



LOUISIANA
POWER & LIGHT

317 BARONNE STREET • P. O. BOX 60340
NEW ORLEANS, LOUISIANA 70160 • (504) 595-3100

May 16, 1988

W3P88-0084
A4.05
QA

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Waterford 3 GES
Docket No. 50-382
License No. NPF-38
NRC Inspection Report 88-05
Status of Post Accident Sampling System

Attached is the Louisiana Power and Light Company (LP&L) response to the NRC request for information identified in Inspection Report No. 88-05 relative to the status of the Post Accident Sampling System at Waterford 3.

Very truly yours,

R.F. Burski
Nuclear Safety & Regulatory Affairs
Acting Manager

RFB:BGM:ssf

Attachment

cc: R.D. Martin
J.A. Calvo
D.L. Wigginton
NRC Resident Inspectors Office
E.L. Blake
W.M. Stevenson

IE06
|
|

LP&L Response to NRC Inspection Report 88-05

INTRODUCTION

During the inspection conducted by Dr. J.B. Nicholas and Mr. R. Wise for the period of March 7-11, 1988, it was verified that the Post Accident Sampling System (PASS) equipment and associated procedures satisfied the requirements of NUREG-0737, Item II.B.3, for representative sampling and analysis of reactor coolant and containment atmosphere following a reactor incident, with one exception. The PASS has been, and is, capable of collecting diluted samples of reactor coolant; however, there has been a problem with degasing the reactor coolant sample for performing an accurate analysis of dissolved hydrogen and gaseous radioactive isotopes. Therefore, it was requested that LP&L outline the steps taken to ensure continued operability of PASS design functions including reactor coolant system sample degasification.

PASS DESIGN FUNCTIONS

The PASS is a dedicated system which provides the capability to obtain and analyze liquid samples from either the hot leg of the Reactor Coolant System (RCS) or the Safety Injection System (SIS) sump following a design basis accident. Instrumentation provides on-line analysis of pH, dissolved oxygen and dissolved hydrogen. Dissolved oxygen and pH are analyzed on depressurized, flowing streams with in-line probes. Dissolved hydrogen concentration is determined by stripping gas from a pressurized liquid sample bomb having a known volume. The liquid is stripped of dissolved gases through batch processing using a combination of vacuum, sample heating, and argon sparging. The stripped gas sample is trapped and remotely routed to an in-line gas chromatograph for hydrogen analysis. A grab sample of the stripped gas can be manually extracted and transported to the Primary Chemistry Laboratory for isotopic gas analysis.

The PASS panel is capable of obtaining dilute and undilute liquid grab samples. The diluted liquid sample can be diluted up to 1500:1, and analyzed onsite for boron and isotopic composition. The undiluted liquid sample is contained in a shielded cask, which can be shipped offsite for chloride and confirmatory analyses. An agreement for this work is in place with Babcock & Wilcox.

The diluted liquid and stripped gas grab samples are obtained in a separate shielded cubicle to reduce operator exposure and all samples have their own ventilated sampling boxes. The Process Control Panel contains instrumentation readouts and permits remote operation of the analyzers and valve manipulation.

SYSTEM MODIFICATIONS

Waterford 3 is completing installation of a Station Modification which modifies the existing Reactor Coolant and Safety Injection Sump portion of the PASS. The gas analysis section of the system is being changed from a "flow through" to a "batching" system. This change will enable the operator to have better control of the system and increase the accuracy of quantifying dissolved gas concentration in the reactor coolant or the Safety Injection System sump.

The installation of the Station Modification was begun during the first refueling outage. With the exception of sample degasing, operability of PASS has been demonstrated by collecting at least 14 diluted samples of reactor coolant and analyzing these samples for boron and activity. The sample analyses met or exceeded the requirements of NUREG-0737 II.B.3. The pH analyzer and the dissolved oxygen analyzer were both tested and met the requirements of NUREG-0737. The testing and operation of the PASS panel has demonstrated that samples can be obtained and analyzed in the 3 hour time limitation. Undiluted samples of RCS were not taken for ALARA reasons, however the flow path was verified as operable by taking radiation readings along the piping.

The Station Modification has not corrected the problem of being able to degas the reactor coolant sample and perform an accurate analysis of the reactor coolant dissolved hydrogen and radioactive gaseous isotopes. The gas chromatograph was operational and accurately calibrated, and repeatability of results was verified by testing with certified gas standards. However, when actual RCS samples were analyzed and compared with the primary sample analysis the PASS results for dissolved hydrogen and gaseous radioisotopes were found to be inaccurate. Therefore, an investigation was conducted which discovered unexpected pressure changes in the system. Upon further review, the root cause of this sampling problem was determined to be leakage through the solenoid sampling valves. Leakage through the valves was attributed to the valve's inability to properly seat.

CORRECTIVE ACTIONS

LP&L plans to replace the sampling valves in PASS with new ones which are custom-made by Gemoco. The 29 new valves have a combination of hard and soft seat design and have been designed and successfully tested specifically for this application. The tests on these valves include stroking them open and closed in borated water at 2250 psi, helium tests at increasing pressures while submerged in water, and hydrostatic testing to 3000 psi while fully open for 5 minutes. The acceptance criterion for all tests is zero leakage. The installation of these valves is expected to be completed by May 31, 1988.

The PASS will be retested after the plant returns to 100% reactor power when RCS hydrogen and isotopic conditions are conducive to dilution. A PASS sample will be analyzed and compared to Primary Sample Panel results for hydrogen and boron. It is expected that testing will be complete and that sufficient personnel will be trained to have a trained technician on each shift by July 15, 1988.

Following testing, the system will be maintained operable by following Chemistry Department Procedures, CE-1-004, "Periodic Analysis Scheduling Program", and CE-3-905, "Testing and Maintenance of the Post Accident Sampling System". CE-3-905 details the steps required for testing the operation of PASS and for calibration and maintenance of the in-line analytical instrumentation such as the pH monitor, dissolved oxygen analyzer, and gas chromatograph. Verification of the dilute liquid grab sample is also covered in this procedure.