

**BEFORE THE UNITED STATES NUCLEAR REGULATORY  
COMMISSION – DIRECTOR OF NUCLEAR REACTOR  
REGULATION**

**RE: Docket 0500443**

**License NPF – 86**

**Seabrook Station**

**Licensee: Florida Power & Light Energy Seabrook LLC**

**PETITION PURSUANT TO CFR  
2.206 FOR THE DIRECTOR TO  
SUSPEND OR REVOKE LICENSE  
DUE TO UNEVALUATED RISK  
ARISING FROM STEAM  
GENERATOR TUBE CRACKING**

**Under NRC regulations 10 CFR Part 2 – Rules of Practice For Domestic Licensing Proceedings and Issuance of Orders Subpart B- Procedure For Imposing Requirements by Order, or for modification under 2.206, we, the undersigned, request enforcement action to modify the license to require the below listed steps be taken during the Seabrook nuclear power plant's 2003 refueling outage to provide a technically meaningful inspection of the tubes in all four steam generators. Seabrook Station's restart should only be permitted upon adoption of the inspection scope proposed by the undersigned below, as a license amendment.**

**The C-10 Research and Education Foundation had requested technical and procedural information in letters to the NRC dated June 30<sup>th</sup>, 2003 and August 27, 2003 to assure that Seabrook nuclear power plant's October 2003 refueling outage inspection of steam generator tubes is designed and conducted to employ inspection methods capable of detecting all flaw types; to assure an extremely low probability of abnormal leakage, and therefore to protect public health and safety. The NRC's response to our inquiry, received on September 25<sup>th</sup>, 2003, has not only inadequately addressed our questions, but also served to heighten our concerns.**

**On October 4, 2003 Seabrook operator's have begun a refueling outage and will be inspecting their steam generators for unaccepted tube**

**degradations. We have reviewed their planned inspection scope for all four steam generators, researched and studied NRC documentation and consulted with technical experts. After this review of the NRC's response to our inquiry, we have determined that the inspection is not technically adequate to ensure the public health and safety. The NRC is not requiring the Seabrook licensee to accurately determine the extent of their steam tube degradation by means of readily available specialized rotating probes quantified and able to more adequately detect all flaw types than the bobbin coil in all four steam generators. This is of grave concern to us because The Advisory Committee on Reactor Safety has determined that the NRC does not currently have a defensible analysis of the behavior of all flawed steam generator tubes, under all credible and plausible severe accident conditions. Inadequate tube inspection and repair can lead to a severe accident at Seabrook. Publicly available NRC documents state that more than 50% of the entire high-pressure boundary which prevents release of radioactivity to the environment is contained within the steam generators. If a main steam line breaks it will release radioactive steam and water directly to the environment through the ruptured pipe bypassing all containment barriers. A main steam line break is a design basis accident and the plant's license requires that releases during this accident not exceed the allowable limits specified in 10CFR Part100. The present Seabrook inspection plan for the October outage provides no assurances that radioactivity releases will not exceed 10CFR Part100.**

**Because significant runs of the main steam lines in this reactor plant are not within containment, maintaining steam generator tube integrity is of critical importance, especially in light of the events of 9/11 and the constant threat of terrorism.**

**The NRC's inaction concerning the limited scope of Seabrook's proposed steam generator inspection plan is technically unacceptable and therefore intolerable to the undersigned. The NRC discovered at the May 2002 refueling outage that Seabrook is the first domestic plant to identify axial outside-diameter stress corrosion cracking of steam generator tubes fabricated, by an unknown process, from thermally-treated Alloy 600 tubing. Given that this finding at Seabrook was**

**determined by the NRC as both “unusual and unexpected”, and is but one in a series of other “unusual and unexpected” findings from steam generator tube inspections at other domestic reactors ( Diablo Canyon being the most recent one) it is technically mandatory and imperative that the upcoming October inspection be thorough and valid since the risk of operating Seabrook with susceptibility to tube damage can not be quantified or qualified.**

**As mentioned above, the NRC failed to provide a satisfactory reply to our concerns regarding the tube degradation at Seabrook. The NRC reply and evaluation was incorrect, and it ignored several important factors of which among those are: 1.) Because portions of the steam lines, and the refueling water storage tank are outside containment and they present large and easily recognized targets they are vulnerable to terrorist attacks. Since now, for the first time, the NRC admits that tubes with circumferential cracks will fail following a steam line break a thorough evaluation must consider that borated water will not be readily available to cool the reactor core following a steam line break. 2.) The NRC indicated that exceeding the 40% limit is not a violation of 10CFR PART 50 because the “methodology (in RG 1.121) accounts for flaw growth”. This rationale is flawed because the 40% limit and the 10% degradation growth rates are based on uniform wastage and not on cracks that may grow and exceed the leakage criteria. A valid methodology for degradation growth between inspections must be based on a limiting crack growth. Seabrook has not provided a credible analysis in this regard. 3.) The NRC indicated that Seabrook could operate with loose parts as long as the licensee shows by analysis that the wear from loose parts will not be safety significant. We do not believe that it is possible to conduct a credible analysis of wear from loose parts of unknown size, material, and location. According to NUREG-1771 wear from loose parts is unpredictable.**

**Based on the many uncertainties associated with the newly discovered stress corrosion cracking and the existence of unknown number of circulating loose parts, Seabrook should at a minimum take the**

**following steps during the 2003 refueling outage:**

**\* All the unplugged tubes in all four steam generators should be inspected with the specialized rotating probes best qualified and capable of determining all flaw types.**

**\* All tubes with identifiable cracks and crack indications should be plugged.**

**\* Four tubes from susceptible areas should be removed for laboratory examination.**

**\* Susceptible areas should be examined with the rotating coil every four months.**

**\* All loose parts should be removed from the reactor coolant system and secondary system piping during the 2003 outage.**

**\* A technically valid risk assessment for the as-found and as-left steam generators should be completed prior to restart from the 2003 outage.**

**The NRC and the licensee now intend to examine 100% of the four steam generators using a bobbin coil but not with a rotating probe. According to NRC documentation, the bobbin coil is not reliable in detecting stress corrosion cracks. This probe has not been qualified for and is not capable of reliably detecting axial or circumferential cracks particularly in regions with geometric changes and at the tube support plates. However, the rotating pancake coil and the plus point probes are qualified for inspecting those regions at Seabrook steam generators that are most susceptible to stress corrosion cracking. Seabrook operators plan to limit the use of the rotating probe to small areas specifically neglecting those areas where degradations were detected during the May 2002 outage.**

**The discovery of the fast growing cracks indicates that the crack initiation period has been reached in an unknown and unquantifiable**

**number of tubes. If small cracks are not detected and are missed during an inspection they will enlarge quickly when the local stresses are sufficiently large. Because there are no data to predict the growth rates of stress corrosion cracks in thermally treated alloy 600 with induced stresses from an unspecified fabrication process it is imperative that Seabrook employ the best technology available to detect tube defects.**

*We, the undersigned, are calling for an enforcement action to require a license amendment to include a thorough inspection of Seabrook's steam generators as outlined above and that a restart should only be permitted on the basis of a new license condition calling for quarterly inspections.*

*Sandra Gavutis, Executive Director, C-10 Research and Education Foundation*

*Dr. Joram (Joe) Hopenfeld, Ph.D. Engineer*

*Paul Gunter, Director of the Reactor Watchdog Project, Nuclear Information and Resource Service*

*David Lochbaum, Nuclear Safety Engineer, Union of Concerned Scientists*