Omaha Public Power District
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402/536-4000

December 21, 1983
LIC-83-304

Mr. James R. Miller, Chief
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Licensing
Operating Reactors Branch No. 3
Washington, D.C. 20555

References: (1) Docket No. 50-285
(2) OPPD to ONRR letter dated December 3, 1982
(3) ONRR to OPPD letter dated January 1, 1983
(4) OPPD to ONRR letter dated April 15, 1983
(5) ONRR to OPPD letter dated September 1, 1983

Dear Mr. Miller:

NUREG-0737, Item II.B.3
Post-Accident Sampling System (PASS)
Status Report

As requested in a telephone call on November 1, 1983 between Mr. W. D. Johnson and Mr. E. G. Tourigny of your staff and Mr. K. J. Morris of the District, attached is a status report on the PASS. The eleven criteria provided in NUREG-0737, Supplement 1, are provided only for convenient reference. The design capabilities of the PASS have been previously addressed by the District and accepted by the Commission. This letter should not be construed as altering

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the design capabilities of the PASS, as detailed in the reference correspondence. Interim provisions which are required until the PASS is declared fully operational are also detailed.

Sincerely,

W. C. Jones
Division Manager
Production Operations

WCJ/DJM:jmm

Attachment

cc: Mr. J. E. Gagliardo, Director
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& Engineering Programs
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Mr. E. G. Tourigny, Project Manager
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Inspector

OMAHA PUBLIC POWER DISTRICT
FORT CALHOUN STATION
STATUS REPORT ON POST-ACCIDENT
SAMPLING SYSTEM (PASS)

Criterion (1)

The licensee shall have the capability to promptly obtain reactor coolant samples and containment atmosphere samples. The combined time allotted for sampling and analysis should be 3 hours or less from the time a decision is made to take a sample.

Status

The equipment utilized for sampling and analyzing reactor coolant and containment atmosphere has been functionally tested to verify flow paths, flow rates, and analysis capabilities. With the exception of certain analytical instruments discussed in the status of Items (2)(a), (2)(c), and (10), the PASS is operational and capable of performing as previously specified.

Criterion (2)

The licensee shall establish an onsite radiological and chemical analysis capability to provide, within the three-hour time frame established above, quantification of the following:

(a) Certain radionuclides in the reactor coolant and containment atmosphere that may be indicators of the degree of core damage (e.g., noble gases, iodines and cesiums, and non-volatile isotopes);

(b) Hydrogen levels in the containment atmosphere;

(c) Dissolved gases (e.g., H_2), chloride (time allotted for analysis subject to discussion below), and boron concentration of liquids;

(d) Alternatively, have in-line monitoring capabilities to perform all or part of the above analyses.

Status

The in-line equipment required for the specified analyses is operable as follows:

(a) Isotopic analysis is performed using two Canberra germanium detectors. Due to environmental factors, the detectors could not be maintained in a calibrated status. The manufacturer has provided new equipment to correct this problem and the District has obtained satisfactory results with the detector used for liquid isotopic analysis. Calibration and testing of the new detectors will be completed as soon as

possible. In the interim, isotopic analysis will be performed on diluted reactor coolant and containment atmosphere grab samples using existing detectors located in the plant chemistry laboratory.

(b) Hydrogen levels are measured using the containment hydrogen analyzers.

(c) The gross dissolved gas analyzer (SL-24) has been tested and is operational. The ion chromatograph used for boron and chloride analysis has been bench-tested and satisfactory results were obtained. Minor mechanical and electrical modifications are presently being made in preparation for installation of the ion chromatograph. Upon installation, the ion chromatograph will be functionally tested to verify on-line performance. In the interim, diluted grab samples will be analyzed for boron and chloride concentrations using laboratory methods.

Criterion (3)

Reactor coolant and containment atmosphere sampling during post-accident conditions shall not require an isolated auxiliary system [e.g., the letdown system, reactor water cleanup system (RWCUS)] to be placed in operation in order to use the sampling system.

Status

Compliance with this design requirement is as detailed in the reference correspondence. In accordance with Reference (5), the final SER, the District meets this requirement.

Criterion (4)

Pressurized reactor coolant samples are not required if the licensee can quantify the amount of dissolved gases with unpressurized reactor coolant samples. The measurement of either total dissolved gases or H_2 gas in reactor coolant samples is considered adequate. Measuring the O_2 concentration is recommended, but is not mandatory.

Status

The gross dissolved gas analyzer (SL-24) is operational.

Criterion (5)

The time for a chloride analysis to be performed is dependent upon two factors: (a) if the plant's coolant water is seawater or brackish water and (b) if there is only a single barrier between primary containment systems and the cooling water. Under both of

the above conditions, the licensee shall provide for a chloride analysis within 24 hours of the sample being taken. For all other cases, the licensee shall provide for the analysis to be completed within 4 days. The chloride analysis does not have to be done on-site.

Status

The capability for chloride analysis is discussed under Criterion (2).

Criterion (6)

The design basis for plant equipment for reactor coolant and containment atmosphere sampling and analysis must assume that it is possible to obtain and analyze a sample without radiation exposures to any individual exceeding the criteria of GDC 19 (Appendix A, 10 CFR Part 50) (i.e., 5 rem whole body, 75 rem extremities). [Note that the design and operational review criterion was changed from the operational limits of 10 CFR Part 20 (NUREG-0578) to the GDC 19 criterion (October 20, 1979 letter from H. R. Denton to all licensees.)]

Status

Compliance with this design requirement is as detailed in the reference correspondence. In accordance with Reference (5), the final SER, the District meets this requirement.

Criterion (7)

The analysis of primary coolant samples for boron is required for PWRs. (Note that Rev. 2 of Regulatory Guide 1.97 specifies the need for primary coolant boron analysis capability at BWR plants.)

Status

The capability for boron analysis is discussed under Criterion (2).

Criterion (8)

If in-line monitoring is used for any sampling and analytical capability specified herein, the licensee shall provide backup sampling through grab samples and shall demonstrate the capability of analyzing the samples. Established planning for analysis at offsite facilities is acceptable. Equipment provided for backup sampling shall be capable of providing at least one sample per day for 7 days following onset of the accident and at least one sample per week until the accident condition no longer exists.

Status

The equipment required for reactor coolant and containment atmosphere grab samples, both diluted and undiluted, has been tested and is operational. In the event of failure of in-line monitoring instrumentation, analysis can be performed in-house in the Fort Calhoun Station laboratory. Please note that operability of the mechanical portion of the PASS is required in order to obtain these grab samples.

Criterion (9)

The licensee's radiological and chemical sample analysis capability shall include provisions to:

(a) Identify and quantify the isotopes of the nuclide categories discussed above to levels corresponding to the source terms given in Regulatory Guide 1.3 or 1.4 and 1.7. Where necessary and practicable, the ability to dilute samples to provide capability for measurement and reduction of personnel exposure should be provided. Sensitivity of onsite liquid sample analysis capability should be such as to permit measurement of nuclide concentration in the range from approximately 1 μCi/g to 10 Ci/g.

Status

The gross gamma detectors used to measure gross activity and sample dilution are operational. The status of the germanium detectors required for isotopic analysis is discussed under Criterion (2).

(b) Restrict background levels of radiation in the radiological and chemical analysis facility from sources such that the sample analysis will provide results with an acceptably small error (approximately a factor of 2). This can be accomplished through the use of sufficient shielding around samples and outside sources and by the use of a ventilation system design which will control the presence of airborne radioactivity.

Status

Compliance with this design requirement is as detailed in the reference correspondence. In accordance with Reference (5), the final SER, the District meets this requirement.

Criterion (10)

Accuracy, range, and sensitivity shall be adequate to provide pertinent data to the operator in order to describe radiological and chemical status of the reactor coolant systems.

Status

Instrument specifications for the operational portions of the PASS were provided in the SER. Due to the interim methods being used for boron and chloride analysis, the required accuracy cannot be achieved using diluted samples. Capability for taking an undiluted high pressure sample does exist as previously discussed in the SER.

The District has not been able to achieve proper calibration of the pH cell used for on-line analysis. We are working with the manufacturer to correct this problem. pH measurements will be made on diluted grab samples in the interim.

The off-line germanium detectors which will be used for isotopic analysis of grab samples are capable of performing analysis equivalent to the on-line detectors. The interim use of grab sample analysis will not affect the instrument specifications previously provided.

Criterion (11)

In the design of the post accident sampling and analysis capability, consideration should be given to the following items:

(a) Provisions for purging sample lines, for reducing plateout in sample lines, for minimizing sample loss or distortion, for preventing blockage of sample lines by loose material in the RCS or containment, for appropriate disposal of the samples, and for flow restrictions to limit reactor coolant loss from a rupture of the sample line. The post accident reactor coolant and containment atmosphere samples should be representative of the reactor coolant in the core area and the containment atmosphere following a transient or accident. The sample lines should be as short as possible to minimize the volume of fluid to be taken from containment. The residues of sample collection should be returned to containment or to a close system.

(b) The ventilation exhaust from the sampling station should be filtered with charcoal adsorbers and high-efficiency particulate air (HEPA) filters.

Status

Compliance with this requirement is as detailed in the reference correspondence. In accordance with Reference (5), the final SER, the District meets this requirement.