

**IN THE MATTER OF AN ARBITRATION UNDER  
CHAPTER ELEVEN OF THE NORTH AMERICAN FREE TRADE AGREEMENT  
AND THE UNCITRAL RULES OF 1976**

**BETWEEN:**

**WILLIAM RALPH CLAYTON, WILLIAM RICHARD CLAYTON, DOUGLAS  
CLAYTON, DANIEL CLAYTON AND BILCON OF DELAWARE, INC.**

Claimants/Investors

**AND:**

**GOVERNMENT OF CANADA**

Respondent

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**WITNESS STATEMENT OF**

**DANIEL KONTAK**

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December 13, 2016

1. I am a tenured Professor of Ore Deposit Geology at Laurentian University, where I have taught since 2006. My research is focused on base and precious metal deposits, with an emphasis on integrating field and laboratory studies to unravel the nature and origin of the mineralizing environment.
2. I received a Bachelor of Science (Hons) from St. Francis Xavier University, a Masters of Science from the University of Alberta, and a PhD from Queen's University, with a one year post-doctoral fellowship from Memorial University (1985). I have published approximately 90 articles in international peer-reviewed journals, nearly 20 book chapter articles and more than 160 government reports. I have received a number of awards for my research, including the 2011 Gesner Medal from the Atlantic Geological Society, the 2015 Julian Boldy Award and the 2016 Duncan Ramsay Derry Medal from the Geological Association of Canada. A copy of my CV is attached to my witness statement as Appendix "A".
3. Before entering academia, I was employed by the Nova Scotia Department of Natural Resources (the "DNR") as a mineral geologist for 20 years, from January 1986 to July 2006. My work primarily focused on examining and researching a variety of mineral deposits and providing an up to date documentation of their setting and origin in order to, among other things, assist proponents interested in their potential exploitation.
4. In fact, I was hired for my experience in mineral deposit research, because of the discovery of the East Kemptville tin deposit near Yarmouth in Southwest Nova Scotia. The mine was projected to be open for 17 years and to employ up to 250 people. Thus, there was considerable effort directed specifically at expanding the database and geographical survey to enhance the likely discovery of other mineral deposits in the Province to develop.
5. The Province directed considerable effort towards assessing the development and potential of industrial minerals and metal commodities, because of their

importance to the Province in providing employment, royalties and tax revenue. This was in part helped by federal funding to the provinces through Mineral Development Agreements ("MDA"). As a result of these MDAs, the DNR was able to significantly expand geological staff in the 1980's to upgrade existing data bases such as geological maps and mineral deposit studies to promote exploration.

6. These studies are not of simply academic interest. Rather, the DNR undertakes research and writes papers specifically to promote Nova Scotia natural resources on an international scale.<sup>1</sup> For example, field work the DNR carried out helped discover a large clay resource in the Musquodoboit Valley, east of Halifax, which was explored for potential commercial development.<sup>2</sup>
7. Likewise, over the years I have published numerous studies on the geology of the North Mountain, where Bilcon proposed to build the Whites Point Project.<sup>3</sup> The reason for these studies was, among other reasons, to better understand what controlled the distribution of zeolites, which is a class of porous minerals used in various commercial applications, along the North Mountain. By doing this work, the DNR provided companies with better information on the potential for zeolites and high quality aggregate production from rocks in the North Mountain.

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<sup>1</sup> R.J. Horne and D. Pelley, "Geological Transect of the Maguma Terrane from Centre Musquodoboit to Tangier"; Frank P. Bierlein and Paul K. Smith, "The Touquoy Zone deposit: an example of "unusual" orogenic gold mineralization in the Meguma Terrane, Nova Scotia, Canada (*Investors' Schedule of Documents, Tabs C1082 and C1083*).

<sup>2</sup> M.X. Gillis and R.R. Shea, "Mesozoic Stratigraphy and Kaolin Exploration in the Sibley Road Area (NTS 11E/03, Halifax County (*Investors' Schedule of Documents, Tab C1084*).

<sup>3</sup> *Internal Stratigraphy of the Jurassic North Mountain Basalt, Southern Nova Scotia*, Dan J. Kontak, January 1, 2001 (*Investors' Schedule of Documents, Tab C364*); Dan Kontak (NSDNR), Jarda Dostal, John Greenough, 2006 "Geology and Volcanology of the Jurassic North Mountain Basalt, Southern Nova Scotia", Undated (*Investors' Schedule of Documents, Tab C006*); D.J. Kontak, "Nature of Zeolite Distribution in the North Mountain Basalt, Southern Nova Scotia: Field and Geochemical Studies" (*Investors' Schedule of Documents, Tab C1085*), D.J. Kontak, "Geological Map of the North Mountain Basalt from Cape Split to Brier Island, with Comments on its Resource Potential", Edited by D.R. MacDonald. Nova Scotia Department of Natural Resources, Report 2005-1, pp. 39-66. (*Investors' Schedule of Documents, Tab C1086*).

8. My study showed that within the area referred to as the North Mountain a geological rock unit referred to as the North Mountain Basalt (NMB) could be subdivided into three laterally continuous units, the bottom, middle and upper flow units. Importantly the bottom and top flow units consist of massive, very hard or durable and very fresh rock ideal for aggregate production, whereas the middle was zeolite rich and not suitable for aggregate use.
  
9. To attract potential exploration companies to the Province, the DNR also spent considerable time and resources promoting the results of DNR studies and deposits through a variety of venues, including:
  - a. A large DNR delegation, including the Minister, along with prospectors subsidized by the government attends the Annual Prospectors and Developers Conference ("PDAC") in Toronto. This annual meeting of 30,000 draws numerous companies, federal and provincial agencies and foreign governments, including for example those from Australia, Netherlands, Mexico, Brazil, India and China;
  - b. The Association for Mining Exploration, Roundup Conference, an annual conference held in Vancouver, BC with +7000 was attended by DNR representatives to promote Nova Scotia mineral and ore deposits;
  - c. The DNR hosted an Annual Open House and Report of Activities. This two day event attracted upwards of 250 professionals. It was held for decades and was the annual showcase for work done in the department;
  - d. The DNR also attended various industrial trade shows, including many focused on the industrial minerals as well as a variety of smaller meetings such as the Mining Society of Nova Scotia and the Canadian Institute of Mining and Metallurgy meetings; and

- e. Professional annual meetings comprised of university and government geoscientists such as the Geological Association of Canada, Geological Society of America, and Atlantic Geoscience Society.
10. The DNR promotion of Nova Scotia mineral and ore deposits resulted in a number of developments over the years. For example, Atlantic Gold Corporation's Touquoy gold deposit, which is expected to open next year, will be the province's first new gold mine in nearly 80 years. This project's development resulted from DNR geologists promoting this property at PDAC about 15 years ago and introducing exploration geologists to the current owners of the property.
11. The DNR also provides "free" consulting to private companies, including office meetings, site visits and preparing detailed site specific studies or research on materials extracted from sites. This is a boon to companies, which often do not have the necessary in-house expertise on a particular deposit. It also, as I noted earlier, benefits the Province, which is interested in ensuring the resource is being effectively exploited. In the case of metallic resources, many detailed studies, which often took months to complete, were done to improve the understanding of the setting of the mineralization to benefit the operating companies, but also exploration elsewhere.
12. The DNR also assisted Bilcon on the Whites Point Project. In the spring of 2002, Phil Finck, a DNR geologist, introduced me to John Lizak, Bilcon's consulting geologist, because I was the in-house expert on the basalt rocks of the North Mountain. I understood Mr. Lizak was sent to Nova Scotia to assess potential aggregate quarries.

13. 

Bilcon of Delaware, Inc. *et al*  
v *Canada*

PCA Case No. 2009-04

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[REDACTED]

14.

[REDACTED]

Dated: December 13, 2016

Daniel Kontak  
Daniel Kontak

## Appendix "A"

### CURRICULUM VITAE

#### DANIEL J. KONTAK

Born March 28, 1955, Antigonish, Nova Scotia

Marital Status Married with two children, a boy (7) and a girl (4)

Residence 1639 Preston Street, Halifax, Nova Scotia B3H 3V2  
phone 902-423-0433 (home ) 902-424-2516 (work)  
fax 902-424-0527 (work)

#### EDUCATION

Post Doctoral Fellowship Memorial University, St. John's, Newfoundland  
(January 1985 - December 1985)

Ph.D. Queen's University, Kingston, Ontario  
(September 1979 - December 1984)

M.Sc. University of Alberta, Edmonton, Alberta  
(September 1976 - August 1978)

B.Sc. St. Francis Xavier University, Antigonish  
(September 1972 - May 1976)

University of St. Andrew's, St. Andrew's,  
Scotland (October 1974 - June 1975)

#### RELEVANT WORK EXPERIENCE

*Nova Scotia Department of Natural Resources:* Halifax, Nova Scotia (1986-present). Investigation of tin and tungsten mineralization in the South Mountain Batholith (primarily the East Kemptville tin deposit), gold mineralization in the Meguma Group and base metal mineralization at the Gays River (Zn-Pb) and Walton (Ba-Zn-Pb-Cu-Ag) deposits. Studies are field oriented, focusing on the scale of mineral deposits with detailed surface and underground mapping and logging of drill core. In addition, various aspects of whole-rock and mineral chemistry, igneous, metamorphic and ore petrology, fluid inclusion studies, geochronology ( $^{40}\text{Ar}/^{39}\text{Ar}$ , Rb/Sr) and isotopes (S, C, O, D, Pb) are currently being integrated with present knowledge of the deposits. Results are written up for both in house and external publications as well as oral and poster presentations at conventions attended by mining industry personnel.

*Post-Doctoral Fellowship:* Memorial University of Newfoundland (1985). Research projects involved geochronology ( $^{40}\text{Ar}/^{39}\text{Ar}$ ) of the Ackley Granite, SE Newfoundland; chemical and structural studies of alkali feldspars in granitoid rocks (Ackley Granite, Newfoundland, and South Mountain Batholith, Nova Scotia, were used as case studies); 1:10 000 scale field mapping of the peralkaline King's Point complex of western Newfoundland; chemical and isotopic evolution of granitoid rocks based on suites from the Central Andes, Nova Scotia and Newfoundland.

**Teaching Assistant:** Queen's University, Kingston (1979-1984). Taught a variety of laboratory courses and assisted with lecturing for both undergraduate (optical mineralogy, ore petrology) and graduate (geotectonics, metallogeny, ore petrology) courses.

**Research Assistant:** Queen's University, Kingston (1979-1984). Studied the metallogeny of the Eastern Cordillera of SE Peru based on regional and detailed mapping of deposits and surrounding areas with subsequent detailed studies of the structural environments, igneous-, metamorphic- and ore petrology, whole-rock and mineral chemistry and geochronology ( $^{40}\text{Ar}/^{39}\text{Ar}$ , K-Ar, Rb-Sr).

**Geologist:** (summers of 1980 and 1982; thesis field work). Regional and detailed geological investigations of mineral deposits of the Cordillera de Carabaya region, SE Peru.

**Instructor:** Queen's University, Kingston (May of 1981 and 1982). Instructed second and third year undergraduate geology students at field school.

**Geologist:** Conwest Exploration Co., Bathurst, New Brunswick (June-September, 1979). Regional and detailed mapping of the volcanic stratigraphy and structure in the Bathurst massive sulphide camp.

**Instructor:** St. Francis Xavier University, Antigonish (1978-1979). Taught introductory geology labs to 100 undergraduate students and assisted with laboratory instruction of optical mineralogy and igneous petrology to second, third and fourth year undergraduate students.

**Teaching Assistant:** University of Alberta, Edmonton (1976-1978). Taught a variety of labs (introductory geology, engineering geology, structural geology) for first, second and third year undergraduate courses.

**Geologist:** Newfoundland Department of Mines and Energy (May-October, 1977). Regional and deposit scale mapping of volcanic and granitic suites that hosted uranium mineralization in the Central Mineral Belt of Labrador. Detailed investigations of the controls on uranium mineralization at a selected group of deposits, including the Kitts, Michelin, Stormy Lake, Moran Lake and Burnt Lake areas.

**Instructor:** University of Alberta, Edmonton (May, 1977). Taught third and fourth year undergraduate students at field school.

**Research Assistant:** University of Alberta, Edmonton (1976-1978). Studied regional geology and uranium mineralization of the Central Mineral Belt, Labrador combining extensive field work with whole-rock geochemistry, igneous petrology, structural geology, fluid inclusions, Rb-Sr geochronology and stable isotopes (O, C).

**Geologist (Senior):** Getty Mines Ltd., Toronto (May-September, 1976). Uranium exploration in the Annapolis Valley, Nova Scotia.

**Geologist (Junior):** Nova Scotia Department of Mines (May- September, 1974). Assisted with a mineral inventory study of western Cape Breton Island.

**Geologist (Junior):** Iron Ore Company of Canada, Schefferville, Quebec (May-September, 1973). Regional and detailed mapping in the Schefferville area.

#### ADDITIONAL RELEVANT INFORMATION



1. Thesis supervision(past and active) has involved both undergraduate and graduate students as follows: BSc-18 past, 2 active), MSc (13 past, 16 active), PhD (6 past, 5 active)

2. Organized and edited special volumes: 1) *Maritime Sediments and Atlantic Geology* on the "Geology of Granitoid and Host Rocks in the Meguma Terrane, Nova Scotia" (vol. 24, No. 1); 2) *Atlantic Geology* on "Devono-Carboniferous Geology of Atlantic Canada" (vol. 28, No. 1); 3) *Canadian Mineralogist* with papers from Proceedings of VIII PACROFI Meeting, (vol. 44, No. 5) 4) *Lithos* on Rift Related Magmatism and Related Mineralization (vol. 101);

3. External examiner for several M.Sc. and Ph.D. theses at the following schools: Memorial University of Newfoundland, McGill University, Dalhousie University, University of Windsor, University of Ottawa, and Acadia University, University of Western Australia, Certain University.

4. Have reviewed over 80+ papers for scientific journals over the years, including Canadian Journal of Earth Sciences, Atlantic Geology, Economic Geology, Geological Society of America Bulletin, Journal of Geology, Contributions to Mineralogy and Petrology, American Mineralogist, Mineralium Deposita, Canadian Institute of Mining and Metallurgy, European Journal of Mineralogy and Petrology, Canadian Mineralogist, Ore Geology Reviews, Mineralogical Magazine, Lithos.

5. I have been invited to give lectures at several institutions over the years and a summary follows: 1. McGill University (spring, 1984); 2. Memorial University (winter 1984, winter 1988, fall 1992); 3. Dalhousie University (winters, 1986, 1987); 4. Acadia University (winter, 1988); 5. St. Francis Xavier University (1988, 1990, 1991, 1992, 1993, 1995); 6. St. Mary's University (1990, 1991, 2013); 7. University Western Ontario (winter 1990); 8. Carleton University (winter, 1990); 9. Windsor (2013).

## **SOCIETIES, PROFESSIONAL MEMBERSHIPS AND COMMITTEES**

Member of the following professional societies:

Mineralogical Association of Canada - Geological Association of Canada,  
Fellow (1980-present)  
Society of Economic Geologists, Fellow (1993-present)  
Atlantic Geoscience Society (1987-present)  
Nova Scotia Mineral and Gem Society Member (1993-present)

Participated in the functioning of the following societies and committees:

President (1991-1992) and Councillor (1989-1994) for Atlantic Geoscience Society  
Video Committee, Atlantic Geoscience Society (1991-present)  
Associate Editor of Candian Insitute of Mining and Metallurgy (1990-1993)  
and Atlantic Geology (1994-present)