Bulletin, 1985-1987)
- Licensed Professional Geologist (Texas #1487)
- Society of Economic Paleontologists and Mineralogists
- International Association of Sedimentologists
- AAAS
- Houston Geological Society
- Geological Society of Trinidad and Tobago
- National Science Foundation and ODP proposal reviewer

PUBLICATIONS AND TECHNICAL PRESENTATIONS

- 36 major refereed publications on stratigraphy, source rocks, seismic stratigraphy, carbonate sedimentology, basin evolution; 25 technical presentations at important international meetings
- **Keynote Speaker Roles (since 2000)**
 - 2015 NOIA annual meeting (Washington, DC)
 - 2014 Bureau of Economic Geology Lecture Series (Austin, Texas)
 - 2014 Oilfield Breakfast (Houston)
 - 2013 Texas A&M Lecture Series (College Station, Texas)
 - 2013 ConocoPhillips Lecture Series (College Station, Texas)
 - 2013 Geological Society of Trinidad and Tobago
 - 2008 AAPG International Meeting (Cartagena, Colombia)
 - 2007 Geological Society of Trinidad and Tobago Annual Meeting

- **Session Chairman and Other Speaking Roles (since 2000)**

- 2019 GCAGS annual meeting (Houston)
- 2015 Shreveport Geological Society
- 2015 GCAGS annual meeting (Houston)
- 2015 Caribbean Geological Conference (Trinidad)
- 2015 Houston Geological Society
- 2014 Houston Geological Society
- 2011 AAPG annual meeting (Houston)
- 2008 AAPG annual meeting (Houston)
- 2008 Unconventional and Conventional Hydrocarbon Resources Conference (Colombia)
- 2000 SEPM/Simposio Bolivariano (Venezuela)

PUBLICATIONS

- ◆ D. T. Pocknall and R. N. Erlich, 2020, Palynostratigraphy and lithostratigraphy of Upper Cretaceous and Paleogene outcrop sections, Mérida Andes (Maracaibo Basin), Western Venezuela: *Journal of South American Earth Sciences*, v. 104, <https://doi.org/10.1016/j.jsames.2020.102830>
- ◆ R. N. Erlich and J. Pindell, 2020, Crustal origin of the West Florida Terrane, and detrital zircon provenance and development of accommodation during initial rifting of the southeastern Gulf of Mexico and western Bahamas, *in* Davison, I., Hull, J. N. F. and Pindell, J. (eds), *The Basins, Orogens and Evolution of the Southern Gulf of Mexico and Northern Caribbean*: Geological Society, London, Special Publications, 504, <https://doi.org/10.1144/SP504-2020-14>
- ◆ J. Pindell, B. Weber, W. Hale-Erlich, S. Cossey, M. Bitter, R. Molina, R. Graham, and R. N. Erlich, 2020, Strontium isotope dating of evaporites and the breakup of the Gulf of Mexico and Proto-Caribbean Seaway, *in* Martens, U., and Molina Garza, R.S., eds., *Southern and Central Mexico: Basement Framework, Tectonic Evolution, and Provenance of Mesozoic–Cenozoic Basins*: Geological Society of America Special Paper 546, [https://doi.org/10.1130/2020.2546\(12\)](https://doi.org/10.1130/2020.2546(12))
- ◆ A. Goswami, J. Pindell, R. N. Erlich, K. Reuber, and B. W. Horn, 2019, Regional Structure and Petroleum Potential of the North Panama Deformed Belt: *GeoGulf Transactions*, v. 69, p. 365–372.
- ◆ R. N. Erlich, W. Hermoza, and D. Jarvie, 2018a, Depositional environments and geochemistry of the Upper Triassic- Lower Jurassic Pucará Group, Huallaga Basin, Perú, *in* Zamora, G., McClay, K., and Ramos, V., *Petroleum Basins and Hydrocarbon Potential of the Andes of Peru and Bolivia*: American Association of Petroleum Geologists Memoir 117, p. 141-174.
- ◆ R. N. Erlich, J. Fallon, and P. O’Sullivan, 2018b, Stratigraphy and LA-ICP-MS zircon U-Pb provenance of Middle Permian-Maastrichtian sandstones from outcrop and subsurface control in the Subandean basins of Perú, *in* G. Zamora, K. McClay, and V. Ramos, *Petroleum Basins and Hydrocarbon Potential of the Andes of Peru and Bolivia*: American Association of Petroleum Geologists Memoir 117, p. 175-222.
- ◆ R. Erlich, J. Pindell, and L. Dzou, 2015a, Petroleum potential of the Florida-Cuba-Bahamas collision zone (extended abstract), *in*, *Gulf Coast Association of Geological Societies Transactions*, v. 65, p. 443–445.
- ◆ R. Erlich, 2015b, Private equity’s role in today’s E&P business: *World Oil*, June, 2015, p. 31.
- ◆ R. Erlich, 2015c, How the Jusepin Field was discovered – and lost: *AAPG Explorer*, October 2015, p. 34-38.
- ◆ R. Erlich, 2014a, OCS potential doesn’t always ensure success: *AAPG Explorer*, May, 2014, p. 32-34.
- ◆ R. Erlich, 2014b, Persistence paid off for Lihua – eventually: *AAPG Explorer*, August, 2014, p. 40-43.

- ◆ R. N. Erlich, G. Wine, C. Monges, J. Rebaza, M. Angel A., and C. Alegría, 2011, Sub-thrust oil and gas potential of Block 107: A potential giant field complex along the Peruvian mountain front, *in*, Proceedings of the 7th INGEPET Meeting, November 7-11, 2011, Lima, Peru: Digital publication, 13 p.
- ◆ R. N. Erlich and D. A. Leckie, 2008, The geology of stratigraphic heavy oil accumulations in North and South America (abstract): Earth Sciences Journal, Universidad Nacional de Colombia, from Conventional and Unconventional Hydrocarbon Resources International Conference, Cartagena, Colombia, Feb. 6-8, 2008, p. 54.
- ◆ R. N. Erlich and J. Keens-Dumas, 2007, Late Cretaceous Palaeogeography of North-eastern South America: Implications for source and reservoir development, *in*, Proceedings of the 4th Geological Conference of the Geological Society of Trinidad and Tobago, "Caribbean Exploration – Planning for the Next Century." June 17-22, 2007, Port-of-Spain, Trinidad: Digital publication, 34 p.
- ◆ O. Macsotay, R. N. Erlich and A. D. Rincón R., 2006, Fósiles Heterocronos en Lodos Anóxicos de la Fosa de Cariaco: Comparación Con el Neocretácico Venezolano: Boletín del Instituto Oceanográfico de Venezuela, v. 45, no. 1, p. 17-39.
- ◆ L. M. Preuher, R., Erlich, R., and L. W. Snee, 2005a, ⁴⁰Ar/³⁹Ar geochronology and hypabyssal igneous rocks in the Marañon Basin of Peru – A record of thermal history, structure, and alteration: U.S. Geological Survey Scientific Investigations Report 2005-5132, 41 p.
- ◆ R. N. Erlich and J. L. Coleman, Jr., 2005b, Drowning of the Upper Marble Falls carbonate platform (Pennsylvanian), central Texas: A case of conflicting "signals?" Sedimentary Geology, v. 175, p. 479-499.
- ◆ R. N. Erlich, J. Keens-Dumas, and T. Villamil, 2003a, Controls on Upper Cretaceous source rock deposition, Costa Rica to Suriname, *in*, C. Bartolini, R. Buffler, K. Burke, J. Blickwede, and B. Burkart (eds.), The Gulf of Mexico and Caribbean Region: Plate Tectonics, Basin Formation and Hydrocarbon Habitats: AAPG Memoir 79, Chp. 1, p. 1-45.
- ◆ O. Macsotay, R. N. Erlich, and T. Peraza, 2003b, Sedimentary structures of the La Luna, Navay and Querecual Formations, Upper Cretaceous of Venezuela: Palaios, v. 18, p. 334-348.
- ◆ D. T. Pocknall, R. N. Erlich, J. A. Stein, J. A. Bergen, and M. A. Lorente, 2001, The palynofloral succession across the Cretaceous to Paleocene transition zone, Mérida Andes, western Venezuela, *in*, D. K. Goodman and R. T. Clarke (eds.), Proceedings of the IX International Palynological Congress, Houston, Texas, USA, 1996: American Association of Stratigraphic Palynologists Foundation, P. 171-179.
- ◆ R. N. Erlich, S. E. Palmer-Koleman, A. J. Nederbragt, O. Macsotay I., and M. Antonieta Lorente, 2000, Birth and death of the 'La Luna Sea', and origin of the Tres Esquinas phosphorites: Journal of South American Earth Sciences, v. 13, p. 21-45.
- ◆ R. N. Erlich, O. Macsotay I., A. J. Nederbragt, and M. Antonieta Lorente, 1999a, Palaeoceanography and depositional environments of Upper Cretaceous rocks of Western Venezuela: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 153, p. 203-238.
- ◆ R. N. Erlich, S. E. Palmer-Koleman, and M. Antonieta Lorente, 1999b, Geochemical characterization of oceanographic and climatic changes recorded in upper Albian to lower Maastrichtian strata, western Venezuela: Cretaceous Research, v.20, p. 547-581.
- ◆ A. J. Nederbragt, R. N. Erlich, B. W. Fouke, and G. M. Ganssen, 1998, Paleoeology of the biserial planktonic foraminifer *Heterohelix moremani* (Cushman) in the late Albian to middle Turonian Circum-North Atlantic: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 144, p. 115-133.

- ◆ R. N. Erlich, D. T. Pocknall, C. A. Yeilding, and M. A. Lorente, 1997a, Chronostratigraphy, depositional environments, and reservoir potential of Eocene rocks, southern and central Mérida Andes (Maracaibo and Barinas/Apure basins), western Venezuela, *in*, K. Shanley, (ed.), *Shallow Marine and Non-marine Reservoirs: Gulf Coast SEPM 18th Annual Research Conference*, December 7-10, Houston, Texas, USA, p. 93-106.
- ◆ R. N. Erlich, A. J. Nederbragt, and M. A. Lorente, 1997b, Origin and depositional environments of Turonian - Maastrichtian organic-rich and phosphatic sediments of Western Venezuela, *in*, *Proceedings of the Sixth Simposio Bolivariano, "Exploración Petrolera en las Cuenca Subandinas"*, September 14-17, Cartagena, Colombia, v. 1, p. 478-524.
- ◆ D. T. Pocknall, R. N. Erlich, J. A. Stein, J. A. Bergen, and M. A. Lorente, 1997c, A Cretaceous-Tertiary boundary section at Río Lora, Mérida Andes, western Venezuela, *in*, *Proceedings of the Sixth Simposio Bolivariano, "Exploración Petrolera en las Cuenca Subandinas"*, September 14-17, Cartagena, Colombia, v. 1, p. 552-564.
- ◆ R. N. Erlich, A. Astorga, Z. Sofer, L. M. Pratt, and S. E. Palmer, 1996, Palaeoceanography of organic-rich rocks of the Loma Chumico Formation of Costa Rica, Late Cretaceous, eastern Pacific: *Sedimentology*, v. 43, p. 691-718.
- ◆ R. N. Erlich, A. P. Longo, Jr., and S. Hayare, 1993a, Response of carbonate platform margins to drowning: evidence of environmental collapse, *in*, R. G. Loucks and J. F. Sarg (eds.), *Carbonate Sequence Stratigraphy: AAPG Memoir 57*, Chp. 9, p. 241-266.
- ◆ R. N. Erlich, P. F. Farfan, and P. Hallock, 1993b, Biostratigraphy, depositional environment, and diagenesis of the Tamana Formation, Trinidad: a tectonic marker horizon: *Sedimentology*, v. 40, p. 743-768.
- ◆ R. N. Erlich and S. F. Barrett, 1992, Petroleum geology of the Eastern Venezuela foreland basin, *in*, R. Macqueen and D. A. Leckie (eds.), *Geology of Foreland Basins: AAPG Memoir 55*, Chp. 12, p. 341-362.
- ◆ R. N. Erlich, S. F. Barrett, and B. J. Guo, 1991, Drowning events on carbonate platforms: a key to hydrocarbon entrapment?, *in*, *Proceedings of the 23rd Offshore Technology Conference*, February 4-7, Houston, Texas, USA, p. 101-112.
- ◆ R. N. Erlich, S. F. Barrett, and B. J. Guo, 1990a, Seismic and geologic characteristics of drowning events on carbonate platforms: *AAPG Bulletin*, v. 74, p. 1523-1537.
- ◆ R. N. Erlich and S. F. Barrett, 1990b, Cenozoic plate-tectonic history of the northern Venezuela-Trinidad area: *Tectonics*, v. 9, p. 161-184.
- ◆ R. N. Erlich, et al., 1988, Baltimore Canyon Trough, mid-Atlantic OCS: seismic stratigraphy of Shell/Amoco/Sun wells, *in*, A. W. Bally (ed.), *Atlas of Seismic Stratigraphy: AAPG Studies in Geology 27*, v. 2, p. 51-65.
- ◆ F. Nagle, R. N. Erlich, and C. J. Canovi, 1978, Caribbean dredge-haul compilation: summary and implications: *Geologie en Mijnbouw*, v. 57, p. 267-270.