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SUBJECT: LER 90-008-00:on 900518,improper temporary sampling lineup results in Tech Spec violation due to inappropriate action.
W/9 ltr.

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DUKE POWER

June 18, 1990

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
LER 269/90-08

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report (LER) 269/90-08 concerning improper temporary sampling lineup results in Technical Specification violation due to inappropriate action.

This report is being submitted in accordance with 10 CFR 50.73 (a)(2)(i). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Joe M Davis
for
H. B. Barron
Station Manager

RSM/ftr

Attachment

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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Oconee Nuclear Station, Unit 1	0 5 0 0 0 2 6 9	1 OF 0 8

TITLE (4) Improper Temporary Sampling Lineup Results in Technical Specification Violation Due to Inappropriate Action

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)
									N/A	0 5 0 0 0
0 5	1 8	9 0	9 0	0 0 8	0 0	0 6	1 8	9 0	N/A	0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	- 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
Henry R. Lowery, Chairman Oconee Safety Review Group	8 0 3 — 8 8 5 - 3 0 3 4

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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On May 18, 1990 at 1000 hours, with Unit 1 shutdown for refueling, it was discovered that the temporary sampling equipment (TSE) for air particulate and iodine samplers for unit vent release was not connected to the unit vent stack sample line. The normal radiation monitors were out of service in preparation for replacement and an auxiliary sampler (AS) had been used to continuously sample the unit vent. But, at 2200 hours on May 17, the AS was aligned to draw a sample from the RB. The TSE was aligned with the intent to continuously sample the unit vent stack. It was discovered the next morning that the TSE sample lines were not connected to the unit vent stack resulting in the samples not being collected according to Technical Specification 3.5.5.2.c. Upon the discovery of the problem, the AS was aligned to sample the unit vent. The root cause of this event is classified Inappropriate Action, lack of attention to detail.

BACKGROUND

Radiation Monitors (RIAs)(EIIS:IL) are provided to monitor the release of radioactive materials in gaseous effluents during actual or potential releases. RIAs provide: early warning of equipment, component, or system malfunction; control room indication; automatic action on some alarms; and prevention of exceeding regulatory limits. RIAs 43 & 44, particulate sampler and iodine sampler, monitor the unit vent stack (EIIS:VL) for radioactive air particulate and iodine respectively. Per Technical Specification 3.5.5.2.a, RIAs 43 & 44 are required to be operable with their alarm/trip setpoints setpoints set to ensure that the limits of TS 3.10.1 are not exceeded. In the event that RIAs 43 & 44 are removed from service, TS 3.5.5.2.c allows releases to continue provided that samples are continuously collected with auxiliary equipment.

The Unit Vent Stack receives exhaust from the following sources: Reactor Building Purge (EIIS:VA) Filter Train, Auxiliary Building Ventilation (EIIS:VF) Exhaust, Gaseous Waste Filter Discharge, Sample Hood Exhaust, Penetration Room Ventilation (EIIS:VC) Filter Train, and Condensate Air Ejector Exhaust.

EVENT DESCRIPTION

On the evening of May 17, 1990, the Radiation Protection (RP) Shift Supervisor A (RPSSA) and a RP Specialist A (RPSA) received independent turnovers concerning the temporary sampling equipment (TSE) and the status of the radiation monitor (RIA) replacement from their counterparts, RP Shift Supervisor B (RPSSB) and RP Specialist B (RPSB). As a result of the turnovers, both the RPSSA and the RPSA independently believed that the TSE was setup and prepared to take samples from the unit vent stack and that RIAs 43 & 44 would be removed the next morning. Shortly after the turnover, RPSSA and RPSA inspected the TSE and tugged at the supply and return tygon tubing to determine if it was connected to the unit vent stack sample lines. As a result of the tug, they decided that it was attached and did not visually check to make sure the tygon tubing was connected. Prior to this evening, RPSSA and RPSA had not received any information concerning the actual sequence of events on the replacement of RIAs 43 & 44.

According to RPSSB and RPSB, they told RPSSA and RPSA that it would be two days before RIAs 43 & 44 would be removed. The turnover also contained information that the TSE connections had been checked and all that was required was a "dry run." RPSSB believed that he told the RPSSA that should a RB sample be needed, 2 samples would have to be taken either in

the Reactor Building (RB)(EIIS:NH) or from the RB purge duct work if the purge was operating. This had been the normal contingency sampling method since RIAs 43 & 44 had been removed from service on May 3. RPSSB was under the impression that the sample line from the RB to the AS had been disconnected. RPSSB was also under the impression that since a letter was forthcoming from the RP staff concerning the RIA replacement and contingency sampling procedures, a formal turnover, using procedure HP/0/B/1000/54 (Plant Radiological Status), of information from the meeting was not necessary.

Earlier in the day, Oconee Nuclear Station had experienced a significant radioactive spill that required the attention of many RP personnel throughout the rest of the day. There were also a number of ongoing jobs that required RP support as a result of the Unit 1 refueling outage. Overall workload was higher than normal.

On the same evening, Operations Unit 1 Shift Supervisor informed RP that the RB required depressurizing. After a discussion with RP Lead Scientist (RPLS), RPSSA decided to collect two RB samples (initial and independent) prior to the RB depressurization. Each of these samples would take 1.5 to 2 hours, depending on the flow rates, to meet TS requirements. The RPLS and RPSSA did not discuss where the samples were to be taken. Since the RB samples are normally taken by the AS, the RPSSA decided to begin taking unit vent stack samples with the TSE and use the AS to take the RB samples. At 2200 hours on May 17, 1990, RPSA was sent to begin sampling the unit vent stack using the TSE and also begin sampling the RB using the AS. In order to save the next shift some time, RPSSA believed that by swapping the samplers at this time, it would prevent having to swap the samplers later in the morning when RIAs 43 & 44 were to be cut out. Upon starting the TSE, the RPSA observed that the sampler operated as expected.

On the morning of May 18, 1990, RPSSA turned-over to RPSSC the status of the RB samples and unit vent stack samples being taken. Therefore, RPSSC, on his first day of day shift, believed that the TSE was hooked up and taking samples of the unit vent stack. Later that morning, the Technical Support Leader (TSL) inspected the work area and discovered the TSE operating, and found the ends of the tygon tubing draped over some ductwork. TSL contacted the RPSSC to inform him that the vent particulate and iodine samples were not being collected. RPSSC sent a RP Technician to inspect the unit vent stack line sample lineup.

At 1000 hours, May 18, 1990, the RP technician lined up and began a continuous sample of the unit vent stack using the AS. The unit vent stack sample train had been out of service for approximately 12 hours.

CONCLUSIONS

The root cause to this event is classified Inappropriate Action, lack of attention to detail. Radiation Protection (RP) Specialist A (RPSA) lined up to sample the unit vent stack using RP procedure HP/0/B/1000/57 (Procedure for Quantifying Airborne Radioactivity). This procedure contains a generic section for setting up a sample system and collecting a sample. One step instructs the technician to "Perform visual inspection of sample train to ensure sample system integrity." This was inadequately performed. RPSA and RP Shift Supervisor A (RPSSA) had checked that the connections were made by tugging on the tygon tubing to ensure it was attached. The tygon had been routed up about 15 feet and over some ductwork, therefore giving the impression that it would be difficult to discover where it was actually attached. But, in the case of such an abnormal and important lineup, a more positive method to verify the integrity of temporary connections should have been made.

In interviewing several individuals, it was revealed that the term "sample train" normally refers to the connections that the RP technician has immediately before him. These connections are those between the vacuum pump and various flasks and canisters required to draw a representative air sample. Historically, these connections have had leaks. Therefore, by inspecting just the temporary sampling equipment, RPSA met the intent of the procedure.

Had the Construction Maintenance Department Technical Support Leader not inspected the RIA work site and noticed the TSE operating, the incident would have lasted until the TSE sample canister and filter paper were analyzed, per the Radiation Protection Manual Section 6.4 (Radioactive Effluent Sampling, Analysis, and Control Requirements) & 6.5 (Radioactive Effluent Monitoring Instrumentation Contingency Requirements), for activity on May 18th at approximately 2000 hours. The lack of radionuclide activity, as indicated on the isotopic analysis, would have led to an investigation of the TSE lineup and discovery of the tygon tubing not being connected to the unit vent stack.

The health and safety of the public were not compromised as a result of this condition. Any releases of gaseous effluent radioactivity during the time that the unit vent stack and iodine samples were not being taken would have been detected by other operable radiation monitors scattered throughout the plant. A review of LERs over the past 24 months reveals that this event is non-recurring. There were no equipment malfunctions or component failures involved in this discovery, therefore no NPRDS reportable conditions exist. There were no radioactive releases, radiation exposures, or personnel injuries resulting from this event.

CORRECTIVE ACTIONS

Immediate

Upon the discovery of the misaligned temporary sampling equipment (TSE), the auxiliary sampler was lined up to sample the unit vent stack.

Subsequent

1) On May 18, 1990, the Radiation Protection (RP) staff conducted an investigation into the potential releases from the Unit 1 Vent Stack during the time that a (Technical Specification required) continuous particulate and iodine vent sample was not being collected. It was concluded that no unaccounted releases were made during the time period in question and that one release that was made was monitored by 1RIA-45 and that activity released was accounted for in the normal program.

2) The procedures involved with replacement of the radiation Monitors (RIAs) were reviewed to ensure appropriate steps were in place for notification of the RP prior to the removal of the RIAs so that RP could be prepared to start up the TSE after it had been correctly connected.

3) A detailed memo was distributed to the RP shift personnel identifying the RIA replacement sequence of events and actions required by RP to collect required Technical Specification samples.

4) RP staff performed an investigation of the incident and wrote their findings and corrective actions.

5) Reviewed the incident with the personnel involved and stress the need for accurate, complete turnovers.

Planned

1) Counsel people involved in the event about the need for attention to detail.

2) Provide training on the importance of visually inspecting all temporary connections in addition to checking the "sample train" connections to ensure sample system integrity.

SAFETY ANALYSIS

This safety analysis addresses the potential for unmonitored releases of radioactive gaseous effluent while radiation monitors (RIA) 43 & 44, vent particulate and vent iodine samplers, were out of service. The auxiliary sampler (AS), normally used to pull a continuous sample when RIAs 43 & 44 are out of service, had been aligned to sample the Reactor Building (RB). Temporary sampling equipment (TSE) had been started with the assumption that it was connected to sample the unit vent stack. The TSE was not connected and the unit vent stack was not continuously sampled for approximately 12 hours.

The purpose of RIAs 43 & 44 is to monitor the unit vent stack for radioactive air particulates and iodine. In the event that RIAs 43 & 44 are removed from service, Technical Specification (TS) 3.5.5.2.c allows releases to continue provided that samples are continuously collected with auxiliary equipment. The Unit 1 Vent Stack receives exhaust from the following sources:

1) Reactor Building Purge Filter Train
2) Auxiliary Building Ventilation Exhaust
3) Gaseous Waste Filter Discharge
4) Sample Hood Exhaust
5) Penetration Room Ventilation Filter Train
6) Condensate Air Ejector Exhaust

During the evening of the event, the RB required depressurization. Appropriate samples were taken prior to the depressurization and indicated that activity due to air particulate and iodine was low and was with in release limits. RIA-49 (RB gaseous process radiation monitor) and RIA-45 (Unit Vent Stack gaseous process monitor) were in service during the time of the RB depressurization via the purge system, from 0345 to 0527 on May 18, 1990. The dose expected from this release was calculated to ensure the station would not exceed the instantaneous, quarterly and yearly limits as per TS 3.10.2. Upon releasing the RB to the atmosphere via the RB purge system, the air must pass through the exhaust purge filters. These filters are composed of a prefilter, absolute filter, and a carbon filter. The prefilter and absolute filter, high efficiency particulate air (HEPA) filters, are 99.97% efficient. The carbon filter, used to filter out the radioactive iodine and prevent its release to the environment, is 95% efficient. There were no radiation monitor alarms.

The Auxiliary Building (AB) ventilation serves all areas of the AB (EIIS:NF) with the exception of the Control Room Area and the Penetration Rooms. Ventilation air is supplied to both clean and potentially contaminated areas. All air for the AB is directed to the unit vent stacks at which point it is exhausted and normally continuously monitored

by radiation monitors; RIAs 43, 44, 45, and 46. RIAs 45 & 46 are radioactive gas monitors. In addition, RIA-32, AB multipoint Gas monitor, samples air throughout the AB. During the time that the unit vent stack was not being sampled for air particulate and iodine activity, from 2200 on the 17th to 1000 on the 18th, RIA-32 was in service continuously. RIA-45, however, was removed from service at 0835 on the 18th and RIA-46 was out of service. If there had been any significant release of airborne or gaseous activity in the AB, it would have been detected by RIA-32 since the concentration would have been higher nearer the point of release. During this event RIA-32 did not alarm.

The Spent Fuel Pool (SFP)(EIIS:ND) ventilation in normal mode of operation is exhausted to the unit vent via the AB exhaust fans and then to both the Unit 1 and Unit 2 Vent Stacks to be discharged to atmosphere. RIA-41 is provided to continuously monitor the SFP air to detect any possible fuel handling accidents. When fuel handling operations are in progress, the filtered exhaust system must be operable. In the event of an emergency, a fuel handling accident, the SFP Emergency Exhaust (EIIS:VG) system is actuated manually and utilizes Unit 2's RB purge ventilation filter train prior to discharging to Unit 2's Vent Stack. Under normal operating conditions, if there had been any significant airborne and gaseous activity, it would have been detected by RIA-41 and Unit 2's Vent Stack process radiation monitors. Prior to this event, fuel handling operations had been completed in refueling Unit 1's reactor. During this event, RIA-41 and Unit 2's vent stack radiation monitors were in service and did not alarm.

The Gaseous Waste Disposal (GWD)(EIIS:WE) system is provided to collect, holdup, and process potentially radioactive gaseous waste. After the radioactive gas is processed, it is released through the waste gas filters (similar to the RB purge filters). The effluent is then monitored by two noble gas activity monitors, RIA 37 & 38. During this event there were no releases from the GWD system. Had there been an inadvertent release from a GWD tank, the quantity of radioactivity contained in each GWD tank is restricted such that the resulting total body exposure to an individual at the nearest exclusion area boundary will not exceed 0.5 rem.

The Sample Hood Exhaust fan pulls a suction on the Primary Sample Hood. During this event, the Primary Chemist drew two Reactor Coolant samples. Each sample required a 10 minute line flush. The sample activity was much lower than if it had been drawn during reactor power operation. Had there been any significant leakage through the sample lines, it would have been noticed by the periodic monitoring of the waste tank level. Therefore, airborne activity from this source was insignificant during this event.

The Penetration Room Ventilation (PRV)(EIIS:VC) system collects and processes potential RB penetration leakage to minimize environmental activity levels from post-accident RB leaks. Since during this event the reactor was in a refueling shutdown mode, the potential of a LOCA event is insignificant.

PRV discharge exhaust has RIA-51 so that if there was an actuation, the release would have been monitored.

The Condensate Air Ejector is used to help maintain a vacuum on the condenser during normal power operation. RIA-40 monitors the air ejector off gas to detect activity in the secondary system resulting from a steam generator tube leak. Since during this event the reactor was in a refueling shutdown mode, the potential that an unmonitored release due to a steam generator tube leak was insignificant.

There were eight area radiation monitors scattered throughout the AB which could have provided the operators an early indication of increasing activity. This indication would have resulted in an investigation as to the possible source of the activity and taking airborne and gaseous samples. There were no area radiation monitor alarms during this event.

Therefore, between 2200 on May 17, 1990 and 1000 on May 18, 1990, there were no significant releases of airborne activity as monitored by the existing operable radiation monitors. The probability of a significant release of airborne activity without causing at least one operable radiation monitor to alarm is negligible. Because no significant releases postulated in this safety analysis took place during this event, the health and the safety of the public were not affected. There were no personnel injuries or excessive exposures associated with this event.