

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:)
)
CALVERT CLIFFS 3 NUCLEAR PROJECT,)
LLC AND UNISTAR NUCLEAR)
OPERATING SERVICES, LLC) Docket No. 52-016-COL
)
(Calvert Cliffs Nuclear Power Plant, Unit 3))

AFFIDAVIT OF SEPTIMUS VAN DER LINDEN

I, Septimus van der Linden, do hereby state as follows:

1. I am the founder, co-owner, and President of BRULIN Associates LLC. During my previous employment with Curtiss/Wright Power Systems and Alstom, I investigated compressed air energy storage systems ("CAES"). I worked for Brown Boveri Corporation which built the first CAES plant in Huntorf, Germany. I was also involved in the design and application aspects of CAES plant and technology in the U.S. A statement of my professional qualifications is attached.
2. I am responsible for the testimony marked with my initials.
3. I attest to the accuracy of those statements, support them as my own, and endorse their introduction into the record of this proceeding.
4. I hereby certify under penalty of perjury that the forgoing is true and complete to the best of my knowledge, information, and belief.

Executed in accord with 10 C.F.R. § 2.304(d),

signed electronically by Septimus van der Linden

Septimus van der Linden

President

BRULIN Associates LLC

14418 Old Bond Street

Chesterfield, VA 23832

brulinassoc@comcast.net

Dated at Chesterfield, Virginia
this 21st day of October 2011

Septimus van der Linden**International Consultant, Gas Turbine and Emerging Technologies****President, BRULIN Associates LLC. brulinassoc@comcast.net**

BRULIN Associates was incorporated in 2002, when van der Linden retired from the Global Energy Company –Alstom Power Inc. Van der Linden served as VP & Director of Strategic Planning & New Technology Business development with Alstom Power Inc. He is a member of ASME (American Society of Mechanical Engineers) and past Chair of the Electric Power Committee of the IGTI-International Gas Turbine Institute. He is the ASME 1998 recipient of the Dedicated Service Award

Van der Linden has been associated with Energy Storage, CAES (Compressed Air Energy Storage) development & studies since 1981. He is Staff Consultant to the Energy Storage Council and serves on the Advisory Boards of ASME IGTI, PowerGen International and Electric Power. He has contributed to the EPRI-DOE Handbook of Energy Storage for Transmission and Distribution Applications

ASME Technical Papers were presented under the auspices of IGTI. Numerous technical articles and Gas Turbine Technology application papers were presented internationally, and published in Technical Journals. Currently several papers on Energy Storage on the latest Bulk Energy storage concepts have been published at EESAT (Electricity Energy Storage Applications & Technology) and Waste Energy Power Recovery at ASME IMEC (International Mechanical Engineering Congress & Exposition) ECOS (Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems) International Conferences.

With more than 45 years of experience in power generation, with three major international companies: Worthington Corporation, Curtiss-Wright Power Systems, and ALSTOM Power, Inc.(BBC, ABB and ABB ALSTOM). Septimus van der Linden has extensive world-wide experience in power equipment and rotating machinery, strategic marketing and sales management, sales promotion, application engineering, engineering studies and reports, contracting, cost estimating, market analysis, and supervisory responsibility of engineering service and equipment installation., He has traveled extensively in Europe, SE-Asia, and Australasia as well as, Central and South America on project and business related development.

Brulin Associates, which provides consulting services to the power industry in the area of strategic marketing and application of new technology development, new power concepts, and related functions including technical, legislative, regulatory, environmental and other after market services.

Emerging technologies related to renewable energy and efficiency are currently of specific interest, especially solar/storage, waste heat power recovery and Adiabatic CAES with pipe storage. Mr. van der Linden is extensively involved in the Iowa ISEPA CAES program, the Norton CAES program, and several other CAES projects under

development in the U.S. Review Services have been provided to NETL “Enabling Turbine Technologies for High Hydrogen Fuels Proposal” DE-PS26-05NT42380-1, Hydrogen Turbines for Future Gen.

Born and educated in South Africa, now an American citizen, he immigrated to Canada in 1957 with a Mechanical Engineering degree, and has brought many innovations to the Power Industry during his career.

Recent Work Experience:

Iowa Storage Energy Park Agency July/December 2010

Provided support to the study on large CAES project as “Subject Matter Expert” SME services related to Turbomachinery for CAES Power Plant

PG&E CAES 2 Study Dec, 2010

Provided services as Technical Advisor to WorleyParsons Folsom, California

EUCI Webinar “Compressed Air Energy Storage” June 3, 2010

“The combination of DOE funding of new CAES on both US coasts, coupled with the adaptability of new technologies that can create flexibility and economies for both small and very large CAES projects, has acted as a catalyst triggering immediate interest from power planners and developers who want to know more in order to exploit these new opportunities.

Join us for this webinar as Septimus van der Linden, former VP & Director of Strategic Planning & New Technology Business Development at Alstom Power Inc. explains the details of these new systems and the CAES renaissance.”

DOE/NETL Review Services-several engagements including;

Review Services have been provided to NETL “Enabling Turbine Technologies for High Hydrogen Fuels Proposal” DE-PS26-05NT42380-1, Hydrogen Turbines for Future Gen.

Work Experience History:

1957 to 2002—available on request

Publications:

Most recent related to Energy Storage and Renewable energy – Detailed Publication list available on request.

Advanced heat recovery Technology improves efficiency and reduces emissions
IMECE2008-66296 Proceedings of IMECE2008
2008 ASME International Mechanical Engineering Congress and Exposition
October 31-November 6, 2008, Boston, Massachusetts, USA. Septimus van der Linden

Integrating Wind Turbine Generators (WTG's) with GT-CAES (Compressed Air Energy Storage) stabilizes power delivery with the inherent benefits of Bulk Energy Storage .IMEC 2007-41853 Proceedings of IMEC 2007
2007 ASME International Mechanical Engineering Congress & Exposition
November 12-15, 2007 Seattle, Washington, USA. Septimus van der Linden

Wind Power Published by Intech ISBN 978-953-7619-81-7: June 2010, Chapter 18
Wind Power: Integrating Wind Turbine Generators (WTG's) with Energy Storage.
Septimus van der Linden, Brulin Associates LLC

SynGas Fuel Hybrid 45 MW GTCC/ORC Power Plant using Modular 500 TPD Coal/Biomass Modular Pyrolytic Gasification ASME GT2010-22225 Proceedings of ASME Turbo Expo 2010: Power for Land, Sea and Air, June14-18, 2010, Glasgow, Scotland.
Septimus van der Linden, Brulin Associates. Mark Wiley, Wiley Consultants, LLC, Denver, CO.
Gary Williams, Earth Fuels Corporation, South Africa. Roel Swart, Ansaldo Thomassen B.V Netherlands

"Review of CAES Systems Development and Current Innovations That Could Bring Commercialization To Fruition," Electrical Energy Storage Applications & Technology (EESAT) 2007Conference. San Francisco, CA: Energy Storage Association, 2007. Septimus van der Linden. Brulin Associates LLC.

Energy Storage Week (Infocast) July 12-16, 2009, San Diego, CA. Storage Technology Survey: Adiabatic CAES (3 TO 30 MW/hrs) Septimus van der Linden, Brulin Associates LLC.

Energy Efficiency & Renewable Energy-USA DOE. June 10, 2008. Meeting at DOE HQ, Forrestal Building, DC. Technology Overview for Energy Storage and Renewable Energy, Septimus van der Linden, Brulin Associates LLC

Closed cycle nuclear plant rated at 165 MW and 41% efficiency: Gas Turbine World April 2007. Septimus van der Linden
Zero emissions plant, powered by a pebble bed modular reactor and closed cycle gas turbine, is priced at around \$1700 per kW – can be up and running within 24-30 months from start of construction

“Wind Turbine Generator and Compressed Air Energy Storage System for Production of Electrical Power & Co-generation of Chilled Air for Desalination.” ECOS 2007, Padua, Italy.
Dr. Ben Enis; Dr. Paul Lieberman; Irving Rubin; Septimus van der Linden. (June 2007)

Gas Turbine Development, More than 50 Years ago. ASME GT2005-68966
ASME Turbo Expo 2005: Power for Land, Sea and Air June 6-9, 2005, Reno-Tahoe, Nevada, USA.
Septimus van der Linden, BRULIN Associates LLC. Axel von Rappard, Gas Turbine Engineering.

Development Trends & the Role of Gas Turbines in the Future 30 Years.

.Keynote address ECOS 2003 Copenhagen University, Denmark Septimus van der Linden, BRULIN Associates LLC, Chairman, ASME-IGTI *(International Gas Turbine Institute) Electric Power Committee*

Investing in Energy Storage Technologies. Oct 11-12, 2007. Manhattan NY. Technology Ready Storage Concepts Low Risk for Investors

Septimus van der Linden, BRULIN Associates LLC

Transportable Compressed Air Energy Storage (CAES) System 1 to 10MW 3 HRS Discharge including Solar Radiation. PowerGen International Conference. Las Vegas, Nevada. Dec 8-10, 2009. Enis, B. Lieberman, P. **Septimus van der Linden.**

NEW COMPRESSED AIR ENERGY STORAGE CONCEPT IMPROVES THE PROFITABILITY OF EXISTING SIMPLE CYCLE, COMBINED CYCLE, WIND ENERGY, AND LANDFILL GAS POWER PLANTS

GT2004-54278. **ASME Turbo Expo 200414-17 June Vienna, Austria**

Dr. Michael Nakhamkin, ESPC, Inc, President Ronald H. Wolk/ WITS, President

Sep van der Linden, President Brulin Associates, LLC. Manu Patel/ESPC, Consultant

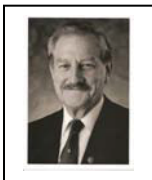
Energy Storage; Why so few pay attention (and what to do about it) EESAT 2005 San Francisco, CA. Jason Makansi, Pearl Street Inc. **Septimus van der Linden, Brulin Associates LLC.**

The Potential for Bulk Energy Storage in USA, Current Developments & Future Projects Renewable Energy Conference VIII Energy Technology Expo. Denver CO. August 2004. **Septimus van der Linden, Brulin Associates LLC**

CAES for Today's Market-Review of Market ready Technologies. EESAT 2002, San Francisco, CA. **Septimus van der Linden**

Integration of Gas Turbine in CAES Plant Provides best Alternative for Mid-Range and Daily Cycling Generation Needs. ASME paper 2000-GT -182. Turbo Expo 2000, Munich, Germany May 8-11, Nakhamkin, M. ESPC. **Septimus van der Linden, Brulin Associates LLC**

Participated in several DOE workshops, as well as Peer Review, involving Advanced GT Technologies and Energy Storage. Provided CAES Technology support to APS* Energy Study Working Group – Study on Electrical Storage; Aug 14, 2006, Washington DC. (* American Physics Society) Reviewed and Critiqued Final Report.



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