

4.14 RADIOACTIVE MATERIALS SOURCES SURVEILLANCE

Applicability

Applies to leakage testing of byproduct, source, and special nuclear radioactive material sources.

Objective

To assure that leakage from byproduct, source, and special nuclear radioactive material sources does not exceed allowable limits.

Specification

Test for leakage and/or contamination shall be performed by the licensee or by other persons specifically authorized by the Commission or an agreement State, as follows:

1. Each sealed source, except startup sources subject to core flux, containing radioactive material, other than Hydrogen 3, with a half-life greater than 30 days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months.
2. The periodic leak test required does not apply to sealed sources that are installed in plant systems or that are stored and not being used. The sources exempted from the test shall be tested for leakage:
 - a. Prior to use unless leak tested within six months prior to the date of use,
 - b. Prior to transfer to another user unless leak tested within six months prior to the date of transfer,
 - c. When the installed sources are exposed as a result of system maintenance unless leak tested within six months prior to the exposure.
3. Each sealed startup source shall be leak tested within 31 days prior to being subjected to core flux and following repair or maintenance to the source.

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PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

1. With a half-life greater than 30 days (excluding Hydrogen 3), and
 2. In any form other than gas.
- b. Stored sources not in use - Each sealed source and fission detector shall be tested prior to use or transfer to another licensee unless tested within the previous six months. Sealed sources and fission detectors transferred without a certificate indicating the last test date shall be tested prior to being placed into use.
 - c. Startup sources and fission detectors - Each sealed startup source and fission detector shall be tested within 31 days prior to being subjected to core flux or installed in the core and following repair or maintenance to the source or detector.
 - d. Sources installed in plant systems - Each sealed source shall be tested for leakage when the source is exposed as a result of system maintenance unless leak tested within six months prior to exposure.

4.7.9.1.3 REPORTS - A report shall be prepared and submitted to Commission on an annual basis if sealed source or fission detector leakage tests reveal the presence of ≥ 0.005 microcuries of removable contamination.

PROPOSED REVISION TO THE ANO-1&2 TECHNICAL SPECIFICATION
BASIS FOR CHANGES AND EVALUATION OF EFFECT ON PLANT OPERATION

Basis for Technical Change

The Technical Specifications for Unit One and Unit Two require leak testing of sealed sources in plant systems at intervals not to exceed six months.

In compliance with these specifications, Health Physics Procedure 1622.020 requires leak testing of sealed sources on a quarterly basis. To comply with ANO Technical Specifications would require that the applicable plant systems containing a sealed source would need to be removed from service quarterly. In the case of the Unit One or Unit Two boronometer, the applicable unit would need to be shutdown solely for leak testing the boronometer neutron source. It should be apparent that to comply with the full intent of the subject Technical Specification would adversely affect plant operations. In addition, since some of the sealed sources in question are located in radioactive systems there exists a potential for unnecessary personnel exposure in order to access and test certain sources. Therefore, leak testing of sealed sources in these systems should be performed when the specific plant system in which it is located is removed from service during required maintenance or scheduled outages. Such a provision would eliminate the continuing conflict between the Technical Specifications and current practices at ANO.

Effect on Plant Operations

The anticipated impact on plant operations at ANO resulting from the proposed Technical Specifications change would:

- a) eliminate the non-conformance condition resulting from a conflict between the Technical Specifications and current Health Physics practices; and
- b) eliminate a requirement which, if enforced, would adversely affect plant performance by requiring system or plant shutdown for required leak testing of sealed sources inside of plant systems.

NO SIGNIFICANT HAZARDS CONSIDERATION

This proposed amendment to the ANO Technical Specifications does not match any of the examples referenced in the DLOP 228 and Federal Register Notice, Page 14870, dated April 6, 1983. Therefore, our evaluation for significant hazards consideration is based solely on 10CFR50.92(c). The following considerations were evaluated:

- a) Increase the probability of a previously evaluated accident - The exemption of sealed radioactive sources installed in radioactive systems from periodic leak testing should in no way enhance the likelihood of an accident due to system failure. The affected systems (area radiation monitors and the boronometers of both units) operation would not be compromised if the sealed sources leaked nor would source leakage result in uncontained spread of contamination since the sources are sealed within these components.
- b) Possibility of a new or different accident not previously evaluated - Exempting sealed sources located in the boronometer and the ARM systems of both units will result in less frequent opening of these systems and handling of the sources than under current surveillance requirements. Leakage of sealed sources in these systems would not cause the failure of the specific detection system itself nor would leakage damage these systems. In the boronometer systems, source leakage would not adversely effect the system operation as the sealed neutron source would still emit neutrons necessary for boronometer function. In the ARM systems, source leakage would not result in monitor failure, but only possible contamination of the interior of the instrument interior without loss of function. The proposed change involves no creation of a new or different accident not previously considered.
- c) Reduction in the margin of safety - In the unlikely event of sealed source leakage, none of the systems considered are likely to fail such that these would compromise plant safety. The neutron sources of the boronometers are double sealed in stainless steel and tantalum casings. Any leakage would have no escape route and would not effect the neutron flux from this source necessary for system function. The Cs-137 sources of the ARM systems are of low activity and are used for detector response checking; these do not affect ARM function.

Personnel safety is of consideration in leak testing the sealed sources in radioactive systems due to increased personnel exposure. The current quarterly surveillance requires personnel entry into radiation areas where radiation hazards may be present. In addition, leak testing the neutron sources of the boronometers involve personnel neutron exposure and accessing a primary system. Exemption of sealed sources installed in radioactive systems from periodic leak test requirements would serve ALARA considerations at ANO.