



The Dow Chemical Company  
Midland, Michigan 48667

February 24, 2017

Document Control Desk  
United States Nuclear Regulatory Commission  
Washington, DC 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) 638-6185.

Paul J. O'Connor  
Facility Director  
Dow TRIGA Research Reactor

Enclosure

CC: Geoff Wertz; USNRC  
Wayde Konze, 1897  
Siaka Yusuf, 1602  
Bryan Haskins, 1602  
James Weldy, 1803  
Michael Buchmann, 1897  
Paul O'Connor, 1897

ADZO  
NRR

## DOW TRIGA RESEARCH REACTOR

ANNUAL REPORT - 2016

There was one US NRC inspection in 2016 during which all aspects of the Dow TRIGA Research Reactor programs were examined. There were no violations found. The annual peer review audit was conducted by Mr. Joseph Talnagi of Ohio State University (Retired) in December of 2016. The audit also examined all aspects of the Dow TRIGA nuclear reactor facility programs and there were no safety concerns or non-compliances with US NRC requirements.

The regular in-house audits of the radiation protection program, safety and housekeeping, and records were also performed by the Dow Chemical Company Radiation Safety Officer and there were no issues found.

There were no significant changes to the facility during 2016. There was, however, one Reactor Operation Committee member change towards the end of the year.

### A. Staff, Licenses, and Training

The current reactor staff members are:

P. J. O'Connor	Facility Director
S. O. Yusuf	Reactor Supervisor
B. D. Haskins	Assistant Reactor Supervisor
B. B. Vanchura	Trainee

There are two Senior Reactor Operators and their operator licenses are current. Dr. Yusuf renewed his Senior Reactor Operator's license in 2012. Mr. Haskins renewed his Senior Reactor Operator's license also in 2012.

The annual re-qualification program was carried out according to the NRC approved program, dated September 6, 2011. All operators are up-to-date in their quarterly re-qualification participations, including operating experience, participation in emergency preparedness drills, Reactor Operation Committee meetings, operating examinations, and the annual fuel inventory.

Operation of the reactor is an important part of the training program, thus, the reactor is operated on an as-needed basis which results in numerous operations. Each operation involves 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 244 hours in 2016 by the two Senior Reactor Operators.

## DOW TRIGA RESEARCH REACTOR

### ANNUAL REPORT - 2016

The one membership change to the Reactor Operations Committee (ROC) in 2016 was due to retirement. The ROC is currently composed of the following staff members:

W. V. Konze	ROC Chairman
P. J. O'Connor	Facility Director
S. O. Yusuf	Reactor Supervisor
J. R. Weldy	Radiation Safety Officer
M. E. Buchmann	Process Analytical Global Leader

Dr. Konze is the first level manager for the facility on behalf of Analytical Sciences and serves as the chairman for the ROC. Dr. O'Connor is the level 2 manager and the facility director. Dr. Yusuf is the level 3 manager and the reactor supervisor for the facility. Yusuf is the reactor operations staff member of the ROC. Mr. Weldy is the Dow Midland location Radiation Safety Officer as well as the TRIGA Radiation Safety Officer and reports through the Dow Environmental, Health and Safety department. Mr. M. E. Buchmann is a Process Analytical Global Leader and reports through the Dow Global Process Analytical. Mr. Buchmann serve as the outside member, (neither a member of reactor operation nor a member of analytical sciences), of the ROC.

#### B. Reactor Operating Experience

The reactor was operated for 1.204 Megawatt-days during 2016 for a total of 244 hours. Operational experience is being optimized as indicated by these numbers. The main purpose of operations at the Dow facility is to perform neutron activation analysis. About 5,543 samples were irradiated in 2016, down by 23% from 2015 numbers, and consistent with the number of licensed operators and focus.

#### C. Major Changes

There were no changes made to the facility in 2016.

#### D. Unscheduled Shutdowns

There were 14 unscheduled shutdowns (scrams) during 2016, slightly up from 2015 numbers. 13 of these scrams were due to a computer function, specifically, the DIS064 device which processes the signals into the DAC computer. Even though this is only an operational nuisance and rarely happens at steady power, the vendor has been requested to work on a solution to this situation.

DOW TRIGA RESEARCH REACTOR

ANNUAL REPORT - 2016

E. Major Preventive and Corrective Maintenance of Safety Significance

There was no maintenance which had safety significance, performed during 2016. There were however, 19 preventive and corrective maintenance items in 2016. These were related to replacements of water purification cartridges, adjustments on the NM1000 safety channel, adjustments on the NP1000 safety channel, Pneumatic tube blower valves, and Heat exchanger routine valves inspections.

F. Radioactive Effluents

The only radioactive material normally released to the environment from the facility is argon-41. This 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. Ar-41 is also produced from the natural argon present in the air used to transport samples from a laboratory into a terminus in the core of the reactor.

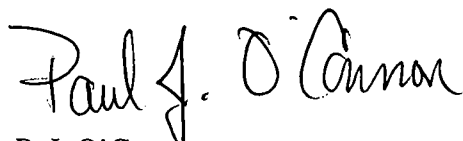
Overall, any release, after dilution is estimated to be less than 25% of the allowed or recommended maximum concentration in 10CFR20.

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. Outside Sampling and Monitoring

There were no incidences requiring outside sampling or monitoring during the year 2016.



P. J. O'Connor  
Facility Director  
Dow TRIGA Research Reactor  
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