

# NEIL K. EARNEST

---

## ***SUMMARY OF EXPERIENCE:***

Mr. Earnest has over 40 years of experience focused on the downstream sector of the energy business, and has played key roles in major international arbitrations, multi-billion-dollar downstream asset acquisitions, and Canadian crude marketing and upgrading programs totaling hundreds of thousands of barrels per day. As a consultant, he has worked on a broad range of assignments around the world with an emphasis on asset acquisition and divestitures, crude and refined product marketing analyses, expert testimony in support for highly complex arbitrations and major pipeline projects, and project feasibility assessment. Mr. Earnest began his career at Phillips Petroleum Company, where he spent 11 years in a variety of roles at Phillips' largest refinery and petrochemical plant and in corporate planning/engineering. Mr. Earnest is currently the President of Muse.

## ***REPRESENTATIVE CONSULTING EXPERIENCE:***

### **Asset Acquisition and Divestitures**

Mr. Earnest has frequently headed Muse's teams that have assisted clients contemplating downstream acquisitions or divestitures. Over the years, dozens of detailed valuations of North American refineries for a variety of clients have been completed. Representative engagements follow:

1. Provided a detailed technical and economic assessment of the range of options available to a Canadian heavy crude producer commencing a downstream integration strategy. Assistance included board-level presentations and assistance negotiating the purchase-sales agreements and the joint-venture operating agreements.
2. Developed a detailed valuation of the combined sales value of the European downstream assets of a major oil company. Included projecting refinery cash flow considering the evolving environmental, product demand, and product specification issues in Europe.
3. Provided economic, technical, and LP modeling assistance to a corporate team considering entry into the Asia-Pacific refining industry.
4. Conducted due diligence of, and assessed the potential for, investment in four state-owned African refineries.
5. Assisted a U.S. client considering the merger of their refining assets with another refiner. The assistance included an assessment of the

competitive position of the potential merger partner and potential synergies.

## **Market, Strategic, and Competitive Analysis**

Have provided a broad range of market and competitive analyses in support of client strategy objectives. Clients include pipeline companies, refiners, and crude producers. Representative examples include:

1. Assisted a number of Canadian crude producers with their long-range investment and market development strategies, including detailed market and potential customer assessments, for their synthetic and heavy sour crude programs.
2. For several refiner clients, provided a detailed assessment of their refinery competitive position versus domestic and foreign competition.
3. Generated a detailed assessment, considering multiple market scenarios, of the expected prices for a range of potential synthetic crude formulations that was instrumental in finalizing the design basis for a multi-billion-dollar Canadian oil sands upgrader.
4. Provided the market analysis in support of a new proposed product pipeline in the Rockies.
5. Assisted several clients with quantifying the value of their equity crude to specific purchasers. The purchasers were either being considered for term contracts or were large volume buyers.
6. Provided the Government of Alberta, Ministry of Energy, detailed analysis of the technical attributes, from the refiner's perspective, of extra-heavy crude oil blends as well as an assessment of their value in potential markets.

## **Project Feasibility and Technology Assessment**

Representative project and technology assessment analyses include:

1. Provided a detailed assessment of the value of a biomass-sourced, partially upgraded feedstock to the refining industry on behalf of the biofuel manufacturer. This assistance included extensive analysis of the suitability and value of the individual fractional components of the bio-feedstock to the typical Gulf Coast refiner, and assessing the economic benefits to the biofuel manufacturer of adding additional desulfurization and hydrogen-addition process technologies. The client ultimately constructed a commercial-scale plant.

2. Provided a detailed technical and economic assessment of a heavy crude partial upgrading technology on behalf of a potential investor in the technology company. Later acted as the independent engineer to certify the performance tests for the commercial demonstration plant. The certification was one of the pre-conditions for the sale of the technology company to the investor.
3. Provided a technology assessment of six extra-heavy crude oil partial-upgrading technologies. The technologies ranged from variations on fairly conventional refinery process technologies to super-critical water cracking schemes and sodium-based desulfurization technologies. The engagement included a ranking of the technologies on an economic, technical feasibility, and readiness for commercialization basis.
4. Assisted a major Canadian heavy crude oil producer with the selection of the process technology for the conversion of extra-heavy crude oil to light synthetic crude oil. The engagement included the detailed technical and economic assessment of competing process technologies.
5. In-depth evaluation of resid upgrading options for a large Middle East refinery. The assistance included the detailed LP modeling of the alternatives.
6. Assisted a South American client with process optimization in connection with a major upgrade of their lube manufacturing facilities.
7. Performed the detailed technical and economic analysis of the overall merits of constructing a new resid FCC unit on behalf of a South American refiner.

## Expert Testimony

1. Private Arbitration (1998): Koch Shipping Inc., Koch Supply & Trading Company, and Koch Refining Company, L.P. v. Mobil Shipping and Transportation Company.
2. Provided expert report, in 2006, on behalf of Enbridge Pipelines regarding the market demand for Canadian crude oils and quantified the benefits that would flow to Illinois and other U.S. consumers regarding the Southern Access Pipeline. Report filed with the Illinois Commerce Commission.
3. Provided expert report and direct testimony before the National Energy Board (Canada) regarding the Southern Lights Project, on behalf of Enbridge Pipelines, Inc., with hearings held in Calgary, Alberta, in 2007.

4. Expert report and direct testimony before the National Energy Board (Canada) regarding the Alberta Clipper Project, on behalf of Enbridge Pipelines, Inc., with hearings held in Calgary, Alberta, in 2007.
5. Provided expert report, in 2007, on behalf of Enbridge Pipelines to the National Energy Board (Canada) regarding the crude supply and demand for Ontario and Montréal refineries.
6. Provided expert reports, in 2007, to the U.S. Federal Energy Regulatory Commission on behalf of Enbridge Pipelines regarding the expected utilization of the Southern Access Extension pipeline, as well as other non-rate shipper benefits that ensued from the commissioning of the pipeline. Also provided written affidavit in response to intervener's expert.
7. Provided direct testimony, in 2008, before the Minnesota Public Utilities Commission regarding the Alberta Clipper Project, on behalf of Enbridge Pipelines, Inc.
8. Direct testimony, in February 2008, before the International Court of Arbitration, with hearings held in Zurich, Switzerland, on behalf of Louis Dreyfus S.A.S. (Respondent) against Ronald W. de Ruuk, as Bankruptcy Administrator for Holding Tusculum B.V., (Claimant). Testifying expert at hearings on behalf of the respondent regarding the value of the Wilhelmshaven, Germany, refinery. Also, co-authored valuation report and responses to claimant's experts.
9. Provided expert report, in May 2009, and oral testimony to the International Court of Arbitration on behalf of Mobil Cerro Negro, Ltd (Claimant) against Petroleos de Venezuela, SA regarding the expropriation of assets.
10. Expert report and direct testimony before the National Energy Board (Canada) regarding the Keystone XL Project, on behalf of Enbridge Pipelines, Inc., with hearings held in Calgary, Alberta, in 2009.
11. Provided expert and reply report, in 2009, on behalf of Enbridge Pipelines to the National Energy Board (Canada) regarding the medium-term prospects for Line 9 in westbound service.
12. Provided expert and reply reports, in 2010 and 2011, to the International Centre for Settlement of Investment Disputes on behalf of Venezuelan Holdings B.V., et.al. (Claimant) against the Bolivarian Republic of Venezuela, and oral testimony at the hearing held in Paris in 2012 regarding the expropriation of assets.

13. Provided expert oral testimony in 2011 on behalf of Enbridge Inc. to the National Energy Board (Canada) regarding the Southern Lights Pipeline.
14. Provided expert report, in 2011, on behalf of Enbridge Bakken Pipeline Company to the National Energy Board (Canada) regarding the market prospects for North Dakota crude oil.
15. Submitted expert report in January 2012 to the Michigan Public Service Commission regarding the public need and local economic benefits of Enbridge Line 17, on behalf of Enbridge Pipelines (Toledo) Inc.
16. In 2011, submitted expert and rebuttal reports to the U.S. Federal Energy Regulatory Commission on behalf of Enbridge Pipelines regarding the Southern Lights Pipeline followed by oral testimony at the hearing in Washington, D.C., in 2012.
17. Provided expert and rebuttal reports to the Joint Review Panel (Canada) regarding the Northern Gateway Pipeline project, followed by oral testimony at hearing held in Edmonton, Alberta in September 2012, on behalf of the Northern Gateway Pipeline.
18. Provided expert report to the National Energy Board (Canada) regarding the market prospects for the Enbridge Edmonton-to-Hardisty pipeline project in November 2012, followed by direct testimony in October 2013, on behalf of Enbridge Pipelines.
19. Provided expert report, rebuttal, and surrebuttal testimony in 2013 and 2014 before the Minnesota Public Utilities Commission regarding the Line 67 Station Expansion Project – Phase 2, on behalf of Enbridge Pipelines, Inc.
20. Provided expert report and rebuttal testimony in 2014 to the U.S. Federal Energy Regulatory Commission on behalf of North Dakota Pipeline Company LLC regarding the Sandpiper pipeline.
21. In June 2014, provided written and oral expert testimony in the English High Court of Justice – Commercial Court, on behalf of Innospec Inc. versus Jalal Bezee Mejel Al-Gaood & Partner regarding issues in the Iraqi refining sector.
22. Provided expert and rebuttal testimony to the National Energy Board (Canada) regarding Trans Mountain Pipeline nomination verification procedures in 2014, on behalf of Tesoro Canada.
23. Provided expert reports and oral testimony in August 2014 through January 2015 before the Minnesota Public Utilities Commission regarding

the Sandpiper Pipeline Project on behalf of North Dakota Pipeline Company LLC.

24. Provided expert report and rebuttal report, followed by oral testimony at trial in February, 2016, in the U.S. District Court for the Central District of California, on behalf of Southern California Edison Company versus ExxonMobil Oil Corporation. The dispute concerned an electrical outage at a refinery.
25. Provided reply report in October 2014, followed by oral testimony in February 2017, to the International Centre for Settlement of Investment Disputes on behalf of ConocoPhillips Petrozuata B.V., et.al. (Claimant) against the Bolivarian Republic of Venezuela regarding the expropriation of assets.
26. Provided an expert report in November 2014 to the National Energy Board (Canada) regarding the expected utilization of the Enbridge Mainline for the Enbridge Line 3 Replacement Program.
27. Provided expert report and oral testimony in June and December, 2015 to the ICC International Court of Arbitration on behalf of Wallis Trading Inc. versus SGS Societe Generale de Surveillance SA for a case regarding issues relating to a collateral management agreement at an Albanian storage facility.
28. Provided expert report in September 2015 to the National Energy Board (Canada) regarding the expected utilization of and the Canadian crude oil producer benefits from the Trans Mountain Expansion Project.
29. Provided expert report to the U.S. Federal Energy Regulatory Commission in November 2015 on behalf of Colonial Pipeline Company regarding revisions to its Rules and Regulations tariff.
30. Provided an expert report and oral testimony in May and December 2016 to the ICC International Court of Arbitration on behalf of ConocoPhillips Petrozuata B.V., et.al. (Claimant) versus Petróleos de Venezuela, S.A. regarding the expropriation of assets.
31. Provided an expert report in August 2017 in the U.S. District Court for Montana, on behalf of Northwestern Energy versus ExxonMobil Oil Corporation. The dispute concerned an electrical outage at a refinery.
32. Provided expert, rebuttal, surrebuttal, and supplemental surrebuttal reports in 2015 and 2017, followed by oral testimony, to the Minnesota Public Utilities Commission regarding the utilization and market impact of

the Enbridge Mainline for the Enbridge Line 3 Replacement Program, on behalf of Enbridge Pipelines, Inc.

33. Provided expert and rebuttal reports in 2017 to an AAA Arbitration proceeding on behalf of NARL Refining Limited Partnership versus BP Products North America regarding technical and economic issues related to a crude oil toll processing contract.
34. Provided an expert report, reply report, and oral testimony in 2017-2019 to the ICC International Court of Arbitration on behalf of the Republic of Turkey versus the Republic of Iraq regarding a dispute concerning Kurdish crude oil exports.
35. Provided an expert report in 2018 to the ICC International Court of Arbitration on behalf of Phillips 66 Company versus PDVSA. The dispute concerns the appropriate valuation methodology for a Venezuelan heavy sour crude oil.
36. In 2019 and 2020, provided an expert and reply report in a private expert proceeding regarding the appropriate protocol to value the crude oils shipped on a North Sea crude oil pipeline, followed by oral testimony. The parties involved included a number of North Sea crude oil producers.
37. In 2019, provided an expert report in the Superior Court of the State of Washington on behalf of the City of Tacoma, Washington – Department of Public Utilities versus U.S. Oil & Refining. The dispute concerned an electrical outage at a refinery.
38. In 2019, provided an expert report in the High Court of Justice Business and Commercial Courts of England and Wales – Commercial Court on behalf of JSC Antipinsky Refinery versus VTB Commodities Trading DAC. The dispute concerned a toll processing agreement at the Antipinsky refinery.
39. In 2019, provided an expert report to the Canada Energy Regulator on behalf of Enbridge Pipelines, Inc., regarding the Canadian Mainline Contracting Application. A response report and oral testimony was provided in 2021.
40. In 2020, provided an expert report and oral testimony to the Federal Energy Regulatory Commission on behalf of Colonial Pipelines Company versus a number of its shippers. The report and testimony addressed various industry issues in a market-based rate proceeding.
41. In June 2020, provided an affidavit in support of Enbridge Energy, LP versus Dana Nessel, Attorney General of the State of Michigan in the



Circuit Court for the 30<sup>th</sup> Judicial Circuit, Ingham County. The affidavit addressed various issues concerning the potential shutdown of a pipeline.

42. In 2020, provided expert and reply reports in the United States District Court, Eastern District of Pennsylvania, in support of the Eddystone Rail Company, LLC versus Bridger Logistics LLC, et al. The dispute concerned a number of issues about a crude oil rail unloading and transloading facility.
43. In 2021, submitted rebuttal testimony to the Michigan Public Service Commission on behalf of Enbridge Energy Limited Partnership regarding an application to replace and relocate the segment of Enbridge Line 5 crossing the Straits of Mackinac. Oral testimony was provided in January 2022.
44. In December 2021, provided written testimony to the Board of Review of Madison County, Illinois, on behalf of WRB Refining LP regarding a tax dispute. Oral testimony was provided in January 2022.
45. In 2022, provided expert and rebuttal reports in the United States District Court for the Western District of Wisconsin, on behalf of Enbridge Energy Company, Inc. and Enbridge Energy, L.P. vs the Bad River Band of the Lake Superior Tribe of the Chippewa Indians of the Bad River Reservation. The expert testimony concerned the technical and market impacts of closing a major crude oil and natural gas liquid pipeline.

***WORK EXPERIENCE:***

Muse, Stancil & Co. 1991 - Present  
Current Position: Chairman of the Board

Phillips Petroleum Company 1981-1991  
Positions:  
Process Senior Engineer  
Economics Engineer  
Staff Process Engineer

***EDUCATION:*** B.S. Chemical Engineering - 1981  
Michigan State University  
M.B.A. - 1986  
University of Houston – Clear Lake

***PROFESSIONAL REGISTRATION:*** Chemical Engineer, Texas, #75398



## **PUBLICATIONS/PRESENTATIONS:**

1. *“Refinery-Profitability Statistics Begin”*  
*Oil & Gas Journal*  
January 2001
2. *“Canadian Crude Market Outlook”*  
Alberta Department of Energy Workshop #2  
March 2002
3. *“View from the Market: The Refiner’s Perspective”*  
CERI 2003 World Oil Conference  
January 2003
4. *“Traditional Markets and New Opportunities”*  
CERI 2004 World Oil Conference  
March 2004
5. *“Independent Views on Markets for Oil Sands and Pipeline Capacity”*  
TD Newcrest Oil Sands Forum 2004  
July 2004
6. *“Independent Views of Markets for Oil Sands and Pipeline Capacity”*  
2004 National Petrochemical & Refiners Association  
July 2004
7. *“The Canadian Crude Market”*  
2005 Canadian Crude Oil Conference  
September 2005
8. *“The Canadian Crude Market”*  
3rd Annual Canadian Oil Sands Summit  
January 2006
9. *“Bigger is Better”*  
4th Annual Oil Sands Forum – Oil Sands Market Overview  
July 2006
10. *“U.S. Market for Canadian Crude – Oil Sands Market Overview”*  
Crude Oil Quality Group General Meeting  
November 2006

11. *“Future Markets for Canadian Crude”*  
4th Annual Canadian Oil Sands Summit  
January 2007
12. *“Canadian Crude Market Outlook”*  
3<sup>rd</sup> Annual Enbridge Mid-Continent Shippers Conference  
January 2007
13. *“New Market Outlook for Canadian Crude”*  
42<sup>nd</sup> Annual Enbridge Jasper Conference  
June 2007
14. *“Canadian Oil Market – Opportunities and Challenges”*  
5th Annual Canadian Oil Sands Summit  
January 2008
15. *“Canadian Crude Market and Outlook”*  
Argus US/Canada Asphalt Conference 2008  
April 2008
16. *“Oil Sands Integration with the U.S. Market – A Revised Perspective”*  
20<sup>th</sup> Annual Canadian Crude Oil Conference  
September 2008
17. *“The Economy and Oil Demand: Where are They Taking the Oil Market?”*  
CERI 2009 Oil Conference  
April 2009
18. *“Oil Sands Integration with the Global Markets – A Revised Perspective”*  
TD Newcrest London Oil Sands Forum 2009  
January 2009
19. *“Oil Sands Integration with the Global Markets”*  
TD Newcrest Canadian Unconventional Oil Forum 2009  
July 2009
20. *“Implications of Expanding Canadian Pipeline Infrastructure”*  
Argus Americas Crude Summit 2010  
January 2010
21. *“Counter-Party Risk”*  
TD Newcrest – Unconventional Oil & Gas Forum  
July 2010

22. *“U.S. Downstream in the New Economic Reality”*  
Annual Canadian Crude Oil Conference  
September 2010
23. *“The Road to Recovery”*  
Argus 4th Annual Americas Asphalt Summit  
March 2011
24. *“Crack Spreads are Back: Which PADDs Stand to Benefit and How Long Will It Last?”*  
TD Securities – Unconventional Energy Conference  
TD Newcrest – 2011 Calgary Unconventional Energy Conference  
July 2011
25. *“Overall Market Landscape for Canadian Crude Oil”*  
Argus – Americas Crude Summit 2012  
January 2012
26. *“Canadian Crude Landscape and Market Expansion Prospects”*  
Argus – Americas Asphalt Summit 2012  
March 2012
27. *“The Changing Crude Supply Landscape – The Refiner’s Perspective”*  
TD Securities  
July 2012
28. *“Rail vs. Pipeline: What Projects are Being Developed to Accommodate Growing Shale Crude Production?”*  
Argus Americas Crude Summit  
January 2013
29. *“Implications of the North American Oil Renaissance”*  
American Fuel & Petrochemical Manufacturers  
January 2013
30. *“Implications of the Evolving North American Crude Supply Outlook”*  
TD Securities – 2013 TD Calgary Energy Conference  
July 2013
31. *“Implications of the Evolving North American Crude Supply Outlook”*  
AICHE –5<sup>th</sup> Southwest Process Technology Conference  
October 2013
32. *“Renaissance of the North American Energy Sector”*  
Lloyds Register – Energy Conference  
October 2013

33. *“Changing Topography of U.S. Crude”*  
Argus – Americas Crude Summit 2014  
January 2014
34. *“Canadian Tidewater Access – Implications for the U.S.”*  
American Fuels & Petrochemical Manufacturers Annual Meeting 2014  
March 2014
35. *“Dealing with an Oversupply of Light Crudes in a World of Heavy Crude Refineries”*  
Canadian Energy Research Institute 2014 Oil Conference  
April 2014
36. *“Update on Market Access by Pipeline”*  
Argus Canadian Crude Summit 2015  
June 9, 2015
37. *“North American Crude Market Outlook”*  
Enbridge 50<sup>th</sup> Annual Liquids Pipelines Conference 2015  
June 11, 2015
38. *“Crude Oil Market Dynamics for 2016”*  
Canadian Heavy Oil Association Annual Luncheon  
January 7, 2016
39. *“Survival Outlook for Canadian Oil”*  
8<sup>th</sup> Argus Americas Crude Summit  
January 21, 2016
40. *“Light Transportation Fuels – Supply-Demand Outlook and Implications for Logistical Infrastructure”*  
Argus Americas Motor Fuels Summit  
January 17, 2018
41. *“Headwinds for the Russian Refining Industry”*  
IP Week Conference – *Re-Engineering the Oil and Gas Operating Models: An Industry in Transition*  
February 22, 2018
42. *North American Shale and Heavy Barrel Competition – The Latin American Competition*  
Argus Canadian Crude Summit  
May 1, 2018