



The Dow Chemical Company  
Midland, Michigan 48667

March 26, 2004

Document Control Desk  
United States Nuclear Regulatory Commission  
Washington D.C., 20555

Dear Sir;

Enclosed is the annual report for The Dow TRIGA Research Nuclear Reactor, Docket No. 50-264. If you have any questions, please contact me at (989) 636-6584.

Ward L. Rigot  
Facility Director and Reactor Supervisor  
Dow TRIGA Research Reactor

Enclosure

CC: Alexander Adams; USNRC  
Tom Dragoun, USNRC  
Richard Wagner, 1897  
Stan Dombrowski, 1803  
Thomas J. Quinn III, 1602  
Siaka O. Yusuf, 1602  
James R. Weldy, 1803  
Jay. D. Romick, 1897  
Tim Lickly, 1803

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## DOW TRIGA RESEARCH REACTOR

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There were no US NRC inspections in 2003. The required annual peer review audit was conducted by an outside consultant. Recommendations were made and the Reactor Operations Committee has responded to these recommendations. The normal in-house audits of the radiation protection program, safety and housekeeping, and records were also performed and the recommendations acted upon. There were no significant changes to the facility during 2003. There was no security incidence during 2003. Several communications were made to the US NRC regarding compensatory measures.

#### A. Staff, Licenses, and Training

Ward L. Rigot continues serving as reactor supervisor and facility director of The DOW TRIGA Research Reactor. Richard A. Wagner continues to serve as first level manager for the facility. Thomas J. Quinn III remains as one of the two designated alternates (assistant reactor supervisors) for the reactor supervisor. Siaka O. Yusuf serves as the other designated alternate. Mr. Buchmann's license expired in April, 2003 and was not renewed. Bryan Haskins has accepted the role of a trainee operator. His time commitment for now is part-time but that is expected to change as his work load improves.

W. L. Rigot	Reactor Supervisor and Facility Director
T. J. Quinn	Assistant Reactor Supervisor
S.O. Yusuf	Assistant Reactor Supervisor
B. D. Haskins	Senior Reactor Operator Trainee

Licenses are current. Rigot's and Quinn's licenses were renewed in 1999, while Siaka O. Yusuf received his Senior Reactor Operator's license in 2000. All operators are current in their required medical examinations; which were taken during 2002 and 2003.

The current two-year re-qualification program will be completed in the second quarter 2004. All operators are up-to-date in their quarterly re-qualification participations. The SROs are current with operating experience and participation in emergency preparedness drills, Reactor Operation Committee meetings, operating examinations, and the annual fuel inventory.

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Operation of the reactor is an important part of the training program, since this reactor is operated on an as-needed basis, which results in numerous operations each involving reactivity manipulations, use of the control console, placement and retrieval of samples and handling of radioactive materials. The reactor was operated for a total of approximately 400 hours during 2003. Furthermore, each licensee performed about 1/3 of the daily checkout procedures during 2003 and at least three monthly checkout procedures.

James R. Weldy is the Radiation Safety Officer and sits as a member of the Reactor Operations Committee. Jerry Cassidy continues as the Health Physics Technician for the Midland Area and assists in support of the reactor facility. The entire composition of the Reactor Operations Committee is listed below.

R. A. Wagner	Chairman
W. L. Rigot	Reactor Supervisor and Facility Director
J. R. Weldy	Radiation Safety Officer
T. J. Quinn	Assistant Reactor Supervisor
T. D. Lickly	Senior Technical Leader
J. D. Romick	Senior Analytical Specialist

R. A. Wagner is the Resource Leader for the Atomic Structure group within the Leveraged Technology Segment of the Global Analytical Sciences Laboratory (GAS). W. L. Rigot reports administratively to R. A. Wagner. J. R. Weldy is the Dow Midland location Radiation Safety Officer as well as the TRIGA Radiation Safety Officer and reports, as does T.D. Lickly, to the Dow Environmental, Health, Safety and Security department. J. D. Romick and T. J. Quinn report through The Global Analytical Sciences Organization.

#### B. Reactor Operating Experience

The reactor was operated for 2.0 Megawatt-days during 2003 for a total of approximately 400 hours. Operational experience is higher than 2002. The main purpose of operations at the Dow facility is to perform neutron activation analysis. The total number of experiments introduced in 2003 exceeded 9300.

#### C. Major Changes

There were no completed major changes to the facility, which required 10CFR50.59 review. A capital project was initiated to convert the secondary cooling system from a one pass through tube and shell heat exchanger to a closed loop system, with a heat exchanger and cooling tower design. The cooling fluid will also be converted from water to a glycol based heat exchanger fluid. The equipment was ordered and delivered during 2002, but the project was placed on hold due to capital restrictions imposed by the company. The delay in no way affects the safety of the facility. The change in the cooling system design was made to reduce the total cost of operations

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of the facility and improving the burden of water to the site's waste water treatment facility. This upgrade in the cooling system is also a sign of commitment of the company to assuring safe operation of the facility and preparing for future improvements which will allow for smooth licensing activities. A 50.59 review will be performed prior to operation of the new cooling system.

There were minor changes to the facility procedures in 2003 related to security due to the September 11, 2001 incidents. These changes have been communicated to US NRC separately.

#### D. Unscheduled Shutdowns

There were 28 unscheduled shutdowns (scrams) during 2003. Of these, 21 were due to losses of computer function. The most common malfunction is still with the DIS064 device which processes the digital signals into the DAC computer. The vendor has been asked to address this situation, but as of the end of 2003, there has not been a successful solution provided. It is important to note that the frequency of unscheduled shutdowns does not reflect any safety concerns, but is a source operational inconvenience. The other shutdowns occurred due to high power indications on the safety channels. Most of them can be attributed to electrical spikes or power excursion at 250kW.

#### E. Major Preventive and Corrective Maintenance of Safety Significance

There was no maintenance, which had safety significance performed during 2003. There were 10 preventive and corrective maintenance items, three of them were replacement of water purification cartridge and three were on the CSC DIS064 board. The other four items were replacement of a shear pin in the rotary specimen rack, replacement of the primary pressure sensor, replacement of the pump for the continuous air monitor and tightening of shim2 screws.

#### F. Radioactive Effluents

The only radioactive material normally released to the environment from the facility is argon-41, which is produced from activation of the natural argon dissolved in the pool water and subsequently escapes from the pool into the reactor room and from there to the outside of the building, and from the natural argon present in the air used to transport samples from a laboratory into a terminus in the core of the reactor.

#### G. Radiation Exposures

Radiation exposures received by facility personnel and visitors are monitored using film badges and thermoluminescent detectors. No persons have received exposures approaching 25% of those allowed or recommended in 10CFR20.

#### H. Request from The University of Michigan NER dept.

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**A proposal by the university of Michigan NER department to allow some of their reactor lab students to visit and observe some of our experimental works was accepted by the ROC.**

**W. L. Rigot  
Facility Director and Reactor Supervisor  
Dow TRIGA Research Reactor  
25 March 2003**