



The Dow Chemical Company
Midland, Michigan 48667

Mr. Geoffrey Wertz
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Subject: The Dow Chemical Company- License No. R-108; Docket No. 50-264

Enclosed are responses for the July 11, 2011 NRC letter "REQUEST FOR ADDITIONAL INFORMATION REGARDING FINANCIAL QUALIFICATIONS FOR THE DOW CHEMICAL COMPANY TRIGA RESEARCH REACTOR LICENSE RENEWAL (TAC NO.ME1595)" submitted in support of the license renewal.

Should you have any questions or need additional information, please contact the Facility Director, Paul O'Connor, at 989-638-6185.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 10, 2011

Paul O'Connor, Ph.D.
Director
Dow TRIGA Research Reactor

Subscribed and sworn to before me this 10th day of August, 2011

Notary Public
_____ County, Michigan

My Commission Expires:



cc: Wayde Konze, R&D Director - Analytical Sciences
Toby Threet, Counsel - Legal
Siaka Yusuf, Reactor Supervisor

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Subject: Dow Chemical Company- License No. R-108; Docket No. 50-264. Responses for the July 11, 2011 NRC letter "REQUEST FOR ADDITIONAL INFORMATION REGARDING FINANCIAL QUALIFICATIONS FOR THE DOW CHEMICAL COMPANY TRIGA RESEARCH REACTOR LICENSE RENEWAL (TAC NO.ME1595)" submitted in support of the license renewal.

Dow is providing response in support of its Application for License Renewal for the Dow TRIGA research reactor. The response to the RAI is organized by individual question. Each question will be reiterated and our response will follow.

RAI 1: Contents of applications:

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.33, certain information is required by the applicant, as applicable. Within its application and supplements to its application, Dow provided the names, addresses and citizenship of Dow's directors and principal officers, but did not provide a diagram of its organizational structure. a) Please provide a diagram of the organizational structure of Dow, including its subsidiaries. Also, state if any of the directors and principal officers of Dow's subsidiaries are not citizens of the United States and, if so, provide their names, addresses, and citizenship.

DTRR Response to RAI 1a:

In a meeting and teleconference with NRC staff on July 27, 2011, The Dow Chemical Company ("Dow") requested clarification of this RAI in light of the fact that Dow has several hundred subsidiaries. NRC staff indicated that Dow would not need to provide information about subsidiaries that have no connection to the Dow TRIGA Research Reactor. In that light, Dow's response is as follows:

Details of the corporate management for The Dow Chemical Company have been released as public record in the FORM 10-K ANNUAL REPORT to the UNITED STATES SECURITIES AND EXCHANGE COMMISSION for the fiscal year ended DECEMBER 31, 2010, Commission file number: 1-3433. As found in Exhibit 1 of the report, pages 176 through 187, The Dow Chemical Company has more than 500 subsidiaries. At this time, none of the subsidiaries have any direct or indirect influence on the ownership, control or influence on the operation or management of the DTRR.

RAI 2: Foreign ownership, control, or domination:

Sections 103d and 104d of the Act provide, in relevant part, that: No license may be issued to any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation or a foreign government. In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issue of a license to such person would be inimical to the common defense

and security or to the health and safety of the public. Section 50.38 of 10 CFR implements this statutory prohibition.

a) *Note: the RAI 2a specific question is omitted in this document because it contains Dow Proprietary Information.*

DTRR Response to RAI 2a:

A teleconference was held on July 27, 2011 between The Dow Chemical Company and NRC personnel. Present for Dow Chemical were Paul O'Connor (DTRR Facility Director), Wayde Konze (ROC Chair), Toby Threet (Attorney), Michele Osmun (Paralegal), Siaka Yusuf (Reactor Supervisor). Present for NRC were: Walt Meyer, Renewal Project Manager; Jo Ann Simpson, Financial Analysis Branch; Chris Regan, Branch Chief, Financial Analysis Branch; Susan Uttal, Office of General Counsel; Beth, Mizuno, Office of General Counsel; and Tom Frederichs, Financial Analysis Branch.

At this meeting the NRC requested clarification of the Dow response of December 7, 2010 to address Dow's ownership and control with respect to the DTRR. NRC staff indicated that the Agency had reconsidered the previously-recommended approach which was reflected in Dow's then-current proposed Negation Action Plan. As a result, NRC staff suggested an alternative approach to the December 7, 2010 negation plan. Dow is investigating this alternative approach. Dow has a meeting scheduled for August 11, 2011 with members of the NRC to review this approach and establish timing for a response.

Dow therefore requests an extension of 60 days to this RAI to explore this option.

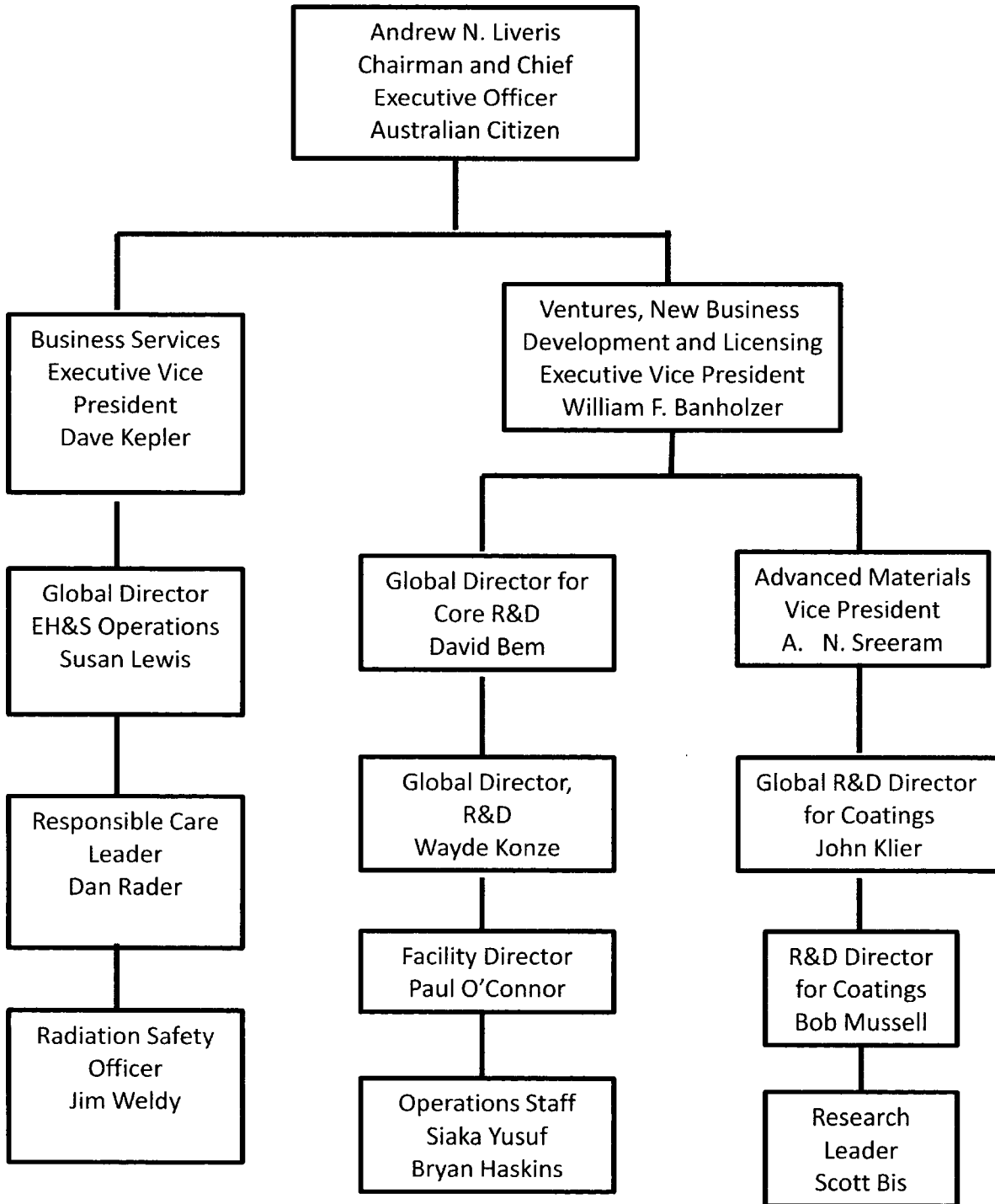
b) By letter dated December 7, 2010, supplement to the application, it was stated that "Physical access to the reactor and [SNM] is restricted to [United States] citizens." Physical Security is discussed, planned and approved with individuals on the Reactor Operations Committee. The Reactor Operations Committee is restricted to [United States] citizens. Please identify to whom the Reactor Operations Committee, which is comprised of citizens of the U.S., reports within the Organizational Chart included in the April 4, 2011, submittal. If the individual(s) are not included within the Organizational Chart, please provide the names, addresses, and citizenship of those who have managerial, financial, or staffing authority over the Reactor Operations Committee.

DTRR Response to RAI 2b:

Updated DTRR organization information as of June 4, 2011 is shown in the chart below. Wayde Konze (US Citizen) has replaced Sandeep Dhingra as the Global Director for Analytical Sciences and the ROC Chair, Paul O'Connor (US Citizen) has replaced Melinda Krahenbuhl as the Facility Director. These changes were communicated to the NRC in a May 23, 2011 letter.

The ROC is currently comprised of Wayde Konze, Paul O'Connor, Jim Weldy, Siaka Yusuf, Michael Buchmann and Jay Romick. All members of the ROC are US Citizens. Two current members of the ROC, not shown directly in this organizational chart, are Michael Buchmann and Jay Romick, both former licensed Senior Reactor Operators of the DTRR. These members have line management that reports up through William F. Banholzer in Dow's R&D organization.

Michael Buchmann reports to David Bem. Jay Romick reports to Scott Bis (US Citizen), who reports to Bob Mussell (US Citizen), who reports to John Klier (US Citizen), who reports to Attiganal Sreeram (US Citizen), who reports to William F. Banholzer (US Citizen).



The name, address and citizenship for direct line management of ROC member Jay Romick is shown below in Table 1.

Table 1. Name Address and Citizenship of Line Management for ROC member Jay Romick

<p><i>A.N. Sreeram, Vice President The Dow Chemical Company Advanced Materials 100 Larkin Midland, MI 48674</i></p> <p><i>US Citizen</i></p>
<p><i>John Klier, Global R&D Director The Dow Chemical Company 100 Larkin Midland, MI 48674</i></p> <p><i>US Citizen</i></p>
<p><i>Bob Mussell, R&D Director The Dow Chemical Company 1707 Building Midland, MI 48674</i></p> <p><i>US Citizen</i></p>
<p><i>Steve Bis, Research Leader The Dow Chemical Company 1707 Building Midland, MI 48674</i></p> <p><i>US Citizen</i></p>

RAI 3: Financial Assurance:

Under 10 CFR 50.75(e)(1)(iii)(1): [T]he surety or insurance must . . . provide that the full face amount be paid to the beneficiary automatically prior to the expiration without proof of forfeiture. In your application, you state “[i]t is currently providing the funds necessary for the operation and for the eventual decommissioning of the DTRR in the form of a Surety Bond.” However,

financial assurance is used for only radiological decommissioning and not for the operation of the DTRR.

a) Within its December 7, 2010, supplement to the application, Dow stated that the current value of the surety bond is \$5,472,560. However, within its April 4, 2011, supplement to the application, Dow stated that the decommissioning cost estimate for the DTRR is \$5,516,000 (2011 dollars). Please state the current value of the surety bond, if different than the value stated within the December 7, 2011, supplement to the application, and Dow's plans to adjust the value of the surety bond to reflect its updated 2011 decommissioning cost estimate of \$5,516,000 for the DTRR.

DTRR Response to RAI 3a:

As detailed in the April 15, 2011 communication from Dow to Thomas Fredrichs, Dow has updated the value of the Surety Bond increased Surety Bond Rider and updated Standby Trust Agreement Schedules A and B on behalf of The Dow Chemical Company. Bond #6210359 was increased to \$5,521,813 due to the annual inflation factor. This exceeds the estimated decommissioning costs for 2011 of \$5,516,000. The Surety Bond Rider will be reviewed and updated annually to reflect the DTRR decommissioning cost estimate of the current year.

RAI 4: Decommissioning cost estimate:

Under 10 CFR 50.75(d)(1), "[e]ach non-power reactor applicant for or holder of an operating license for a production or utilization facility shall submit a decommissioning report as required by §50.33 of this part." a) Within the April 4, 2011, letter, the decommissioning cost estimate appears to be derived from reactors that were decommissioned four to ten years ago. Please provide comparison of decommissioning cost estimate for the DTRR to the more recent decommissioning estimates of research reactors of similar size to the DTRR.

DTRR Response to RAI 4a:

The DTRR decommissioning estimate of \$5,516,000 can be compared to more recent decommissioning estimates. More recent estimates include: University of Wisconsin Nuclear Reactor (UWNR) 1000 kW (July 8, 2010 ADAMS Accession No. ML102110051); Washington State University (WSU) 1000 kW (April 2010 ADAMS Accession No. ML101030215); Reed College Research Reactor (RCRR) 250 kW (October 5, 2010 ADAMS Accession No. ML102861079); University of Utah (UOU) 100 kW (2010 ADAMS Accession No. ML100810149). The information for these recent decommissioning estimates is shown below in Table 2.

Table 2. Decommissioning Cost Estimates

<i>Reactor</i>	<i>Power (kW)</i>	<i>Year of Estimate</i>	<i>Estimated Decommissioning Cost (\$)</i>	<i>EDC per kW (\$)</i>
<i>University of Wisconsin</i>	<i>1,000</i>	<i>2010</i>	<i>9,861,295</i>	<i>9,861</i>
<i>Washington State University</i>	<i>1,000</i>	<i>2010</i>	<i>12,037,908</i>	<i>12,038</i>
<i>Reed College</i>	<i>250</i>	<i>2010</i>	<i>2,250,000</i>	<i>9,000</i>
<i>University of Utah</i>	<i>100</i>	<i>2010</i>	<i>5,957,465</i>	<i>59,575</i>

The Reed College Reactor is the unit that is most similar to the DTRR and may provide the most comparative decommissioning estimate. The average Estimated Decommissioning Cost (EDC) per kW for the UWNR, WSU and Reed College reactors is \$10,000/kW. The DTRR EDC per kW is \$18,387. This places the estimated cost for decommissioning the DTRR at a conservative value relative to these reactors. Since Dow has not requested an outside contractor to provide an estimate specific to the DTRR, and since no similar facilities have decommissioned recently, Dow will continue to use the 2011 decommissioning estimate of \$5,516,000 as the baseline.

Should you have any questions or need additional information, please contact Paul O'Connor, Facility Director at 989-638-6185.