Radiation Center

Oregon State University

Corvallis, Oregon 97331 (503) 754-2341

September 19, 1983

U. S. Nuclear Regulatory Commission
Region 5
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Attention: Regional Administrator

Subject: Annual Report of Changes, Tests and Experiments Made Under the Provisions of 10 CFR 50.59 for the Oregon State University TRIGA Reactor (OSTR), License No. R-106, Docket No. 50-243.

Gentlemen:

The following report is submitted in accordance with the requirements of 10 CFR 50.59(b), and covers the OSTR's annual reporting period of July 1, 1982 through June 30, 1983.

During the specified reporting period there were seven facility changes, one change to facility procedures and no changes to reactor experiments made pursuant to 10 CFR 50.59. The individual changes being reported are listed below by title and are described in more detail in Attachment A. Regarding the attachment, you will find that it includes a brief description of each change, followed by a summary of the safety evaluation conducted for the described change. As required, none of the changes involved a change in the OSTR Technical Specifications or an unreviewed safety question.

A. Changes to the OSTR Facility:

1. Installation of an Exhaust Isolation Valve into the Argon Ventilation System.

2. Installation of a Flow Meter on the Lazy Susan Ventilation System Exhaust Line.

3. Installation of an Alarm Set Point Test Switch and Potentiometer on the Reactor Top Continuous Air Monitor

4. Installation of an Exhaust Isolation Valve into the Exhaust Duct of the Standard Pneumatic Transfer System

5. Installation of a Communications System Between the Reactor Building Third Floor Hallway and the Reactor Bay.

6. Emergency Power Inverter Replacement.

7. Installation of a Control Room Annunciator for Ventilation System Dampers in the Reactor Building Ventilation System

B. Changes to OSTR Procedures:

1. Change to the Administrative Procedures, OSTROP 6.0

C. Changes to OSTR Experiments:

None.

Should you require more information or have any questions regarding this report, please let us know.

Sincerely yours,

C. H. Wang
Reactor Administrator, OSTR
Director, Radiation Center

CHW/pc
Encl.
cc: Document Management Branch, USNRC, Washington, DC
Director, Office of Inspection & Enforcement, USNRC, Washington, DC
Director, Oregon Department of Energy, Salem, OR
A. G. Johnson, Assistant Director, Radiation Center
B. Dodd, Assistant Reactor Administrator, OSTR
S. E. Binney, Chairman, Reactor Operations Committee, OSTR
T. V. Anderson, Reactor Supervisor, OSTR

CHANGES TO THE FACILITY, TO FACILITY PROCEDURES, AND TO REACTOR EXPERIMENTS PURSUANT TO 10 CFR 50.59

1. Introduction

The information contained in this attachment provides a summary of OSTR changes made during the reporting period under the provisions of 10 CFR 50.59. As applicable, changes have been grouped into three categories: those dealing with the facility itself; those dealing with the facility's procedures; and those involving OSTR experiments. For each change identified, a brief description of the change and a summary of the safety evaluation is included.

2. 10 CFR 50.59 Changes to the Facility

There were seven changes to the facility itself which were reviewed and performed under the conditions of 10 CFR 50.59 during the reporting period. A summary of each change and its safety evaluation follows.

a. Installation of an Exhaust Isolation Valve into the ARGON Ventilation System

Description

The argon ventilation system effluent is discharged into the reactor building exhaust fan intake plenum, where it is mixed with large quantities of room air and then discharged out the reactor building ventilation exhaust stack. At the end of a normal operating day, after the argon vent fan has been turned off, one could speculate that very small amounts of argon-41 from the argon ventilation system could be drawn into the plenum, because of the lower pressure in the exhaust fan intake plenum, and then subsequently discharged to the atmosphere. An exhaust isolation valve was therefore inserted into the argon vent line. This valve is closed whenever the argon vent fan is turned off and prevents

c. Installation of an Alarm Set Point Test Switch and Potentiometer on the Reactor Top Continuous Air Monitor

Description

The alarm set points for the gas and particulate channels of the reactor top continuous air monitor (CAM) were becoming difficult to check with the built-in check sources. This was largely due to the small radioactivity content of the sources and to their relatively poor geometric relationship to the detectors. In an effort to correct this, we added a three-position, spring-loaded switch and a potentiometer to the CAM. The switch has positions labeled "operate," "gas" and "particulate." When the switch is in the "gas" or "particulate" position, the potentiometer enables the needle on the gas or particulate channel (as appropriate) to be raised to the alarm point to check the setting. The three-position switch is spring-loaded so that upon release it returns to the operate position where the CAM will function normally.

Safety Evaluation

This modification improves safety as it ensures that the CAM alarm points can be more easily checked for correct settings. The spring-loaded selector switch will ensure that the CAM cannot be left in an inoperative mode. We see no unreviewed safety questions.

d. Installation of an Exhaust Isolation Valve into the Exhaust Duct of the Standard (Non-Cadmium-Lined) Pneumatic Transfer (PT) System

Description

The exhaust duct for the standard PT system discharges into the reactor building exhaust fan intake plenum, where it is mixed with large quantities of room air before being discharged out the reactor building ventilation exhaust stack. Because of the lower pressure in the exhaust fan intake plenum, a slight air flow is induced

e. Installation of a Communications System Between the Reactor Building Third Floor Hallway and the Reactor Bay

Description

At various times it is convenient for staff members to communicate from the reactor building third floor hallway to reactor operators who are in the reactor bay. Such a communications sytem was installed by connecting a microphone, which is located in the hallway, to the existing reactor P.A. system.

Safety Evaluation

This change enhances safety, since it broadens the ability to communicate between the reactor bay and potential emergency support areas outside the reactor bay. No safety-related questions (or unreviewed safety questions) have been identified with respect to the installation of the additional microphone.

f. Emergency Power Inverter Replacement

Description

The reactor building emergency power inverter failed on August 23, 1982. All attempts to repair the machine failed. The old inverter was replaced with a new type that operates under a better principle, and claims better reliability. The new unit is an un-interruptible power system (UPS) operating with a ferroresonant inverter design that maximizes reliability. The new inverter has a theoretical mean time before failure (MTBF) of 86,730 hours, which is approaching 10 years. The old inverter experienced chronic problems from the day of purchase, and did not always maintain un-interruptible power. The old design was such that the system would idle before needed, and would not always transfer to auxiliary power in the required time frame. The new system will be on and running all of the time as an integral part of the circuit.

g. Installation of a Control Room Annunciator for Ventilation System Dampers in the Reactor Building Ventilation System

Description

The ventilation system supply and/or exhaust dampers on the reactor building ventilation system could conceivably close unexpectedly while the ventilation fans were on and the reactor was operating. This would require that the reactor be shut down. As a result, some means, such as an annunciator, was found to be needed to alert the reactor operator should one or both of the dampers close. To accomplish this, an air pressure switch was installed on each of the two air supply lines which control the reactor building ventilation dampers. One switch monitors the damper-control air pressure for the supply fan dampers and one switch monitors the corresponding air pressure for the exhaust fan dampers.

Loss or reduction in air pressure sufficient to close either the supply or exhaust dampers will now be detected by the appropriate pressure switch and will immediately initiate a single annunciator in the reactor control room.

Safety Evaluation

This change will improve overall reactor safety and the ability to comply with OSTR Technical Specification requirements for the following reasons:

1) Closure of supply or exhaust dampers while the fans are operating constitutes an abnormal mode of operation for the reactor ventilation system. If the reactor is operating when such an event takes place it must be shut down, since the ventilation system must be in an "operate" mode (i.e., operating normally as designed) during reactor operation. Use of an annunciator to signal the closure of ventilation system dampers will allow the operator to take immediate action to shut down the reactor and thus meet the requirements of the Technical Specifications.

Safety Evaluation

The new section 6.8 more fully explains the correct procedures to be used and hence can only be an enhancement to safety. The change in the use of OIBs and FCBs now requires them to be circulated for signatures. This will ensure more rapid notification and approval, which is again a beneficial effect. We have found no unreviewed safety questions associated with this procedural change.

4. 10 CFR 50.59 Changes to Reactor Experiments

There were no 10 CFR 50.59 changes to reactor experiments during this reporting period.

5. Forthcoming Changes to Be Made Under 10 CFR 50.59

At present, there are no changes planned under the provisions of 10 CFR 50.59.