

3.6 RADIATION MONITORING SYSTEM

3.6.1 Radiation Monitoring Equipment

Applicability. This specification applies to the radiation monitoring information which must be available to the reactor operator during reactor operation.

Objective. The objective is to assure that sufficient radiation monitoring information is available to the operator to assure safe operation of the reactor.

Specification. The reactor shall not be operated unless the radiation monitoring channels listed in the following table are operable. Each channel shall have a readout in the control room and be capable of sounding an audible alarm which can be heard in the reactor control room.

Radiation Monitoring Channels*	Number
Area Radiation Monitor	1
Continuous Air Particulate Radiation Monitor	1
Exhaust Gas Radiation Monitor	1
Exhaust Particulate Radiation Monitor	1

\* When maintenance to the radiation monitoring channels is required, the intent of this specification will be satisfied if they are replaced with portable instruments of appropriate sensitivity having their own alarms, or which shall be kept under visual observation.

Basis. The radiation monitors provide information to operating personnel regarding routine releases of radioactivity and any impending or existing danger from radiation. Their operation will provide sufficient time to evacuate the facility or take the necessary steps to prevent the spread of radioactivity to the surroundings.

3.6.2 Radiation Release Limits

Applicability. This specification applies to the release rate of argon-41 from the Oregon State TRIGA reactor facility.

Objective. The objective is to ensure that the concentration of argon-41 in the unrestricted areas is consistently well below the applicable maximum permissible concentration.

Specification. The annual average concentration of argon-41 discharged into the unrestricted area shall not exceed  $4 \times 10^{-6}$  microcuries per milliliter at the point of discharge.

### 4.3 LIMITING CONDITIONS FOR OPERATIONS

#### 4.3.1 Reactivity Requirements

Applicability. These specifications apply to the surveillance requirements for reactivity control of experiments and systems.

Objective. The objective is to measure and verify the worth, performance and operability of those systems affecting the reactivity of the reactor.

#### Specifications.

- a. The reactivity worth of each control rod and the shutdown margin shall be determined annually (interval not to exceed 15 months) and following significant core or control rod changes.
- b. The reactivity worth of an experiment shall be estimated or measured, as appropriate, before reactor operation with said experiment.
- c. The control rods shall be visually inspected for deterioration biennially (interval not to exceed two and one-half years).
- d. The transient rod drive cylinder and associated air supply system shall be inspected, cleaned and lubricated as necessary, semi-annually (interval not to exceed seven and one-half months).
- e. A test pulse shall be performed prior to resumption of operational pulsing when a non-pulsing interval of six months or more has elapsed. Fuel temperature measurements and peak power levels from the test pulse will be compared with those of previous pulses of the same reactivity value.

Bases. The reactivity worth of the control rods is measured to assure that the required shutdown margin is available and to provide an accurate means for determining the reactivity worths of experiments inserted in the core. Past experience with TRIGA reactors gives assurance that measurement of the reactivity worth on an annual basis is adequate to insure no significant changes in the shutdown margin. The visual inspection of the control rods is made to evaluate corrosion and wear characteristics caused by operation in the reactor. The test pulse is performed prior to resumption of operational pulsing to provide assurance that pulsing characteristics of the reactor have not significantly changed.

#### 4.3.2 Control and Safety System

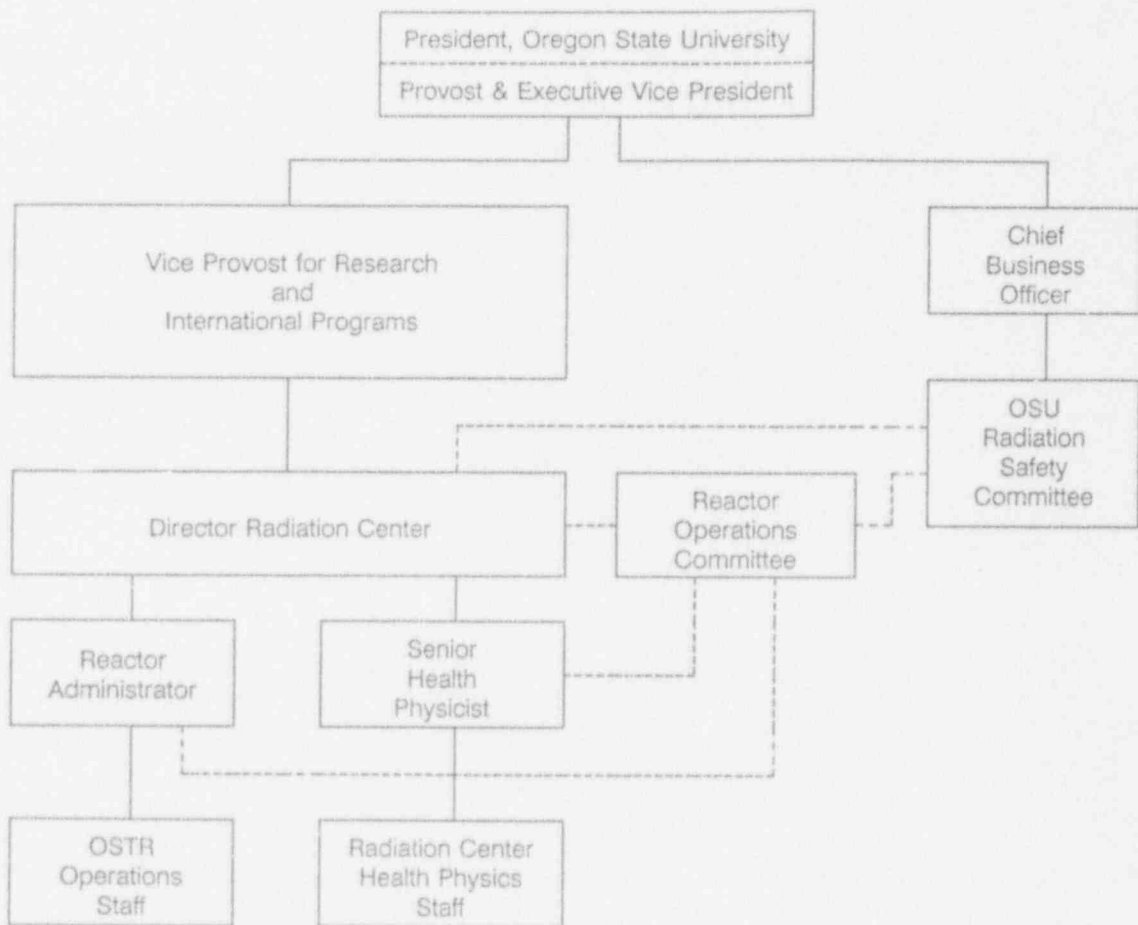
Applicability. These specifications apply to the surveillance requirements for measurements, tests, and calibrations of the control and safety systems.

Objective. The objective is to verify the performance and operability of those systems and components which are directly related to Reactor Safety.

## 6. ADMINISTRATIVE CONTROLS

### 6.1 ORGANIZATION

- a. The facility shall be under the direct control of the Radiation Center Director or a licensed senior operator designated by him to be in direct control. The Radiation Center Director shall be responsible to Oregon State University's Vice Provost for Research and International Programs for the safe operation and maintenance of the reactor and its associated equipment. The Radiation Center Director, or an individual appointed by the Director, shall be responsible for assuring that all operations are conducted in a safe manner and within the limits prescribed by the facility license and the requirements of the Reactor Operations Committee. The Radiation Center Director shall enforce rules for the protection of personnel against radiation.
  
- b. The safe operation of the OSTR shall be related to the University Administration as shown in the following chart:



———— Normal administrative reporting channel

- - - - - Technical review (as applicable), communications and assistance

## 6.5 OPERATING PROCEDURES

Written operating procedures shall be adequate to assure the safety of operation of the reactor, but shall not preclude the use of independent judgement and action should the situation require such. Operating procedures shall be in effect for the following items:

- a. Performing experiments.
- b. Startup, operation and shutdown of the reactor.
- c. Emergency situations including provisions for building evacuation, earthquake, radiation emergencies, fire or explosion, personal injury, civil disorder, and bomb threat.
- d. Core changes and fuel movement.
- e. Control element removal and replacement.
- f. Performing preventive maintenance and calibration tests on the reactor and associated equipment.
- g. Power calibration.

Substantive changes to the above procedures shall be made only with the approval of the ROC. Temporary changes to the procedures that do not change their original intent may be made by the Reactor Supervisor or his designated alternate. All such temporary changes shall be documented, reviewed and approved by the ROC within 30 days of implementation.

## 6.6 FACILITY OPERATING RECORDS

In addition to the requirements of applicable regulations, and in no way substituting therefore, records and logs shall be prepared for at least the following items and retained for a period of at least five years for items a. through f. and indefinitely for items g. through k.

- a. Normal reactor operation.
- b. Principal maintenance activities.
- c. Those events reported as required by Sections 6.7.a and 6.7.b.
- d. Equipment and component surveillance activities required by the Technical Specifications.
- e. Experiments performed with the reactor.
- f. Gaseous and liquid radioactive effluents released to the environs.