



ENGINEERING DEPARTMENT
Ronald Sanacore, Senior Vice President

October 5, 2007

Mr. Gary Little
Manager-Insurance
Progress Energy
Treasury Department
410 S. Wilmington St. PEB 19A3
Raleigh, NC 27602

Subject: ANI Nuclear Liability Insurance Inspection
Brunswick Steam Electric Plant
Dates: June 5-6, 2007 & August 28, 2007
Policy Reference: NF-218 / Certificate NW-597

Dear Mr. Little:

Enclosed please find a copy of ANI's Nuclear Inspection Report for the Nuclear Liability Insurance Inspection conducted at the Brunswick Steam Electric Plant during June 5-6, 2007 and the follow-up inspection on August 28, 2007.

We very much appreciate the courtesies extended by the Brunswick staff. Mr. Steve Tabor was especially helpful and facilitated the achievement of our objectives in a mutually efficient manner. Throughout the inspection, I found the Brunswick staff professional and ready to assist in the inspection efforts.

Seven new recommendations are offered as a result of this inspection. Two previous recommendations were closed and one noted as pending. Your response to the new recommendations within 60 days from receipt of the report would be appreciated.

Should you have any questions regarding the report, please do not hesitate to call me at (860) 682-1340, or contact me via e-mail at bwendland@amnucins.com.

Sincerely,

William G. Wendland
William G. Wendland, P.E.
Director - Nuclear Projects

Enclosure

cc: S. Tabor, D. McGarvey

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W-3



NUCLEAR LIABILITY INSURANCE INSPECTION REPORT

Insured: Carolina Power & Light Company

Facility: Brunswick Steam Electric Plant

Address: P.O. Box 10429
Southport, NC 28461

Liability Policy: NF-218

Worker Policy: NW-597

Report Date: October 5, 2007

Document: L060607.218

Inspector: *William G. Wendland*
William G. Wendland, P.E.
Director-Nuclear Projects

Inspection Dates: June 5-6, 2007 &
August 28, 2007

PURPOSE

The inspection was a routine nuclear liability insurance inspection.

SCOPE

- Brunswick Nuclear Plant Performance Evaluation – ANI Engineering Rating Factor
- Site Tour of Effluent Release Points, Ponds, Tanks, Wells, Radiological Control Areas and ISFSI
- Unplanned and Unmonitored Releases of Radioactive Material – ANI Guideline 07-01

On-site Leakage Documentation (10CFR 50.75(g))

Action Plan

Communications Protocol

Onsite Monitoring Wells

Plume Characterization(s)

Site Hydrology

Spent Fuel Pool Integrity

Tank & Underground Piping Integrity Assessments

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RESULTS

Seven **new** liability recommendations were offered as a result of this inspection. Two previous recommendations were closed and one noted as pending.

RECOMMENDATIONS

New

- LR 07-01 **Site Hydrogeological Evaluation** - A complete site hydro-geological study should be performed. The design of the well monitoring program should be determined by the local hydro-geological materials and structures. The design of the well monitoring program should be determined by the local hydro-geological materials and structures. Sentinel wells should be placed proximate to high risk systems, components, or structures (e.g., piping, tanks, etc.) to provide early detection of a leak. The location of new monitoring wells should also consider known or suspected leaks, spills or other releases of contaminated water to the soil.
- LR 07-02 **2006 Hydrogeological Evaluation** – The wells recommended in the 1995 and 2006 Hydrogeological Evaluations should be installed as recommended in the reports.
- LR 07-03 **Groundwater Protection (EPRI Guidelines)** – An evaluation should be conducted to ensure the fundamental elements of the EPRI GW Guidelines (when finalized) are incorporated into the GW evaluations conducted at the Brunswick site.
- LR 07-04 **Storm Drain Stabilization Pond Groundwater Leak** - The distribution of contaminants in the leak plume should be characterized horizontally and vertically including maximum concentrations and areas actually or potentially affected. Leak location, migration pathway, contamination levels, effects on existing groundwater, potential for migration off-site, potential for contamination of local aquifers and drinking water supplies as well as radiological dose assessments should be considered. Strategies for remediation of the pond and groundwater contamination should be developed which would minimize the potential for migration off-site.
- LR 07-05 **Integrity of Underground Piping** - Integrity assessments of all underground piping systems that contain or could contain radioactive materials should be performed. Inspection and testing methods may include: visual, UT, acoustic

emission monitoring, hydrostatic or pressure drop testing, helium sniff, cameras/pipe crawlers, dye injection, etc. Engineering judgment should be used. Piping located in a sealed, engineered trench with leak detection capabilities may not need to be routinely inspected / tested; however these piping systems should be included in the formal evaluation and documented appropriately. (Ref. ANI Guideline 07-01)

Underground piping in contaminated systems in the industry has experienced leakage of contamination to groundwater, contributing to increased nuclear liability insurance exposure.

LR 07-06 **Integrity of Storm Drains** - The integrity of the entire storm drain system located within the Protected Area should be periodically evaluated. The evaluation should consider inspection for debris, line breaks or any discontinuity that would contribute to an unplanned and unmonitored release of radioactive materials to the groundwater. (Ref. ANI Guideline 07-01) **Storm Drain Sampling for Radionuclides** - Storm drain effluent should be periodically sampled for tritium and gamma emitters. If these analyses indicate the presence of plant-related radionuclides, subsequent analyses should be performed for hard-to-detect radionuclides (e.g., Sr90, Fe55, Ni63, alpha emitters, etc.). The analyses should be based on the plant's source term, isotopic ratios and transport characteristics. (Ref. ANI Guideline 07-01)

LR 07-07 **Sampling for Other Radionuclides** – If the gamma isotopic or tritium analyses results taken from the yard drains, potable water wells, groundwater observation / monitoring wells, sanitary waste or other effluent / environmental monitoring sample points indicate the presence of plant-related radionuclides, the station should perform analyses for hard-to-detect radionuclides (e.g., Sr90, Fe55, Ni63, alpha emitters, etc.). The analyses should be based on the plant's source term, isotopic ratios, and transport characteristics. Note: If the tritium results are >MDA but are consistent with, or approximate to, environmental background levels, the results would not constitute "contamination due to plant-related radionuclides." (Ref. ANI Guideline 07-01)

Previous Liability Recommendations

Pending

LR 98-09 **RWP / Minor Maintenance Work Order Cross-Reference** Radiological conditions and dose for minor or routine maintenance activities which are controlled by

standing or general RWP should be cross-referenced to the job specific work order ticket. These work tickets should be retained based on the recommendations provided in ANI Bulletin 80-1A, for the life of the nuclear liability insurance policy plus 10 years.

Status A new staff member was assigned responsibility to address this recommendation who has experience with this particular issue at another ANI insured facility. Under this new leadership, progress has been achieved.

Based on the present system at Brunswick, records may be present as to who entered the RCA, but the exact purpose of the entry would not be documented. This in our view would further challenge the ability to reconstruct who actually was involved with the work and under what radiological conditions. Our experience in reconstructing who and when access was affected under the auspices of a work order which is not referenced by the RWP, and then reconstructing their dose, stay times and dose rate is generally not as successful in claims defense. We noted that during non-outage time periods, the vast majority of RCA entries are conducted under the auspices of general (routine) RWPs. As such, the issue described herein is even more significant during that time.

This recommendation will be categorized as Pending. We acknowledge the effort to address the recommendation and will review progress at a subsequent insurance inspection.

Closed

LR 05-01 **Unit 2 Spent Fuel Pool Leak** – The 1995 analysis evaluating the effects of the Unit 2 Spent Fuel Pool leakage should be re-reviewed to ensure that the assumptions and conclusions are still valid.

Status The analysis was performed. This recommendation is closed.

LR 05-02 **Sanitary Sewage** – The liquid discharge pathways should be sampled for tritium as well as gamma activity. A pathway analysis should be performed on the “outside RCA” pathway.

Status This recommendation is closed.

DISCUSSION

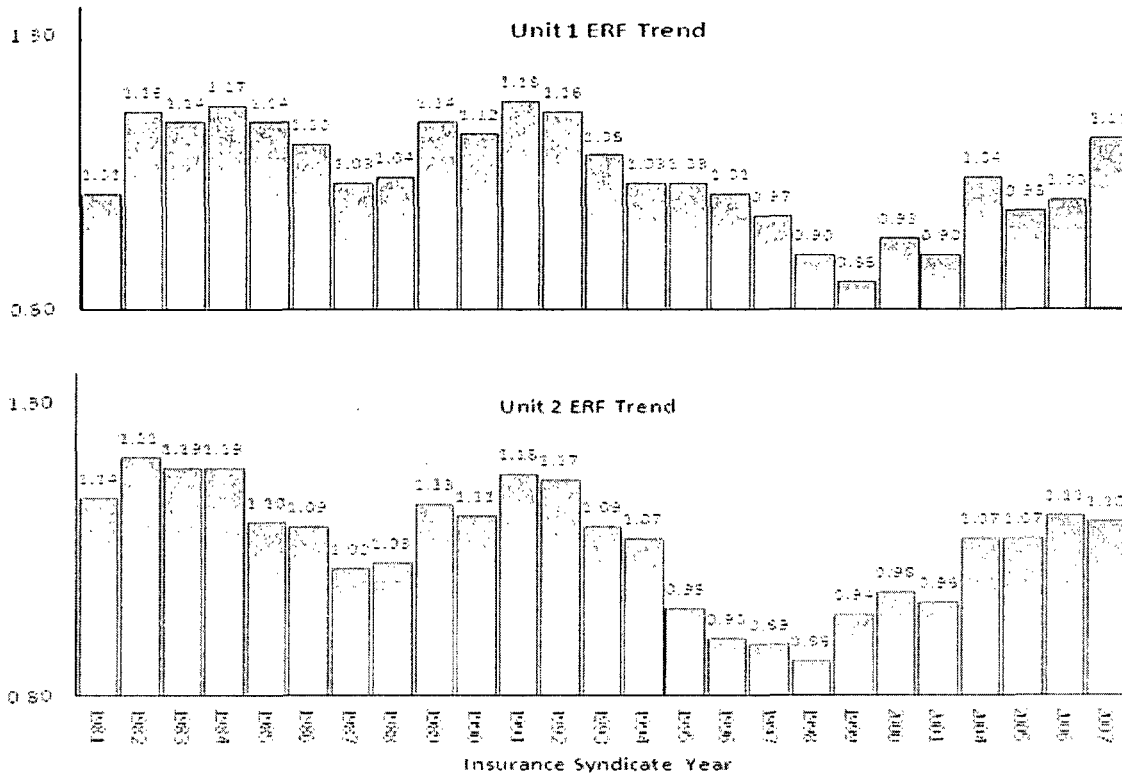
ANI Engineering Rating Factor (ERF) – Brunswick Nuclear Plant Performance Analysis

A presentation of Brunswick Nuclear Plant performance relative to the industry and peer facilities as reflected in ANI's Engineering Rating Factor and dollar contribution to the Nuclear Liability Insurance policy premium was provided. The following tables and graphs summarize the major contributors to the ERF and trends for 2007. The overall ERF trend for both units is increasing.

Major ERF Contributors 2007	
Unit 1 ERF = 1.11	Unit 2 ERF = 1.10
<ul style="list-style-type: none"> ▪ Airborne Iodine & Particulate Releases ▪ Airborne Tritium ▪ NRC Violations w/ Paid Fines ▪ Radwaste Shipments for Burial ▪ Safety System Actuations 	<ul style="list-style-type: none"> ▪ Airborne Iodine & Particulate Releases ▪ Airborne Tritium ▪ NRC Violations w/ Paid Fines ▪ Radwaste Shipments for Burial ▪ Safety System Actuations

Increasing Subfactor Data (Adverse) Trends
<ul style="list-style-type: none"> • Noble Gas Releases • Airborne Iodine & Particulate • Airborne Tritium • Waterborne Tritium • NRC Violations w/ Paid Fines • Safety System Failures • Unplanned Automatic Scrams • Safety System Actuations

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Plant Status during Inspection

Both units were operating at 100% power, with minor maintenance in progress.

Conferees during this Inspection

- Mr. Jim Scarola Site Vice President
- Mr. Gary Little Manager – Insurance Progress Energy
- Mr. Randy Ivey Nuclear Support Services Manager
- Mr. Jeff Ferguson Manager – E & RC
- Mr. Jerry Johnson Environmental & Chemistry Superintendent
- Mr. John Bates BESS Materials Program Manager
- Mr. Philip DeFoggi Nuclear Assessment
- Mr. Steve Tabor Senior Analyst - Licensing
- Mr. Mark Grantham Progress Energy
- Mr. Gary Galloway Nuclear Assessment Manager
- Mr. Tim Trask Engineering Manager
- Mr. Martin Souther System Engineer
- Mr. Marty McGowan Environmental Manager
- Mr. John Vincelli ALARA Supervisor
- Mr. Mike Millinor Effluent Manager