

DECLARATION OF
Patrick A. Pilling, Ph.D., P.E., G.E., D.GE.

I, **Patrick A. Pilling**, declare as follows:

1. I am presently employed as a subcontractor to Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as a Geotechnical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on **Geology and Paleontology**, for the **Ivanpah Solar Electric Generating System (ISEGS)** project based on my independent analysis of the Application for Certification, supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 24, 2009

Signed: _____



At: Reno, Nevada

Patrick A. Pilling, Ph.D., P.E., G.E., D.GE.

President

Education

- B.S. – Civil Engineering – 1986 – Santa Clara University
- M.S. – Civil Engineering – 1991 – San Jose State University
- Ph.D. – Civil Engineering – 1997 – University of Nevada, Reno

Registrations

- P.E. – Civil – Nevada, California, Oregon, Arizona, Utah, Idaho
- P.E. – Geotechnical – California, Oregon
- D.GE. – Diplomate, Geotechnical Engineering – Academy of Geo-Professionals

Experience

1997 to Present: Black Eagle Consulting, Inc. Dr. Pilling acted as the Executive Vice President from 1997 until the end of 2007, and assumed the role of President of Black Eagle Consulting, Inc. in January 2008. Dr. Pilling maintains more than 20 years of construction, geotechnical, transportation, and mining engineering experience, and has supervised the engineering and construction of such projects throughout the western United States and South America. Dr. Pilling oversees daily office operations, including personnel and accounting issues, coordinating company marketing efforts, and performing project management, engineering and laboratory analyses, and report preparation on most projects. Over the past 8 years, Dr. Pilling has assisted the California Energy Commission (CEC) in reviewing geology and paleontology portions of Applications for Certification (AFC) for various power plants throughout the State of California. The power plants included:

Valero Cogeneration Project	Gilroy II Project
Colusa Energy Project	San Francisco Electric Reliability Project
Central Valley Energy Center	Russell City Energy Center
Blythe Energy Project Phase II	Starwood Energy Center
Tesla FPL Project	Ivanpah Solar Plant
Eastshore Energy Center	Marsh Landing Generating Station
Panoche Energy Center	Willow Pass Generating Station
Niland Gas Turbine Power Plant	Tracy Expansion
Los Esteros Critical Energy Facility	Lodi Energy Center
Pico Power Project	San Joaquin Solar 1 & 2
Roseville Energy Center	Vacaville CPV
Contra Costa Energy Project	Mariposa Energy Project

1996 to 1997: SEA, Incorporated; Senior Geotechnical Engineer. Dr. Pilling provided project coordination, management, supervision, and development, and performed field exploration, engineering analyses, and report preparation.

1990 to 1996: WESTEC; Project Manager. Mr. Pilling was responsible for general geotechnical analyses on most projects, as well as design, management, and permitting of heap leach and tailings storage facilities projects. His

experience varied from foundation design recommendations for small pump house structures to detailed liquefaction and seepage/slope stability analyses for large earthen embankments.

1986 to 1990: Case Pacific Company; Project Manager. Mr. Pilling provided cost estimating, project management, and contract negotiation on a wide variety of projects.

Affiliations

- American Concrete Institute: Concrete Field Testing Technician Grade I
- National Society of Professional Engineers
- Secretary/Treasurer - National Society of Professional Engineers, Northern Nevada Chapter
- American Society of Civil Engineers
- International Association of Foundation Drilling
- National Council of Examiners for Engineering and Surveying

Publications

- Ashour, M., P. A. Pilling, and G. M. Norris, "Documentation of the Strain Wedge Model Program for Analyzing Laterally Loaded Isolated Piles and Pile Groups," Proceedings, 32nd Symposium on Engineering Geology and Geotechnical Engineering, Boise, Idaho, March 1997.
- Ashour, M., P. A. Pilling, G. M. Norris, and H. Perez, "Development of a Strain Wedge Model Program for Pile Group Interference and Pile Cap Contribution Effects," Report No. CCEER-96-4, University of Nevada, Reno, 1996.
- Ashour, M., Norris, G., and Pilling, P., "Lateral Loading of a Pile in Layered Soil Using the Strain Wedge Model," Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 124, No. 4, April 1998, pp. 303-315.
- Norris, G. M., M. Ashour, P. A. Pilling, and P. Gowda, "The Non-Uniqueness of p-y Curves for Laterally Loaded Pile Analysis," Proceedings, 31st Symposium on Engineering Geology and Geotechnical Engineering, Logan, Utah, March 1995, pp. 40-53.
- Pilling, P. A., "The Response of a Group of Flexible Piles and the Associated Pile Cap to Lateral Loading as Characterized by the Strain Wedge Model," Doctoral Dissertation, University of Nevada, Reno, 1997.
- Pilling, P.A., Ashour, M., and Norris, G., "Strain Wedge Model Hybrid Analysis of a Laterally Loaded Pile Group," Transportation Research Board Paper No. 01-0174, 2001.
- Pilling, P. A. and P. V. Woodward, "Dependent Facility Closure in California," Proceedings, Mine Closure: Creating Productive Public and Private Assets, Sparks, Nevada, March 1995, pp. 315-326.
- Pilling, P.A. and Beeston, H. E., "Expansion Testing of Clay Soils in Forensic Investigations," Proceedings, 33rd Symposium on Engineering Geology and Geotechnical Engineering, Reno, Nevada, March 1998, pp. 119-127.
- Pilling, P.A., M. Ashour, and G.M. Norris, "Strain Wedge Model Hybrid Analysis of Laterally Loaded Pile Group," Journal of the Transportation Research Board, Transportation Research Record No. 1772, 2001, Paper No. 01-0174, pp. 115-121.

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