RECORD #229

TITLE: Relaxation of the Definition of Source Check in Reference to Effluent Radiation Monitors

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 6 1990

MEMORANDUM FOR: James H. Joyner, Chief, FRSSB, DRSS, Region I
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FROM: LeMoine J. Cunningham, Chief
Radiation Protection Branch
Division of Radiation Protection
and Emergenc Preparedness
Office of Nuc Reactor Regulation

SUBJECT: RELAXATIC ITION OF SOURCE CHECK UNDER THE
LICENSEE PFRM76679)

The Radiation Protection Bran censee Event Report Number
50-328/89011 from Sequoyah Nuc ing the effluent radiation
monitor source check requirements. e has also identified at least
22 other plants which have the same uent radiation monitors, thus
attaching generic significance to the resolu of this issue.

The definition of "source check" under the technical specifications requires that the channel sensor, which includes the primary radiation detector, be exposed to a radioactive source. Sequoyah's plastic scintillator/photomultiplier type effluent radiation monitors currently contain either a built-in LED light source or a secondary check source which does not expose the primary detector. These alternative source check measurements have been used to meet the monthly qualitative source check requirement. Since neither the LED light source or the secondary source check measurements meet the letter of the definition for source check, Sequoyah and other licensees are technically in violation of their technical specification requirement for source check.

Sequoyah, as with some other licensees, has submitted an amendment request to move the existing procedural details of the current Radiological Effluent Technical Specifications (RETS), pursuant to Generic Letter 89-01, to the Offsite Dose Calculation Manual (ODCM). Sequoyah's amendment request will not change the current definition for source check. However, once the amendment is approved, the licensee is free to relax the definition for source check under its ODCM provided the licensee can meet the criteria that "the overall level of radiological effluent control is not reduced". Any violation of the above criteria would still be a violation of the licensee's technical specifications.

Based on the analysis provided in the attached Safety Evaluation Report (SER), it is the staff's position that any proposal by a licensee to relax the definition of source check, whether through an amendment request or under its ODCM after the approval of the amendment request pursuant to Generic Letter

89-01, is not acceptable without the licensee providing compensatory measures for the proposed relaxation since such changes on measurements can reduce the overall effluent control:

1. If the detector of concern is used as the primary means of quantifying radionuclides in the effluent streams, the licensee must provide justification on why an alternative and technically more accurate measurement (e.g. taking grab samples) is not available. If an alternative measurement is not available, then detector specific and other effluent related information should be provided either in the ODCM or other means for the staff to evaluate whether the overall effluent control will be reduced.

2. If the scintillator plastic/photomultiplier type detector is used only for detecting radiation which activates the alarm/trip setpoints, relaxation of the current source check definition should be accompanied by a commitment from the licensee to provide compensatory measure in order that the overall effluent control not be reduced over time and usage. A commitment by the licensee, for example, to cross-check and document the detector scaler count-rate with the grab sample result (C&D measurement), where practical, in lieu of the monthly source check measurement, would be acceptable. In those situations where the C&D measurement or other comparable measurements are not practical, the use of the LED light source and/or secondary check source measurements would be acceptable.

The staff would entertain any other alternative compensatory measures from the licensees which would provide assurance that the overall effluent control is not reduced over time and usage.

/s/
LeMoine J. Cunningham, Chief
Radiation Protection Branch
Division of Radiation Protection
and Emergency Preparedness
Office of Nuclear Reactor Regulation

Enclosures:
1. Safety Evaluation Report
2. Sequoyah LER 50-328/89011

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11/15/90	11/26/90	11/28/90	11/29/90	11/6 /90

Document Name: SOURCE CHECK

ENCLOSURE

SAFETY EVALUATION REPORT - SEQUOYAH
UNITS 1 & 2 PROCESS RADIATION MONITORS SOURCE CHECK REQUIREMENT

Background

Currently, Sequoyah's Technical Specification 3.3.3.10 requires that radioactive gaseous effluent monitoring channels shown in Table 3.3-13 shall be operable. Technical Specification 4.3.3.10 requires that each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated operable by performance of the channel check, source check, channel calibration, and channel functional test at the frequencies shown in Table 4.3-9. This table requires that a monthly source check be performed on specified Noble Gas Activity Monitors.

Technical specification 1.32 defines a source check as "the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source". Upon discovering that their current plant procedures concerning "source check" did not meet the letter of the definition, Sequoyah notified NRC and followed up with a Licensee Event Report (LER) 50-328/89011, dated September 22, 1989. This LER makes the argument that using the as designed (i.e. installed) "second scintillator" with its own built-in check source does meet the letter of the above definition for source check even though the "primary scintillator" would not be source checked using this type of measurement. Although Sequoyah's LER stated that a second type of measurement which uses a LED light source, in lieu of a real source, would not meet the letter of the definition, Sequoyah believes this measurement does meet the intent of the definition for source check. The LER further states, "As long-term corrective action, SQN is in the process of preparing the TS changes specified in Generic Letter 89-01. These changes will move the effluent specifications from TSs to the the Offsite Dose Calculation Manual, which will relieve the potential for TS noncompliance resulting from the use of the pulsed LED source check method."

Staff Evaluation

Although the staff agrees that Sequoyah's plan, as stated in the above referenced LER, to move the effluent specifications from TSs to the the Offsite Dose Calculation Manual (ODCM) is consistant with the objectives of Generic Letter 89-01, the staff does not agree that the above described change by Sequoyah will relieve the potential for TS noncompliance resulting from the use of the pulsed LED light source measurement. Generic Letter 89-01 clearly states that, "It is not the staff's intent to reduce the level of radiological effluent control. Rather, this amendment will provide programmatic controls for RETS consistent with regulatory requirements and allow relocation of the procedural details of

current RETs to the ODCM". Thus the central issue is whether continuing to use the "secondary source" measurement and/or the "LED light source" measurement meets the intent of the original RETS source check definition in that the "level of radiological effluent control is not reduced" as a result of using these source check measurements. Any violation of the above criteria "level of radiological ..." would still be a violation of the licensee's technical specifications.

1. Quantifying the Radionuclides in the Effluent Stream

The staff agrees that the main scintillator, being made of plastic, will not easily degrade over time and usage. However, the optical coupling, which has been traditionally used to connect the main scintillator to the lucite light pipe, and also the lucite light pipe to the photomultiplier tube, have been known to fail frequently over time and usage. It is possible that recent improvements (i.e., using epoxy as the optical coupling or going to the integral line design) will reduce the failure rate of the optical coupling boundaries. Since these effluent radiation monitors are required to be calibrated on a 18-month interval, and both the "LED light source" and the "secondary check source" methods only test the downstream side (i.e., lucite light pipe, photomultiplier tube, etc.) of the radiation monitor, and not the primary scintillator's coupling to the lucite light pipe, a partial failure of the optical coupling boundary (i.e., detachment of the scintillator is such that it will not alarm the downscale count rate failure circuitry) can affect the measurement of the radiological effluent despite the fact that the monthly source check is showing the radiation monitor to be "working".

The staff concludes that Sequoyah's LER, in itself, has not demonstrated that changing the definition of source check to allow the use of the two alternative measurements stated above will not reduce the level of radiological effluent control. Partial failure of the optical coupling boundary without alarming the downscale count rate failure circuitry can only decrease the efficiency of the detector, and therefore, can possibly underestimate the integrated count-rates of the detector for periods as long as 18 months <u>if</u> the detector is used as the primary means of quantifying radionuclides in the effluent stream which the detector is monitoring. Thus, for this situation, even a small reduction in the efficiency of the scintillator detector can possibly have a significant impact on the facility's quantification of total effluent releases for the year. Since the amount of degradation of the optical coupling boundary can also vary for each manufacturer and model, detector specific information concerning the optical coupling material, its probability for degradation over time and usage, and worst case underestimate of the effluent for the period between calibrations, needs to be provided as justification for making a source change definition <u>if</u> that detector is to be used as the primary means of quantifying

radionuclides in the effluent stream.

2. Ensuring Stability of the Alarm/Trip Setpoints

For Sequoyah Units 1 and 2, the primary method to quantify the noble gas effluent is through, as a minimum, monthly grab samples for each effluent stream. The scintillator detectors involved are the Unit 1 and 2 shield building vent monitors, the auxiliary building vent monitor, the waste disposal system gas effluent monitor, the service building vent monitor, and the Unit 1 and 2 condenser vacuum pump exhaust normal and intermediate range monitors. These monitors account for nearly 100% of the noble gas effluents from the plant. Only the condenser vacuum pump exhaust normal range monitors use the LED light source measurement. The other monitors use the secondary check source measurement. This is because the condenser vacuum pump exhaust normal range monitors need to have background radiation levels as low as possible since their purpose is to detect leakages into the secondary side of steam generators from the primary system.

Besides ensuring that measurement of the total quantity of radionuclides released in the effluent stream is accurate, it is equally important that the instantaneous maximum concentration limits of 10 CFR Part 20 not be exceeded at the site boundary. Ensuring that the validity of alarm/trip setpoints is not reduced over time and usage between calibrations is another primary check on the criteria, "the overall level radiological effluent control is not reduced". One accurate method to check the alarm/trip setpoints currently used in industry is to compare the grab sample results for the radioactive concentration in the effluent stream with the detector scaler count-rate <u>if</u> the radioactive concentration in the effluent stream is of sufficient quantity to allow adequate statistical comparison between the two results. In a conference call on October 2, 1990 between the technical staff of Sequoyah, J. Donohew, the NRC Project Manager for Sequoyah, and J. Wang of PRPB, there was no disagreement on the technical merit of this measurement over alternative measurements to assure the working status of the effluent monitors. Since monthly grab samples are being taken anyway for each effluent stream, the staff believes that this type of measurement, cross-checking and documenting the detector scaler count-rate with the grab sample results (C&D), would not be an undue burden on the licensee. However, the staff would support the use of other alternative measurements by the licensee if these measurements are comparable to the C&D measurement.

3. Acceptance Criteria for Qualitative Tests

The use of the C&D measurement to perform "source check" raises the question of whether acceptance criteria were originally implied in the definition for source check even though the word "qualitative" was used in the definition. The staff believes it has always been

the Commission's intention to require acceptance criteria for any performance with regard to source checks of effluent monitors. The bases for this requirement are well documented as follows:

a. 10 CFR Part 50, Appendix B, Section III-V titled "Quality Assurance Criteria For Nuclear Power Plants..." states "... Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished". Thus, the need for acceptance criteria for qualitative tests is clearly stated in the regulation.

b. Regulatory Guide 4.15, "Quality Assurance For Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment", Revision 1, dated February, 1979 again states on page 7, Section 7, titled "Quality Control for Continuous Effluent Monitoring Systems", "Periodic correlations should be made during operation to relate monitor readings to the concentrations and/or release rates of radioactive material in the monitored release path. These correlations should be based on the results of analyses for specified radionuclides in grab samples from the release path".

The staff recognizes that the current Radioactive Effluent Technical Specifications (RETS) require calibrations to be performed every 18 months. Even though more frequent "calibrations" would provide greater assurance of proper monitoring operability, such calibrations or "accuracy" measurements are not required. However, besides the 18 months "accuracy" measurement, it is the staff's position that the monthly functional source check has always been a "precision" measurement which required acceptance criteria for the performance of such tests, and which is consistant with NRC's Part 50 quality assurance regulations. Sequoyah's Updated Final Safety Analysis Report (UFSAR) itself provides further support to the staff's position. Section 11.4.4 "Calibration and Maintenance", of that report stated "each detector is checked daily using its built-in check source". Thus the source check method was originally designed to be used on a much more frequent basis than the current monthly check source measurement.

Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents From Light-Water-Cooled Nuclear Power Plants", Revision 1, dated June 1974, page 5, provides further evidence that the use of the "daily" source check measurement was originally intended to provide support to precision measurements between calibrations. Section II(c), 3rd paragraph states, "... Functional checks, i.e. routine checks performed to demonstrate that a given instrument is in working conditions and functioning properly, may be performed using radioactive sources that are not standards". The 4th paragraph further states, " ... Periodic inservice calibrations should also be performed to relate

monitor 'readings' to the concentrations and/or release rates of radioactive material in the monitored release path (i.e., C&D measurement). These calibrations should be based on the results of analyses for specified radionuclides in grab samples from the release path". Thus the original intent of using the "functional" source check measurement was to provide support to and compliment the C&D measurement as "precision" measurements between "accuracy" calibrations (i.e., 18 months interval). The daily or lesser frequency source check measurements would provide qualitative trends of the effluent monitor functional operability, and along with the C&D measurement would provide some measure on the precision (acceptance criteria) of the effluent monitors between "accuracy" calibrations. The word "calibration", unfortunately, was used interchangeably in this regulatory guide for both "accuracy" and "precision".

It now becomes evident that the "qualitative" original intent of source check was to provide a practical type of measurement to ensure that the "level of radiological effluent control" is not effectively reduced over time between calibrations (18 months interval). The staff agrees, based on historical effluent data, that the licensee's original committment in the UFSAR for performing daily source checks can be relaxed to the current monthly requirement as reflected in the current Technical Specifications. This change has invalidated the original purpose of performing a daily source check (i.e., provide qualitative trends on the functional operability of the effluent monitor over time and usage). Therefore, it is the staff's position, as a compensatory measure for relaxation of the frequency (from daily to monthly) for performing source check, that the "quality" or "precision" of the monthly source check measurement not be further degraded over time and usage between the 18 months calibration periods. The staff concludes that the C&D measurement (for example), in lieu of the monthly source check measurement where practical, meets the original intent of the definition for source check in that some acceptance criteria (i.e., precision) should accompany any periodic source check measurement.

4. Practicality on the use of the C&D Measurement

However, the staff recognizes that the C&D measurement, or other comparable measurements, may not be appropriate or practical for all situations. For example, radioactive effluent is not available to be detected by the condenser vacuum normal range radiation monitors during routine operating conditions since these monitors are designed to detect primary to secondary leakages from the steam generators. Therefore, the C&D measurement would not be an appropriate alternative and more accurate measurement under routine operating conditions when there is no primary to secondary leakages from the steam generators.

In discussions with the vendor, Sorrento Electronics, the optical

boundary material currently used between the primary scintillator and the lucite light pipe is epoxy, whereas optical grease is still being used as the optical boundary material between the photomultiplier tube and the lucite light pipe. The experience of the vendor has been that the epoxy is a much more reliable optical boundary material over time and usage than optical grease. Thus, the most likely place of failure in the detector system over time and usage is the boundary between the photomultiplier tube and the lucite light pipe, which is downstream of the LED light source, the secondary check source, as well as the primary scintillator. This means all three measurements (i.e., using the LED light source, the secondary check source, and source checking the primary scintillator itself) are equally reliable in terms of detecting the most likely place of failure in the detector system.

Sequoyah's LER is currently committing the licensee to source check the primary scintillator (in place of the LED light source) for the condenser vacuum normal range monitors. The staff concludes, based on the discussions stated in the above paragraphs, that Seqoyah's compensory action is not necessary, and the licersee could have continued to use the LED light source since there is no alternative and more accurate measurement available.

However, for the situations where the C&D measurement, or other comparable measurements are available, and do not cause undue burden to the licensee, the staff again disagrees with Sequoyah's LER that the secondary source check measurement meets the letter and intent of the source check definition.

5. Staff Position

It is the staff's position that any proposal by a licensee to relax the definition of source check, whether through an amendment request or under its ODCM, cannot be allowed to proceed on a generic basis and without the licensee providing compensatory measures for the proposed relaxation since such changes on measurements can reduce the overall effluent control:

1. If the detector of concern is to be used as the primary means of quantifying radionuclides in the effluent stream, the licensee must provide justification on why an alternative and technically more accurate measurement (e.g., taking grab samples) is not available. If an alternative measurement is not available, then detector specific and other effluent related information should be provided for the staff to evaluate whether the overall effluent control will be reduced.

2. If the detector of concern is used only for activating the alarm/trip setpoints, relaxation of the current source check definition to allow the use of LED light source and/or secondary source check measurements should be accompanied by a committment from the licensee to provide compensatory measures in order that

the overall effluent control not be degraded over time and usage. A committment by the licensee to use, for example, the C&D measurement, where practical, in lieu of the monthly source check measurement, would be acceptable. In those situations where the C&D measurement or other comparable measurements are not available, the use of the LED light source and/or secondary check source measurements would be acceptable.

The staff would entertain any other alternative compensatory measures from the licensees which would provide assurance that the overall effluent control not be reduced over time and usage.

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TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

6N 38A Lookout Place
September 22, 1989

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

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 2 - DOCKET NO. 50-328 - FACILITY OPERATING LICENSE DPR-79 - LICENSEE EVENT REPORT (LER) 50-328/89011

The enclosed LER provides details of an event wherein two radiation monitors were inoperable because of inadequate source check performance. This event is being reported in accordance with 10 CFR 50.73, paragraph a.2.i.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

for J. R. Bynum, Vice President
Nuclear Power Production

Enclosure
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Sequoyah Nuclear Plant, Unit 2	0 5 0 0 0 3 2 8	1 OF 0 4

TITLE (4)

RE-90-119 radiation monitors inoperable because of inadequate source check performance

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
0 8	2 3	8 9	8 9	0 1 1	0 0	0 9	2 2	8 9		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Geoffrey Hipp, Compliance Licensing Engineer	6 1 5 8 4 3 - 7 7 6 6

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		1 0	2 7	8 9

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On August 23, 1989, with Units 1 and 2 in Mode 1 at 100 percent power, 2,235 pounds per square inch gauge, 578 degrees Fahrenheit, it was discovered that a technical specification (TS) surveillance requirement (SR) to source check the radioactive gaseous effluent monitors on the condenser vacuum pump exhaust was not being fully met. A source check is defined in the SQN TS as a qualitative assessment of channel response when the channel sensor is exposed to a radioactive source. The subject monitors use a light-emitting diode (LED) light source to source check all components except the scintillation crystal. Additionally, the source check adequacy of other gaseous effluent radiation monitors that expose a second, nonprocess scintillation crystal to a radioactive source during source checking is still being investigated. The root cause of this event is still being investigated. As interim corrective action, the two monitors with LEDs were source checked with a radioactive source to demonstrate their operability. The surveillance instruction has been revised to require a radioactive source to be used for source checking these two monitors. A supplemental report will be made upon completion of the investigation.

Description of Event

On August 23, 1989, with Units 1 and 2 in Mode 1, at 100 percent power, 2,235 pounds per square inch gauge, 578 degrees Fahrenheit, it was discovered, as the result of a technical specification (TS) review conducted at Watts Bar Nuclear Plant comparing installed equipment with TS requirements, that a SQN surveillance requirement (SR) was not being fully met. SR 4.3.3.10 requires, in part, a monthly source check on Radioactive Gaseous Effluent Monitors (EIIS Code IL) 1-RE-90-119 and 2-RE-90-119, which monitor the condenser vacuum pump exhaust on Units 1 and 2, respectively. A source check is defined in TS, Section 1.32, as a qualitative assessment of channel response when the channel sensor is exposed to a radioactive source. The radiation monitors listed in TS 3.3.3.10 all use a radioactive source for performing source checks with the exception of the two RE-90-119 monitors, which use a light-emitting diode (LED) light source to simulate a radioactive source. The LED light source is supplied by the monitor's manufacturer and is discussed in the associated vendor manual. The LED light source checks the electronic circuits in the monitor but does not check the scintillation crystal. However, if the scintillation crystal were to fail, a "downscale failure" would annunciate in the main control room (MCR). Sections of TS other than Section 3.3.3.10 were investigated to ensure other source check SRs were being met. The monitors requiring a source check by TS 3.3.3.9 use a radioactive source, and the monitors listed in TSs 3.3.2, 3.3.3.1, and 3.3.3.7 do not require source check performance. Thus, LED usage is limited to the two RE-90-119 monitors. The shift operations supervisor was notified of the event on August 25, 1989, and the action statements of Limiting Condition for Operation (LCO) 3.3.3.10 were entered at 1743 on Unit 2 because Monitor 2-RE-90-99 was also out of service. The LCO was not entered on Unit 1 because Monitor 1-RE-90-99 was in service, and LCO 3.3.3.10 requires a minimum of one operable monitor channel on the condenser vacuum pump exhaust. Subsequently, instrument mechanics used a radioactive source to source check Monitor 2-RE-90-119 on August 26, 1989, and the action statements of LCO 3.3.3.10 were exited at 1008. Instrument mechanics also used a radioactive source to source check Monitor 1-RE-90-119 on August 28, 1989.

During the course of the investigation of this event, it was determined that other gaseous effluent radiation monitors, such as those listed below, are source checked with a radioactive source as installed by their manufacturer. However, this radioactive source is exposed to a second scintillation crystal, which is installed only for source checking and not exposed to the main scintillation crystal that monitors the process effluent. Since the response of the process scintillation crystal is, therefore, not checked by this method, the adequacy of the source check for these monitors relative to the intent of the TS has been questioned. The investigation of this aspect is continuing; the results, including root cause and corrective action, will be determined and submitted by supplemental report. The monitors potentially affected are:

1. 1-RE-90-99 - Unit 1, condenser vacuum pump exhaust monitor (intermediate range)
2. 2-RE-90-99 - Unit 2, condenser vacuum pump exhaust monitor (intermediate range)
3. 1-RE-90-100B - Unit 1, shield building vent monitor
4. 2-RE-90-100B - Unit 2, shield building vent monitor
5. 0-RE-90-101B - Auxiliary building vent monitor
6. 0-RE-90-118 - Waste disposal system gas effluent monitor
7. 0-RE-90-132B - Service building vent monitor

Cause of Event

The root cause of this event is still being investigated.

Analysis of Event

This event is being reported in accordance with 10 CFR 50.73, paragraph a.2.i, as an operation prohibited by TS in that the source checks to demonstrate the two RE-90-119 monitors operable were not consistent with the TS definition of source check. Although the "normal range" RE-90-119 monitors are backed up by "intermediate range" RE-90-99 monitors and LCO 3.3.3.10 requires a minimum of only one operable monitor channel on each unit's condenser vacuum pump exhaust, the event is reportable because, at the time of discovery, the 2-RE-90-99 monitor was out of service. In light of the RE-90-119 source check inadequacy, both the RE-90-99 and RE-90-119 monitors would likely have been considered inoperable at various time in the past, whenever the RE-90-99 monitors were out of service, such as for periodic calibration.

Continuous monitoring process and effluent radiological monitoring instrumentation is described in Section 11.4.2 of the Updated Final Safety Analysis Report (UFSAR); Section 11.4.2.2.2 of the UFSAR describes the RE-90-99 and RE-90-119 monitors cifically. These monitors continuously sample the condenser vacuum pump exhaust to itor noble gas concentrations for indications of primary to secondary leakage and for aluations of radioactivity released into the environment. The potential result of both the RE-90-99 and RE-90-119 monitors being inoperable would be a path for radiological release to the environment monitored for noble gas activity only by the "accident-range" Monitor RE-90-404, also discussed in UFSAR, Section 11.4.2.2.2. However, the two RE-90-119 monitors were regularly source checked with an LED light source, as intended by the manufacturer, verifying the proper operation of all components except the scintillation crystal. Further, a failure of the scintillation crystal would have been annunciated in the MCR. Therefore, although the RE-90-119 monitors were technically inoperable, they were able to perform their design function and presented no risk to the health and safety of plant personnel or the general public.

Corrective Action

As interim corrective action, the RE-90-119 monitors were source checked with a radioactive source to demonstrate their operability. The action statements of LOC 3.3.3.10 were observed until operability of the two monitors was demonstrated. In addition, Surveillance Instruction (SI) 3, "Daily, Weekly, and Monthly Logs", the SI controlling source checks on radiation monitors, has been revised to require a radioactive source to be used for source checking the RE-90-119 monitors.

Any further corrective action will be reported by supplemental LER upon completion of the ongoing investigation.

Additional Information

previous events could be identified that reported a failure to perform source checks radiation monitors.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
¿uoyah Nuclear Plant, Unit 2	0 5 0 0 0 3 2 8	8 9	0 1 1	0 0	0 4 OF 0 4

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Commitments

A supplemental LER will be submitted to report the root cause of this event and any further corrective action upon completion of the ongoing investigation by October 27, 1989.

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