LOUISIANA POWER & LIGHT / 142 DELARONDE STREET
P. O. BOX 6008 • NEW ORLEANS, LOUISIANA 70174 • (504) 366-2345
MIDDLE SOUTH UTILITIES SYSTEM

W3P81-1505
3-G21
Q-3-A29.11
Q-3-A29.18.20

JUN 19 1981

RECEIVED
JUN 19 1981
U.S. NUCLEAR REGULATORY COMMISSION

Mr. Robert L. Tedesco
Assistant Director for Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: Waterford 3 SES
Docket No. 50-382
Effluent Treatment Systems Branch (ETSB)

Dear Mr. Tedesco:

Please find enclosed material requested by the ETSB needed to complete their input to the Waterford Safety Evaluation Report. This material will be included in Amendment 20 to the Waterford FSAR.

Yours very truly,

L V Maurin

L. V. Maurin
Assistant Vice President
Nuclear Operations

LVM/MPF/ddc

Enclosure

cc: Mr. E. L. Blake
Mr. W. M. Stevenson

B001 S/1

8106220331 E

display/control devices shall be mounted on the existing safety related
radiation monitoring cabinet (CP-14) located in the control room.

Equipment associated with monitors (1) through (4) above shall be qualified
both environmentally and seismically to IEEE-323-1974 and IEEE-344-1975 res- 15
pectively up to but not including the control room readouts. The High Range
Containment Monitoring System including the display devices shall be similarly
qualified. The above is in adherence to Regulatory Guide 1.97 Revision 2, and
NUREG 0737 requirements. The source of power for monitors (1) through (4)
above will be from the non-Class 1E uninterruptible 120V ac source; the High
Range Containment radiation monitor will be powered from the Class 1E
uninterruptible 120V ac source. Further design and as built information demonstrating 19
Waterford's compliance with NUREG 0737 will be included as it becomes available.

Individual monitor descriptions follow:

1. High Range Noble Gas Plant Vent Monitor 15

In adherence to NUREG 0737 and Regulatory Guide 1.97 Rev 2 one (1) High Range
Noble Gas Monitor shall be installed to supplement the range of the existing
plant vent stack radiation monitor. The high range Noble gas monitor was
purchased from General Atomic Company. The particular model which was
purchased is entitled "Wide-Range Gas Monitor". This high range Noble gas 16
monitor shall make use of separate isokinetic nozzles for isokinetic sampling
over the flow range of 83,000SCFM to 156,000SCFM.

In order to assure that plant personnel have access to certain assemblies of
the monitor (such as the particulate and iodine sample filters) during a high-
range release condition, the monitor is divided into separate assemblies that
are located in such a way as to minimize personnel exposure to the postulated
high levels of radiation. Figure 1.9-1 is a block diagram of the monitor
showing the various assemblies of the system and their interconnections. 15

There are five assemblies: (1) Isokinetic Nozzles; (2) Sample Conditioner;
(3) Wide-Range Gas Detectors; (4) Electronics; and (5) Readouts. Each of
these assemblies are described below. Skid assemblies (2) and (3) are of open
design to allow access to parts and to allow cooling by natural convection.
All plumbing and piping are stainless steel and all connections are leak
tested prior to shipment. All electrical power needed is distributed from the
Wide-Range Gas Detector assembly.

(1) Isokinetic Nozzles

Two sets of isokinetic nozzles are normally used - one for normal and one for
high-range conditions. Isokinetic nozzles are used to ensure representative
particulate and iodine grab samples (see below). Both sets of nozzles shall
be mounted on a common sample gantry in the duct. The normal isokinetic noz-
zles operate at $2ft^3/min$, whereas the high-range isokinetic nozzles

equipment constitutes instrument failure and a loss initiates valve closure.
Contact outputs (HI-RAD and FAIL) are provided to the main plant annunciator. 1
Local HI-RAD and FAIL lamps are provided on the remote readout/alarm/control
unit.

11.5.2.4.1.5 Condenser Vacuum Pumps Monitor

The condenser vacuum pumps gas monitor measures noncondensable fission
product gases in the condenser air ejector discharge. The presence of 1
radioactivity in this line would indicate a primary to secondary leak in
the steam generators. The predominant isotopes would be Kr-85 and Xe-133
with the presence of Iodine. The function of this monitor is to alarm in
the event the alarm setpoint is reached or exceeded, to terminate discharge
to the atmosphere and direct the discharge through filters. The expected 1
activity levels will be a fraction of the activities listed in Table 11.3-5
with the noble gases going to the condenser in their entirety, but only two
percent of the halogens and one tenth of a percent of the remaining fission
and corrosion products being transported to the condenser. Activity levels
are recorded in the main control room and alarms annunciated when the
activity level exceeds predetermined limits. The channel consists of an
offline sampler, a microprocessor, a beta scintillation detector, check 1
source, and power supply.

The sampler is shielded to give the required sensitivities and is of the
type described in Subsection 11.5.2.1.9.3. 17

High radiation or failure alarms are indicated both locally and in the
main control room.

Additionally a separate monitor on the condenser vacuum pump exhaust provides for Regulatory Guide 1.97 Revision 2 conformance. Description of this monitor can be found in FSAR Subsection 1.9.29.

11.5.2.4.1.6 Fuel Handling Building (FHB) Normal Exhaust Monitors

The FHB normal exhaust monitors provide an indication to operations personnel of the activity in the Fuel Pool Ventilation System serving the operating floor and spent fuel pools. Each of the two normal exhausts is monitored using the airborne particulate, iodine and noble gas monitor described in Subsection 11.5.2.1.9.2. 17

These monitors provide a high radiation alarm when concentration levels reach preset limits. Upon receipt of these alarms, the operator will terminate normal FHB exhaust and initiate emergency exhaust. The receipt of these alarms will alert the operator to the presence of low level leakage so that additional radiation surveys and sampling can be effected in order to locate the leakage source.

11.5.2.4.1.7 Fuel Handling Building (FHB) Emergency Exhaust Monitors

These monitors are part of the monitoring system purchased for NUREG-0737 compliance and are described in Subsection 1.9.29.

There are two kinds of samples taken at the plant. A number of samples are taken directly in the sampling room. These samples are both primary system and secondary system components and streams. Table 11.5-2 identifies the primary system samples, and the type of sample that can be taken (either in a sample vessel or as a grab sample). Table 11.5-3 identifies the secondary system samples. For the latter in particular, radioactivity measurements are of lesser importance.

The frequency of sampling is dictated more by the need to identify proper water quality than activity. Procedures used to obtain samples allow for recirculation of the line prior to sample extraction to ensure a representative sample.

The location of the samples are chosen so that representative volumes can be obtained from well mixed streams, and the particular streams are chosen to provide indications of proper functionings of process equipment immediately upstream, or leaks in process equipment, etc.

The second kind of samples taken are local samples. Table 11.5-4 lists the local samples, and their location, and the approximate sample frequency.

All sampling points allow recirculation of the sample fluid for a period of time prior to actual sample extraction.

The activity concentrations and isotopic contents of the various samples (both local and in the sampling room) are given in the column so designated in Tables 11.5-2 through 11.5-4, by referral to Tables listed elsewhere in Chapters 11 and 12 of this document.

11.5.3 EFFLUENT RADIOLOGICAL MONITORING SYSTEM

11.5.3.1 Implementation of General Design Criterion 64

Subsections 11.5.1 and 11.5.2 contain a detailed description of the means which are provided for monitoring all effluent discharge paths for radioactivity that may be released for normal operations, including anticipated operational occurrences, and from postulated accidents. 1

Other systems which typically require monitoring are monitored through indirect means by the Waterford-3 SES Radiation Monitoring System. Specifically the following systems are monitored in addition to the system described in Subsections 11.5.1 and 11.5.2.

Process System	Comment
1. Containment Purge System	The Waterford-3 SES has no continuous containment purge system. The pre-entry purge system vents to the Plant Vent Stack which is monitored as described in Subsection 11.5.2.4.1.8. Additionally, containment airborne radiation

17

Process System	Comment
	levels are continuously monitored as described in Subsection 12.3.4.2.3.1.
2. Auxiliary Building Ventilation	The Auxiliary Building ventilation system is continuously monitored for radioactive Airborne Particulate Iodine and gas concentration as described in Subsection 12.3.4.2.5. Additionally, this system vents to the plant stack which is monitored as described in Subsection 11.5.2.4.1.8.
3. Radwaste Area Vent System	Waterford-3 SES has no specific Radwaste Area, but rather has the radwaste system dispersed throughout the RAB. Thus any effluents generated by Radwaste systems shall enter the RAB ventilation system and be monitored as described in item 2 above. 17
4. Turbine Gland Seal Conditioner Vent System	This system vents downstream of the condenser vacuum pumps and is then monitored as described in Subsection 11.5.2.4.1.5.
6. Mechanical Vacuum Pump Exhaust (Hogging) System	Waterford-3 has no separate Hogging System.
7 a. Waste Concentrator Vent System	This system vents to the Vent Gas Collection Header and then to the Plant Stack. Thus it shall be monitored by the system described in Subsection 11.5.2.4.1.8.
7b. Boric Acid Concentrators Vent System	These concentrators vent to the Gas Surge Header (Note: When concentrator package "B" is operated as a waste concentrator it vents to the Vent Gas Collection Header)
8. Pre-treatment Liquid Radwaste Tank Vent Gas System	This system vents through the Vent Gas Collection Header to the plant stack.
9. Flash Tank Vent System	This system vents to the Vent Gas Surge Header.

Process System	Comment
10. Steam Generator Blowdown System	This system vents to I.P. Header number 4 from there goes to the VGCH and then to the stack. In the event of over-

Process System	Comment
	pressurization the system vents to the atmosphere through a relief valve.
11. Pressurizer Vent System	This system goes to the Gas decay tanks via the containment vent header and gas surge tank. The gas decay tank vent is monitored as described in Subsection 11.5.2.4.1.2 and is ultimately discharged through the plant stack. 17
12. Boron Recovery Vent System	This system is vented through the plant stack via the VGCH.

11.5.4 PROCESS MONITORING AND SAMPLING

11.5.4.1 Implementation of General Design Criterion 60

Subsections 11.5.1 and 11.5.2 contain a detailed description of the means which are provided for automatic closure of isolation valves in gaseous and liquid effluent paths.

11.5.4.2 Implementation of General Design Criterion 63

Subsections 11.5.1 and 11.5.2 contain a detailed description of the means which are provided for monitoring of radiation levels in radioactive waste process systems.

POOR ORIGINAL

TABLE 11.5-1 (Cont'd)

	MONITOR	QUANTITY	LOCATION	TYPE	FUNCTION	POWER SUPPLY	RANGE & JUSTIFICATION $\frac{(\mu Ci)}{Cm^3}$	ALARM LOCATION	ALARM SETPOINT $\frac{(\mu Ci)}{Cm^3}$	
10.	DRY COOLING TOWER SUMP #1	1	7WM3-254 G-173, A-5	Off-Line Gamma Scint.	Automatic sump pump isolation	Instrumentation ac bus	10^{-7}-$10^{(-2)}$ Functions of Table 11.1-3 Activities-Deposited	Locally	10^{-5}	18
11.	REACTOR BLDG. SUMP	1	7 WM 1 1/2-12 G-173, E-10	Off-Line Gamma Scint.	Automatic sump pump isolation Alarm	Instrumentation ac bus	10^{-6}-10^{-1} Isotopic conc. is unknown	Locally	10^{-4}	
12.	DRY COOLING TOWER SUMP #2	1	7 WM 3-255 G-173, C-14	Off-Line Gamma Scint.	Automatic sump pump isolation Alarm	Instrumentation ac bus	10^{-7}-10^{-2} Fractions of Table 11.1-3 Activities-Deposited	Locally	10^{-5}	
13.	INDUSTRIAL WASTE SUMP-TURBINE BUILDING	1	7 WM 2- 313 G173, M-8	Off-Line Gamma Scint.	Upon high radiation signal closes valve 7WM-V186 and opens valve 7WM-V650. Upon emptying the sumps, operator to reestablish normal flow to oil separator manual. Alarm	Instrumentation ac bus	10^{-6}-10^{-1}	Locally	10^{-4}	1
14.	S,G, Blowdown Heat Exchanger Cooling Water Line	1	7CW 16-55 G-[illegible] sh 1	Off-Line Gamma Scint.	Alarm	Instrumentation ac bus	10^{-7}-10^{-2} Table 11.2-13	Locally	10^{-6}	18
15.	FHB Exhaust A RE-HV-5107-A	1	After fan at release point G-141	Off-Line Particulate Iodine Gas	Alarm	Instrumentation ac bus	Particulate 10^{-12}-$3x10^{-6}$ Iodine $1.5x10^{-11}$-$1.5x10^{-6}$ Gas $8x10^{-8}$-$8x10^{-3}$	Locally	P $3x10^{-11}$ I $2x10^{-10}$ G $3x10^{-7}$	
16.	FHB Exhaust B RE-HV-5107-B	1	After fan at release point G-141	Off-Line Particulate Iodine Gas	Alarm	Instrumentation ac bus	Particulate 10^{-12}-$3x10^{-6}$ Iodine $1.5x10^{-11}$-$1.5x10^{-6}$ Gas $8x10^{-8}$-$8x10^{-3}$	Locally	P $3x10^{-11}$ I $2x10^{-10}$ G $3x10^{-7}$	17
17.	Plant Stack RE-HV-0100.1S RE-HV-0100.2S	2	Probe In plant stack elevation +111.' monitor on G-145	Off-Line Particulate Iodine Gas	Alarm	Instrumentation ac bus	Particulate 10^{-12}-$3x10^{-6}$ Iodine $1.5x10^{-11}$-$1.5x10^{-6}$ Gas $8x10^{-8}$-$8x10^{-3}$	Locally	P $3x10^{-11}$ I $2x10^{-10}$ G $3x10^{-7}$	

POOR ORIGINAL