The Dow Chemical Company
Midland, Michigan 48667

February 28, 2023

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 5579.

2/28/2023

Siaka O. Yusuf
Facility Director
Dow TRIGA Research Reactor

Enclosure

CC: Geoff Wertz; USNRC
Tonya Stockman, 1897
Siaka Yusuf, 1602
Bryan Haskins, 1602
Nick Goodman, 1602
Kelly Wegener, 1803
James Weldy, 1803
Michael Buchmann, 1897

A020
NRR

DOW TRIGA RESEARCH REACTOR

ANNUAL REPORT - 2022

There were two US NRC inspections of the DTRR in 2022, both of which were routinely scheduled inspections. There were no violations found in both inspections. The annual peer review audit was conducted by Mr. Randy Hyde of Plantation Production Inc., in December of 2022 as usual. The audit examined all aspects of the Dow TRIGA nuclear reactor facility programs and there were no safety concerns or non-compliances with US NRC requirements found.

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 2022. There were however a few changes to the Reactor Operation Committee (ROC) membership and leadership during the year, 2022. The leadership change was communicated promptly to NRC via a Subscribed and Sworn letter dated 11th March of 2022.

A. Staff, Licenses, and Training

The current reactor staff members are:

S. O. Yusuf	Facility Director and Reactor Supervisor
B. D. Haskins	Assistant Reactor Supervisor
N. J. Goodman	Senior Reactor Operator

There are currently three Senior Reactor Operators and their operator licenses are current. Dr. Yusuf renewed his Senior Reactor Operator's license in 2018. Mr. Haskins also renewed his Senior Reactor Operator's license in 2018. Mr. Nick Goodman is the newest Senior Reactor Operator. He obtained his license in December of 2020.

The annual re-qualification program was carried out according to the NRC approved program, dated September 6, 2011. All licensed 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 149 hours in 2022 by the three Senior Reactor Operators.

Following the departure of the previous ROC Chairman from Analytical Sciences, the ROC membership has been reorganized. The ROC is currently composed of the following staff members:

T. G. Stockman	ROC Chairwoman
S. O. Yusuf	Facility Director and Reactor Supervisor
B. D. Haskins	Assistant Reactor Supervisor
K. A. Wegener-Gave	Radiation Safety Officer
J. R. Weldy	EH&S Dow Michigan Operations
M. E. Buchmann	Process Analytical Global Leader

Dr. Stockman is the first level manager for the facility on behalf of Analytical Sciences and serves as the chairwoman for the ROC. Dr. Yusuf is the level 2 manager or Facility Director for the Facility. He also serves as the Reactor Supervisor for the facility. Mr. Haskins is the Assistant Reactor Supervisor for the facility. Both Yusuf and Haskins are the reactor operations staff members of the ROC. Ms. Wegener-Gave 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. J. R. Weldy is the Radiation and Industrial Hygiene Specialist for the Dow Chemical Company and reports through the Industrial Hygiene Expertise Center of the Dow Environmental Health and Safety (EH&S). Mr. M. E. Buchmann is a Process Analytical Global Leader and reports through the Dow Global Process Analytical. Mr. Weldy and Mr. Buchmann serve as the outside members, (neither members of reactor operations nor members of analytical sciences), of the ROC.

B. Reactor Operating Experience

The reactor was operated for 1.1 Megawatt-days in 2022 (a 35% increase from last year) for a total of 149 hours (similar to last year's total hours). The main purpose of reactor operations at the Dow facility is to perform neutron activation analysis. About 1,800 samples were irradiated in 2022, which is about the same as last year, 2021, and consistent with hours of operation and focus.

C. Major Changes

There were no changes made to the facility in 2022.

D. Unscheduled Shutdowns

There were 6 unscheduled shutdowns (scrams) during 2022. Most of these scrams were due to a computer function, specifically, the DIS064 device which processes the signals into the DAC computer. The number is consistent with previous years and the number of hours of operations.

E. Major Preventive and Corrective Maintenance of Safety Significance

There was no maintenance which had safety significance performed during 2022. There were 11 preventive and corrective maintenance items during 2022. Three of them were related to the replacements of water purification cartridges and pump. Two were related to Shim1 controller and connectors; and six were related to the continuous air monitor.

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 2022.

S. O. Yusuf
Facility Director
Dow TRIGA Research Reactor
February 8, 2023