

**NOMINATION**

of

**MARCEL ARNOULD**

**6, rue Carrière Marlé  
Bourg la Reine, France**

as

**HONORARY MEMBER**

of

**THE ASSOCIATION of ENVIRONMENTAL & ENGINEERING  
GEOLOGISTS**

The Honorary Member Committee is herewith asked to review the qualifications of Professor Dr. Marcel Arnold, of Bourg la Reine, France as a candidate for presentation to the Association Board of Directors at its Spring, 2009 Meeting.

This nomination is made in conformance with the May, 2008 *Criteria Statement* provided by Ms. Roland, on 2 March, 2009.

The Nomination document begins at this point with the specified Biography:

“The Association of Environmental & Engineering Geologists (AEG) is a leading international technical society in the Applied Geosciences. The American-residing membership of the Association also serves as the U.S. National Group of The International Association of Engineering Geology (IAEG).

AEG herewith elects Professor Dr. Marcel Arnold, of Bourg la Reine, France, as one of its Honorary Members, in full recognition of the fundamental role of the nominee in not only technical contributions to the professions of Environmental Geology and Engineering Geology, but of his profound influence and leadership on those professions over the past sixty years.

Written biography of the Candidate to include a summary of the nominee’s academic and professional history, and the professional accomplishments that address the elements specified in item 4 of the official guidance for nomination submittals.

Marcel Arnould was born in 1927 at Clermont-Ferrand (Puy de Dôme), France, is Married to Sandra, and the couple have four children: Hervé, Olivier, Emmanuel, Matthieu.

His formal higher education includes:

- 1948: Licence ès Sciences - Geology - Universities of Clermont-Ferrand & Paris (Sorbonne)
- 1949: Paris School of Mines - Section Geology and Mining
- 1961: PhD, Geology, University of Clermont-Ferrand

During his undergraduate education, Marcel served as an auxiliary chorist at the Municipal Opera. and during the MS program at Paris , he was part-time teacher in two renowned high schools; one run by the Jesuits Order and the and the other, a private school. During his last academic year (MS), Marcel was placed on the geological staff of the French Overseas (France d'Outre-mer) Ministry, which gave opportunity to begin work on the doctorate.

Marcel's professional career began in 1948, when he was named to the French Overseas Ministry, where also he was allowed to begin his work on the MS equivalent. He spent eleven years (1948-1959) at the Ministry, the last ten years of which were spent on various West African field-mapping assignments the Direction Fédérale des Mines et de la Géologie de l'Afrique Occidentale. This work included contributions to the first geological mapping of a 100,000 km<sup>2</sup> topographic quadrangle centered about the Northern Ivory Coast plus adjacent portions of South Eastern Sudan (now Mali) and in the South Western Upper Volta (now Burkina Faso). This geological mapping was performed at 1:50 000 scale, for publication, at 1/200 000. Included were evidence of mineralization for follow-up prospecting, and notation of local necessities of an engineering geologic nature.

Of this duty, only 2-3 months of each year were spent at Headquarters, in Dakar, during the annual rains, with field work the rest of the time. Marcel recalls the duty as "tough and unforgettable" and rather like the life of the 19<sup>th</sup> century explorer.

Returning to France after his decade in the field, in West Africa, Marcel was accepted at the Paris School of Mines (1960) and spent six years perfecting the doctorate. During 1960-1965, he served as Lecturer in Applied Geology, and was named Full professor in 1965. He was named Honorary Professor in 1996 and in the following year founded, as its first Director, the Research Center of Engineering Geology, at which he served for 24 years (1970-1994). In 1979, the Center was administratively moved into the Ecole Nationale des Ponts et Chaussées.

From 1971 to 1991, Marcel served as Director of the Director Section d'Etudes Géologiques et Minières 1971-1991, and from 1985 to 1996 was the founding Director Center for open Pit Mining and Quarrying; from 1997 until his retirement he was Scientific Adviser to the Centers.

- Exemplary application, research, and/or teaching within the profession.

His west African terrane was Precambrian bedrock, spotted with some Quaternary-aged unconsolidated cover. The scientific results of this decade of West African duty was a new (at the time) disclosure and understanding of the regional geosynclinal structure and a basic classification of the many granitic rocks in two main groups : magmatic (up to hypovolcanics) and metamorphic/metasomatic varieties, and formed the basis for his doctoral dissertation. An international field colloquium then was organised by IUGS and UNESCO, in March 1965. Other geologists came later and exploration produced ore targets manganese, vein-type and placer gold, alluvial diamonds, columbo-tantalite, and spodumene. As noted above, the Arnould mapping also included spot-maps for hydrogeological (water supply) of local cities, and identification of borrow resources for construction and road materials.

- Leadership and responsible charge within the profession (practice, societies, and/or pro-bono service) and external to the profession which has brought recognition and/or credit to the profession.

In our opinion, Marcel Arnould has been the most effective member of our profession to promote international cooperation in terms of technical transfer as well as outreach to the North American community of practicing members of our profession.

1982-1986: President IUGS Coordination Committee "Geophysical and Geological Environment," International Commission on Lithosphere;

1984: President, International Congress on Aggregates (IAEG) Nizza;

1989: Co-Convenor Symposia "Applied Geosciences for low level radioactive and chemical wastes" and "The common geologic hazards: natural and man induced", 28<sup>th</sup> International Geological Congress, Washington;

1992: Co-Convenor Symposium "Restoration of Environment and Management of hazardous wastes sites" 29<sup>th</sup> International Geological Congress, Kyoto;

1993: President Scientific Committee International Symposium GEOCONFINE (Geology and Confinement of Toxic Wastes, Montpellier;

1996: Co-Convenor Symposium "Environmental and Engineering Geology for major construction projects" 30<sup>th</sup> International Geological Congress, Beijing;

2005: President Scientific Committee GEOLINE (Geology and Linear Infrastructures), Lyon; sought and brought forth a considerable North American contingent of speakers and attendees.

- Technical or philosophical innovations or advancements created by or sponsored by the Candidate.

Marcel made literally dozens of discoveries and evaluations of mineral exploration targets, groundwater supply discoveries, and identification of borrow sources in Western Africa;

He contributed to the primary understanding of the igneous and metamorphic contact and regional structure of a remote 100,000 km<sup>2</sup> of Western Africa;

- Publication(s) of high merit

139 publications to date; a selection of which being:

2006: M. Arnould, Discontinuity networks in mudstones; a geological approach, with implications for radioactive waste isolation in deep geological formations in Belgium, France and Switzerland: Bull. Engr. Geol. Environ, v. 65, p. 413-422.

2005: M. Arnould and P. Ledru, eds., GEOLINE - Geology and linear infrastructures: Proc. of IAEG Conf. held at Lyon, France, CDR, BRGM editions, May, ISBN 2-7159-2982-X.

2002: M. Arnould, J.Y. Boisson and I.P. Ivanov, Discontinuity network of

sedimentary clay formations; the model of lower Cambrian blue clays of St. Petersburg, Russia: Proc., ANDRAM Reims, Dec., p. 39-40.

2001: Arnould, M., and Cojean, R., Problemes de stabilite des versants de la retenue du barrage des Trois-Gorges (Chine) Convention MEFI, Secretariat d'Etat a l'Industrie, DGEMP-DIMAH, Final Report, Nov., 50 p.

2000: Cojean, R., Fleurisson, J.A., Billiotte, J., Thenevin, I., Toutitou, D., Cai, Y., and Arnould, M., Contribution to the high rock slope design and monitoring of the permanent shiplock at the Three Gorges Project, Contract CDGPC (Chine), Fourth Progress Report, March, 46 p.

1998: Guinle-Thenevin, I., Deveughele, M., and Arnould, M., Perennite des couvertures de stockage de dechets toxiques vis a vis d'agressions climatiques; erosion, gel, secheresse: 8<sup>th</sup> IAEG Congress, Vancouver, B.C., v. IV, P. 2725-2732.

- Mentoring.

Directed 130 PhD candidates (various types according to successive reforms)

Founder of the Bulletin of the International Association of Engineering Geology (1970) and, as Secretary General of the IAEG, Marcel managed the journal during its first three years, acting as publisher and editor in chief on behalf of the Association. In 1998, the journal became managed by Springer Verlag, with the Editors-in-chief appointed by IAEG.

Was Co-Editor in Chief "Engineering Geology" (Elsevier) together with Dr Ellis L. Krinitzsky (USA): 1992-2005

- Exemplary regional, national, or international practice.

1975-1981 - Quattara Hydro-Solar Power Plant Project in Egypt; required partial filling of the Quattara depression by Mediterranean sea water through a 80 km canal/tunnel - compensated by evaporation. Ministry of Electricity (Arab Republic of Egypt); Kreditanstalt fur Wiederaufbau, Lahmeyer International, Salzgitter international

1977-1981 Kankai multipurpose dam, Nepal, on Siwalik formations; German Agency for Cooperation (GTZ) and Salzgitter Consult

1984-1985 - Diama Dam, Senegal; Organisation de mise en valeur du fleuve S n gal

1986-1990 - Underground and under river galleries for hydraulic transfer of wastes as slurries from superphosphate plants to repositories; CDF Chimie, AZF, ORKEM

1990-1991 - Tunnel under the Channel; Eurotunnel and France-Manche

1994-1996 -Problems of swelling roadbed on Highway A1 - SANEF-VIAFRANCE

1995-1996 -Transpyrenean Somport Tunnel, RAZEL

1998-2002 - Three Gorges Dam, China. China Yangtze Three Gorges

2000-2002 - Underground storage of nuclear waste in clays and mudstones for IRSN (Institut de Radioprotection et de Sûreté Nucléaire)

2000-2008 - Disposal of non nuclear waste for various public and private partners.

- Integrity and ethics above reproach.

Prof. Arnould has been honored, as representation of the manner in which his peers regard his integrity and ethics, by the following honors:

1975 : Ordre National du Mérite, Chevalier

1982 : Doctor Honoris Causa, Prague Technical University

1984: Léopold von Buch Plakette, German Geological Society

1989 : Médaille Jules Gosselet, Société Géologique de France

1990: Hans Cloos Medal, IAEG

1993 : Doctor Honoris Causa, Saint Petersburg Technical University (Mining Institute)

1994 : Ordre National de la Légion d'Honneur, Chevalier

1995 : Ordre National des Palmes Académiques, Commandeur 1995

- Previous recognition by the profession of the Candidate's contributions.

Honorary Professor, Ecole Nationale Supérieure des Mines de Paris and École Nationale des Ponts et Chaussées, Paris

Honorary President, International Association of Engineering Geology and the Environment (IAEG)

Honorary President, French Committee of Engineering Geology and the Environment (CFGI)

The undersigned believe that a resulting election to Honorary Membership, by AEG, to the world-renowned Dr. Arnould, will generate increased favorable international recognition for AEG and of its international mission.

Respectfully nominated by:

Allen W. Hatheway, Honorary Member, St. Louis Section

Richard J. Proctor, Honorary Member, Southern California Section

Raymond T. Throckmorton, Member, Southeastern Section

Aubrey D. Henley, Honorary Member, Texas Section







