June 6, 2008

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of	)	
	)	Docket Nos. 52-014, 52-015
Tennessee Valley Authority	)	
	)	
(Bellefonte Nuclear Power Plant Units 3 and 4)	)	

DECLARATION BY DR. ARJUN MAKHIJANI IN SUPPORT OF BLUE RIDGE ENVIRNONMENTAL DEFENSE LEAGUE'S CONTENTIONS

Under penalty of perjury, I, Dr. Arjun Makhijani, declare as follows:

1. I am President of the Institute for Energy and Environmental Research. IEER has been doing nuclear-related studies for twenty years and is an independent non-profit organization located in Takoma Park, Maryland. Under my direction, IEER produces technical studies on a wide range of energy and environmental issues to provide advocacy groups and policymakers with sound scientific information and analyses as applied to environmental and health protection and for the purpose of promoting the understanding and the democratization of science.

2. I have a Ph.D. (Engineering), granted by the Department of Electrical Engineering and Computer Sciences of the University of California, Berkeley, where I specialized in the application of plasma physics to controlled nuclear fusion. I also have a master's degree in electrical engineering from Washington State University, and a bachelor's degree in electrical engineering from the University of Bombay. I am qualified by training and experience as an expert in the fields of plasma physics, electrical engineering, nuclear engineering, and energy-related technology and policy issues. I have extensive professional experience and am qualified as an expert in radioactive waste disposal, standards for protection of human health from radiation, and the relative costs and benefits of nuclear energy and other energy sources. I have served as an expert witness in numerous lawsuits and testified on a variety of issues including releases of radioactivity from nuclear facilities. A copy of my curriculum vita is attached.

3. Over the past 25 years, I have developed extensive experience with nuclear fuel cycle-related issues, including standards and strategies for radioactive waste storage and disposal, accountability with respect to measurement of radioactive effluents from nuclear facilities, health and environmental effects of nuclear testing and nuclear facility operation, strategies for disposition of fissile materials, energy efficiency, and other energy-related issues. As reflected in my curriculum vita, which is attached, I have authored or co-authored many publications on these subjects. I have testified before Congress on several occasions regarding issues related to nuclear waste, reprocessing, environmental releases of radioactivity, and regulation of nuclear weapons plants.

4. Between 1997 and 2002, I was on the expert team monitoring independent audits of the compliance of Los Alamos National Laboratory with the radiation release portion of the Clean Air Act (40 CFR 61 Subpart H), conducted under a Consent Decree, which was the result of a federal court finding that Los Alamos was out of compliance with Subpart H. In that capacity I have reviewed extensive records, models, facilities, procedures, measurements, and other aspects of the Los Alamos National Laboratory air emissions control and measurement program in order to determine whether the audits were being properly conducted and whether they were thoroughly done. I am the principal author of an assessment of the radioactive waste management and disposal costs of depleted uranium from the National Enrichment Facility (2004 and 2005) and of an analysis of U.S. waste classification regulations. I was the director of a team that analyzed ANDRA's plans for a geological repository for high level radioactive waste in France on behalf of a French government-sponsored stakeholder committee(2004). I have also served as a member of the Radiation Advisory Committee of the U.S. Environmental Protection Agency's (EPA's) Science Advisory Board from 1992 to 1994 and on the EPA's Advisory Subcommittee on Radiation Standards, which is part of the National Advisory Committee on Environmental Policy and Technology. In addition, I have served as a consultant to numerous organizations, as mentioned in my CV.

5. I have written a number of books and other publications analyzing the safety, economics, and efficiency of various energy sources, including nuclear power and sustainable energy sources such as wind and solar energy. I was the principal author of the first evaluation of energy end-uses and energy efficiency potential in the U.S. economy (published by the Electronics Research Laboratory, University of California at Berkeley in 1971). I was also the principal author of the first overview study on *Energy and Agriculture in the Third World* (Ballinger 1975). This study included consideration of both traditional and modern energy sources. I was one of the principal technical staff persons of the Ford Foundation Energy Policy Project, and a co-author of its final report, *A Time to Choose*, which helped shape U.S. energy policy during the mid-to-late 1970s. I am a co-author of Investment Planning in the Electricity Sector, which is an economic model published by the Lawrence Berkeley Laboratory in 1975. I am also the author of *Nuclear Power Deception* (Apex Books 1999), an analysis of the costs of nuclear power in the United States. On behalf of the SEED Coalition, I have assessed the capital costs of proposed nuclear power reactors in South Texas (2008). In addition, I am the author

of *Carbon-Free and Nuclear-Free* (RDR Books and IEER Press 2007), the first analysis of a transition to a U.S. economy based completely on renewable energy, without any use of fossil fuels or nuclear power. I have been a consultant on energy issues to several U.N. agencies, the Tennessee Valley Authority, the Lower Colorado River Authority, the Lawrence Berkeley Laboratory, Edison Electric Institute, and the Congressional Office of Technology Assessment. I was elected a Fellow of the American Physical Society in 2007, an honor granted to at most one-half of one percent of APS members.

6. I have also done extensive work with respect to the health and environmental effects of nuclear weapons production. I am the principal author of the first independent assessment of radioactivity emissions from a nuclear weapons plant (1989) and co-author of the first audit of the cost of the U.S. nuclear weapons program (*Atomic Audit*, 1998). I am also a co-author of the first global assessment of the health and environmental effects of nuclear weapons production (*Nuclear Wastelands*, 1995 and 2000), which was nominated for a Pulitzer Prize by MIT Press and the principal editor of this book.

7. I have reviewed the Environmental Report for the proposed Bellefonte nuclear power plant, as relevant to my declaration. I am also familiar with governing law and guidance, including the National Environmental Policy Act and relevant NRC implementing regulations.

5. I am responsible for the factual content and expert opinions expressed in BREDL's contentions regarding the following subjects: Inadequacy of Environmental Report's Reliance on Table S-3 Regarding Radioactive Effluents from the Uranium Fuel Cycle, Inadequacy of Environmental Report's Analysis of Human Health Impacts of Spent Fuel Disposal, Environmental Report's Inadequate Cost Estimates and Cost Comparison, and Environmental Report's Improper Characterization of Health Effects from the Uranium Fuel Cycle as SMALL and Failure to Adequately Compare Them to Health Effects of Alternative Energy Sources. The facts presented in those contentions are true and correct to the best of my knowledge, and the opinions expressed therein are based on my best professional judgment.

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Dr. Arjun Makhijani

6 June 2006