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Dr. Michael L. Corradini, Chairman
Nuclear Waste Technical Review Board
2300 Clarendon Blvd., Suite 1300
Arlington, VA 22201-3367

Dear Dr. Corradini:

Enclosed you will find a copy of a document entitled "Review Of The Report 'Thermochronological Evolution Of Calcite Formation At The Potential Yucca Mountain Repository Site, Nevada'" published under the auspices of the Siberian Branch of the Russian Academy of Sciences United Institute of Geology, Geophysics and Mineralogy, which was authored by two members of the Institute of Mineralogy and Petrography, Dr. Yuri V. Dublyansky and Dr. Sergey Z. Smirnov. The document is a review of a two part report written by UNLV coordinators, Nick Wilson, Jean Cline and Y. Amelin, of the Yucca Mountain Thermochronology Project, a project conducted in response to a suggestion by the Nuclear Waste Technical Review Board in 1998 to resolve differences in the interpretation of certain fluid inclusion and stable isotope data, which had spawned a heated controversy between scientists representing the State of Nevada and those representing the interests of the DOE (primarily the USGS) concerning the origin and ages of secondary minerals in the interior of Yucca Mountain.

Dr. Dublyansky was Nevada's representative for the UNLV Thermochronology Project. Except for DOE representatives' concession that the secondary minerals in question were, indeed, formed from heated aqueous fluids, the disagreement between the scientists, particularly the source of the heat, has persisted to the present day. The DOE aligned interests still maintain that the source of the depositing fluids was meteoric water in the form of infiltrating rainwater passing through a mountain that remained hot for millions of years. Dr. Dublyansky and a group of internationally based scientists working with him, which include many of his colleagues at the Institute, Jerry Szymanski of Las Vegas, Nevada and Dr. Tim Harper of England are convinced, based on many lines of evidence, that the secondary minerals were deposited by hydrothermal fluids driven from deep beneath Yucca Mountain and that episodes of such deposition are recent in geologic time. If hydrothermal fluids were to flood the proposed repository during its 10,000-year lifetime or even an extended period of many tens of thousands of years, steam explosions would undoubtedly result and the canisters would be breached. As the fissile material is rearranged tremendous quantities of radioactivity would be released through a variety of pathways to the biosphere, not the least of which are those created by predictable low yield nuclear explosions and uncontrollable *in situ* criticality processes.

In a letter written to the NWTRB by the Yucca Mountain Project Manager, J. Russell Dyer,

dated January 24, 2002, the lack of a consensus in the lingering rainwater-upwelling controversy was documented. Inexplicably, however, NWTRB Chairman Jared Cohon wrote a letter addressed to Mr. Lake H. Barrett, Acting Director of OCRWM dated March 11, 2002, which stated:

At the Board meeting and in a letter to the Board dated January 24, 2002, the DOE concluded that the hypothesis of hydrothermal upwelling proposed by Mr. Jerry Szymanski had been adequately addressed and may be discounted. These conclusions were based on the DOE's positive response to a Board recommendation that a joint federal-State of Nevada project be conducted to determine the ages of fluid inclusions at Yucca Mountain. A systematic joint study was coordinated by University of Nevada-Las Vegas scientists and can be considered a model for successful resolution of some contentious scientific issues. The Board concurs with the DOE's conclusions and considers this issue resolved.

The important point to recognize with respect to the foregoing communications is that they contain nothing more than political opinion. The decision whether or not the controversy is scientifically resolved is a technical issue related to the safety of the site, which is committed to the jurisdiction of the Nuclear Regulatory Commission's licensing board. The NRC is the sole entity responsible for safety considerations concerning the licensing of the Yucca Mountain site. Furthermore, the decision whether or not the State of Nevada will raise a contention based upon the continuing controversy is a question, which rests solely with the Nevada Attorney General. The bottom line is that the controversy is resolved neither politically nor scientifically.

Other political statements such as the one attributed to you as the consequence of your recent co-authorship of an editorial in a Madison, Wisconsin newspaper that in your opinion nuclear waste can be "stored safely at Yucca Mountain" are counter productive in the effort to provide the world community with a fair and unbiased process. Since that bell cannot be unrung, an appropriate strategy for the mitigation of the effects of the dissemination of misinformation might come in the form of reopening the scientific review of the origin and ages of the secondary minerals at Yucca Mountain before the NWTRB.

An unbiased consideration of reasonable interpretations, which may be attributed to data acquired during the UNLV Thermochronology Project, is warranted. A number of questions, which were raised by Board members, regarding findings by the Thermochronology Project in a meeting of the full Board on May 9, 2001 need to be resolved. Among these were questions raised concerning the source of magnesium found in samples of secondary minerals, the source of hydrocarbons in all gas inclusions, an explanation for the high salinities in the fluids of the inclusions, the use of a constant lead correction for uranium-lead age dating, thermodynamic limitations to the rainwater hypothesis, etc.

The review authored by Dr. Dublyansky and Dr. Smirnov enclosed herein and a second review authored by them: "Commentary on: 'Physical and stable-isotope evidence for formation of secondary calcite and silica in the unsaturated zone, Yucca Mountain, Nevada' by J.F. Whelan, J.B. Paces, and Z.E. Peterman" (submitted for publication in *Applied Geochemistry*, a peer-reviewed journal) as well as the reports of the USGS and UNLV researchers regarding their interpretations of the data produced by the UNLV Thermochronology Project can provide valuable resources to define the issues. The position of the international group of scientists referred to above will be fully discussed in a book length monograph presently in a draft format pending review, which will contain multiple lines of evidence proving without question that the deposition of the secondary minerals was caused by the upwelling of hydrothermal water.


The NWTRB has the statutory mandate in Section 503 of the NWPA, 42 U.S.C. 10263, to

evaluate the technical and scientific validity of activities undertaken by the Secretary of Energy in relation to, among other things, site characterization activities. This broad grant of authority provides the Board with the power and the duty to oversee the DOE's consideration of potentially disruptive events such as the possible flooding of the proposed repository by upwelling water and to intervene with appropriate admonitions and recommendations to the Department of Energy. It is a dereliction of this duty for the Board to disregard its mandate by leaving contentious issues affecting the performance of the proposed repository left unresolved.

The Board also has the duty to report to the Congress and the Secretary of Energy with regard to findings, conclusions and recommendations as to matters within its purview. *See* 42 U.S.C. 10268. To the extent the Board has prematurely terminated consideration of the need for a comprehensive risk assessment of potential consequences associated with the controversy discussed herein, it appears that both the Secretary of Energy and the Congress have been misled by previous reports from the Board. Eventually, evidence of the dangerous nature of the site will certainly cause the abandonment of the site. At that time certain individuals and entities will be held accountable for the expenditure of billions of dollars and, more importantly, years of lost time in the resolution of a pressing national environmental problem. There will be plenty of blame to go around. Unless the NWTRB takes steps to rectify its past nonfeasance, it will likely become the scapegoat for the misfeasance of many.

I commend the enclosed review for your careful consideration and appropriate action.

Cordially,


Harry W. Swainston
Attorney At Law

Enclosure

cc:

The Honorable Brian Sandoval, Nevada Attorney General, Carson City NV
The Honorable Kenny Guinn, Nevada Governor, Carson City, NV
The Honorable Harry Reid, Nevada Senator, Washington DC
The Honorable John Ensign, Nevada Senator, Washington DC
The Honorable Jim Gibbons, Nevada Representative, Washington DC
The Honorable Shelly Berkley, Nevada Representative, Washington DC
The Honorable Jon Porter, Nevada Representative, Washington DC
The Honorable Spencer Abraham, Secretary of Energy, Washington DC
Brian McKay, Chairman, Nevada Commission on Nuclear Projects, Reno, NV
Michon Mackedon, Vice Chairman, Nevada Commission on Nuclear Projects, Fallon, NV
Richard H. Bryan, Nevada Commission on Nuclear Projects, Las Vegas, NV
Larry Brown, Nevada Commission on Nuclear Projects, Las Vegas, NV
Steven Molasky, Nevada Commission on Nuclear Projects, Las Vegas, NV
Myrna Williams, Nevada Commission on Nuclear Projects, Las Vegas NV
Paul Workman, Nevada Commission on Nuclear Projects, Las Vegas, NV
Robert Loux, Executive Director, NWPO, Carson City, NV
Pricilla P. Nelson, member, NWTRB, Arlington, VA

Paul P. Craig, member, NWTRB, Arlington, VA
Daniel B. Bullen, member, NWTRB, Arlington, VA
Norman L. Christenson, Jr., member, NWTRB, Arlington, VA
Richard Parizek, member, NWTRB, Arlington, VA
Thure E. Cerling, member, NWTRB, Arlington, VA
Ronald M. Latanision, member, NWTRB, Arlington, VA
Mark D. Abkowitz, member, NWTRB, Arlington, VA
David J. Duquette, member, NWTRB, Arlington, VA
Jared Cohon, former Chairman, NWTRB, Arlington, VA
William D. Barnard, Executive Director, NWTRB, Arlington, VA
B. John Garrick, Chairman, ACNW, Rockville, MD
Michael T. Ryan, Vice Chairman, ACNW, Rockville, MD
George M. Hornberger, member, ACNW, Rockville, MD
Milton Levenson, member, ACNW, Rockville, MD
Ruth F. Weiner, member, ACNW, Rockville, MD
Nils J. Diaz, Chairman, NRC, Rockville, MD
Jeffrey S. Merrifield, Commissioner, NRC, Rockville, MD
Edward McGaffigan, Commissioner, NRC, Rockville, MD
William D. Travers, Executive Director, NRC, Rockville, MD
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Wayne Premo, USGS, Denver, CO
James Paces, USGS, Denver, CO
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Donald H. Baepler, Executive Director, Harry Reid Center for Environmental Studies, Las Vegas, NV
Jean S. Cline, Associate Professor, UNLV, Las Vegas, NV
Nicholas Wilson, Calgary, Canada
Robert J. Bodnar, C.C. Garvin Professor of Geochemistry, Blackburg, VA
Yuri Dublyansky, Geochemist, IMP, Novosibirsk, Siberia, Russia
Tim Harper, President, Geosphere, Ltd., Beaworthy, Devon, Eng.
Jerry Szymanski, Geologist, Las Vegas NV
Carol Hill, Geologist, Albuquerque, NM
Charles Archambeau, President, TRAC, Boulder, CO
Mary Beth Gray, Assoc. Professor of Geology, Bucknell University, Lewisburg, PA
Arjun Makhijani, President, IEER, Washington DC
Charles D. Bowman, LANL, Los Alamos, NM
Francesco Venneri, LANL, Los Alamos NM
William J. Broad, New York Times, New York, NY