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U.S. Nuclear Regulatory Commission  
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Washington, D.C. 20555

SUBJECT: ACCELERATED OPERATOR REQUALIFICATION PLAN  
Manhattan College Zero Power Reactor

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Dear Sir:

Attached is a copy of the Accelerated Operator Requalification Plan for the Manhattan College Zero Power Reactor. This plan describes the steps that will be taken to ensure that operators are properly trained and qualified prior to the refueling and restart of the reactor.

Two operators are affected by the implementation of this program:

Dr. William P. Duggan	SRO License: SOP-70026
Dr. Robert E. Berlin	SRO License: SOP-10592

For further information, contact Dr. William P. Duggan at the above address, by phone at 718-920-0112, or by e-mail at [wduggan@mcs1.rlc.mancol.edu](mailto:wduggan@mcs1.rlc.mancol.edu).

Yours truly,

William P. Duggan, PhD  
Reactor Administrator

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# **ACCELERATED OPERATOR REQUALIFICATION PLAN**

## **MANHATTAN COLLEGE ZERO POWER REACTOR MANHATTAN COLLEGE**

### PURPOSE

The Manhattan College Zero Power Reactor has been shut down for approximately two years due to corrosion and maintenance problems. Prior to loading fuel and restarting the reactor, an operator requalification program will be implemented to assure that both licensed operators have sufficient familiarity and expertise to operate the reactor safely. This plan describes the requalification program that will be implemented prior to reactor restart.

### REACTOR DESCRIPTION

The Manhattan College Zero Power Reactor (MCZPR) is a 0.1 watt pool reactor. Control and safety instrumentation includes a logarithmic startup channel, a linear power channel, and two area radiation monitors. The two control rods are manipulated from the console, which is located in the same room as the reactor tank. Technical specifications require a minimum of two individuals in the reactor room during operations, including one licensed operator. Two Senior Reactor Operators are required in the reactor room during fuel handling operations.

### OPERATOR REQUALIFICATION

The normal requalification program at the MCZPR requires operators to perform a complete reactor checkout and to bring the reactor critical at least once every four months. Under 10 CFR 55.53 (e), maintaining active status requires that the licensee shall actively perform operator functions for a minimum of four hours per calendar quarter. The inability to satisfy this requirement during the extended shutdown is the primary reason for implementing this accelerated requalification program. Under 10 CFR 55.53 (f), reactivation of an operator license at a Test and Research Reactor requires the operator to complete a minimum of six hours of shift functions as appropriate and in the position to which the individual will be assigned.

The need for operator requalification coincides with the repair and return to service of the reactor and reactor console. The two licensed operators and an operator-trainee will plan and carry out the reactor maintenance effort and subsequent testing of the reactor systems. Each operator will perform at least one complete checkout of the reactor with no fuel loaded. This can be

accomplished by using the start-up bypass switches on the linear power and area radiation channels, and by using the calibration inputs to the start-up channel. These dry runs allow manipulation of all reactor controls and indicators, but do not account for the actual reactor physics. However, the safety analysis for the reactor indicates that the risk from operations is minimal even in the most extreme circumstances.

Returning the reactor to operational status involves three major steps:

1. Refurbishment of reactor facilities
  - a. Reassembly of control rods
  - b. Reinstallation of instrumentation
  - c. Reactivation of water clean-up system
2. Calibration and test of reactor systems
  - a. Torsion test of hold-down rods
  - b. Rod drop test
  - c. Calibration of area radiation monitors
  - d. Calibration of neutron monitors
  - e. Calibration of rod position indicators
3. Final reactor checkout

The licensed operators will perform or manage each of these activities. Their roles will be documented in the operations log book. After completion of these activities, the operators will be certified as being current with the qualifications and status of their licenses and as having completed the necessary retraining to reactivate their licenses.