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U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, D.C. 20555-0001

Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251

Commitment Revision Summary Report for Reactor Vessel Head Leakage Detection System (RVHLDs)

References:

1. FPL Letter L-88-239, Dated May 31, 1988, FPL's response to NRC Generic Letter 88-05, "Generic Letter 88-05". FPL Letter L-2002-061, Dated April 3, 2002,
2. FPL Letter L-2002-061, dated April 3, 2002, FPL's response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity".
3. NEI Guidance 99-04, NEI 99-04, Guidelines for Managing NRC Commitments
4. Turkey Point Condition Report (AR) 02378331

The purpose of this letter is to provide a commitment revision summary report for the elimination of the Reactor Vessel Head Leakage Detection system from the Turkey Point Licensing Bases.

Turkey Point in response to NRC Generic Letter 88-05, in FPL Letter L-88-239, dated May 31, 1988, committed to adding a non-safety grade single channel radiation monitor in the PTN Unit 3 control rod drive mechanism (CRDM) vent ducting to aid in detecting the onset of small leaks. (Reference 1). A similar commitment was made in FPL's response to NRC Bulletin 2002-01 by FPL Letter L-2002-061, dated April 3, 2002, referencing the reactor vessel head leakage detection system (RVHLDs) as a means of detecting reactor coolant system (RCS) leakage originating inside the reactor vessel head shroud. (Reference 2.) The commitment revision review was performed in accordance with guidance provided in NEI 99-04, Guidelines for Managing NRC Commitments (Reference 3). The justification for changing the commitment is documented in the Turkey Point Corrective Action Program (Reference 4) and is discussed herein.

The wording of Original Commitments found in References 1 and 2 is as follows:

"A non-safety grade single channel radiation monitor was also added in the Turkey Point Unit 3 CRDM vent ducting to aid in detecting the onset of small leaks in the enclosed volume swept by the ventilation flow stream. Its use is currently being evaluated for implementation in Turkey Point Unit 4."

“In addition, Turkey Point Units 3 and 4 have reactor vessel head leakage detection systems. The system monitors air samples drawn from the control rod drive mechanism (CRDM) cooler discharge as well as containment atmosphere for reference. This system can be placed in service to assist in leakage detection by isolating or eliminating the potential sources of unidentified leakage originating inside the reactor vessel head shroud.”

“Turkey Point Units 3 and 4 have a reactor vessel head leakage detection system. This system can be periodically run to assist in leakage detection by isolating or eliminating the potential sources of unidentified leakage as coming from inside the head shroud.”

The revised commitment deletes references to RVHLDS monitors from the Turkey Point Licensing Basis and instead credits the Turkey Point containment atmosphere air particulate monitors RD-3-11, and RD-4-11.

The Revised Commitment Wording is as follows:

RD-3-11 and RD-4-11 monitor containment air samples for airborne radioactive particulate, which is an indication of potential boric acid wastage from the reactor vessel head. These monitors can assist in identification of RCS leakage which can initiate boric acid deposits.”

Justification

The NRC Generic letter 88-05, and NRC Bulletin 2002-01 commitments were implemented by installing the Reactor Vessel Head Leakage Detection System (RVHLDS). The UFSAR includes this system as one of the containment leakage detection systems. The purpose of the RVHLDS was to monitor air samples drawn from the Unit 3 and 4 CRDM cooler ventilation ducts. Specifically, an increasing trend in CRDM discharge radioactivity levels over containment background radioactivity levels indicates a Reactor Vessel Head Leak. The RVHLDS is comprised of radiation monitors RAD-3-6458 and RAD-4-6458. The RAD-3/4-6458 monitors were found to be prone to failure and became a challenge to maintain due to maintenance staff dose issues. These monitors are being removed from the Turkey Point plant’s design by the engineering change packages (ECs) 291559 for Unit 3 and 291563 for Unit 4.

The ECs evaluated the removal of RAD-3/4-6458 (RVHLDS) (via the 10 CFR 50.59 process) as acceptable based on the UFSAR described design function of RAD-3/4-6458 to provide one of three independent means of detecting RCS leakage. The basis for this conclusion was that having two independent means of detecting RCS leakage was adequate.

RAD-3/4-6458 are not credited by the Turkey Point Technical Specifications for RCS leakage detection. The Technical Specifications for Units 3 and 4 credit two means of identifying RCS leakage: the containment atmosphere particulate and noble gas radiation monitors (RD-3/4-11 and RD-3/4-12, respectively) and the containment sump level monitoring system (Reference Technical Specification 3/4.4.6, Reactor Coolant System Leakage). In addition to the means of identifying RCS leakage identified in the Technical Specifications, RCS leakage is monitored by visual inspections and by RCS leakage rate calculations. RCS visual leak inspections and evaluations are performed for Units 3 and 4 in accordance with Operations procedures 3-OSP-041.2 and 4-OSP-041.2, respectively. RCS leak rate calculations are performed for Units 3 and 4 in accordance with Operations procedures 3-OSP-041.1 and 4-OSP-041.1, respectively. These additional means are not identified in the UFSAR discussion of the RVHLDS function but do nevertheless provide additional means in addition to the containment

atmospheric particulate and noble gas radiation monitors. There is robust defense-in-depth for identification of RCS leakages even in the absence of the RVHLDS.

However, RAD-3/4-6458 are credited for detecting the onset of small leaks in the reactor vessel head per FPL Letter L-88-239 and are credited for the boric acid wastage surveillance program per FPL Letter L-2002-061.

A review and evaluation of the commitment of having the RVHLDS available for the boric acid wastage surveillance program confirms that the RVHLDS was not credited by FPL Letters L-88-239 or L-2002-061 as a primary means of identifying RCS leakage or for monitoring boric acid wastage.

FPL Letter L-88-239 credits procedural controls and access doors added to the CRDM vent shrouds to allow inspection of the reactor vessel head area as the primary means of addressing boric acid deposits. FPL letter L-2002-061 describes the RVHLDS as an additional feature that “can be placed in service to assist in leakage detection” and “can be periodically run to assist in leakage detection”, which provided defense in depth. Inspection, monitoring, and trending activities for boric acid monitoring rely primarily on visual inspections.

Although credited as available by FPL Letters L-88-239 and L-2002-061, the RAD-3/4-6458 monitors were never incorporated into any boric acid wastage surveillance program document. The program credited the containment atmosphere particulate monitors, RD-3-11 and RD-4-11, for PTN Units 3 and 4, as discussed below.

Procedure ER-AP-116-1000, Rev 5, “Boric Acid Corrosion Control Program”, is one of the implementing procedures of the Boric Acid Wastage Surveillance License Renewal Program and includes the use of radiation monitors as a means of identification of boric acid leakage (Section 4.1.1, Item 2). Specifically, the containment atmosphere particulate monitors are credited for assessing the significance of boric acid leak indications along with identified/unidentified leak rates, containment sump levels, and containment temperature (Section 4.1.12, Paragraph 3, item D).

In addition to the containment atmospheric particulate monitors, other means of identifying RCS leakage are credited under license renewal for boric acid wastage surveillance. Procedures 3-OSP-041.2 and 4-OSP-041.2 are the implementing procedures for RCS visual leak inspection and leak evaluation, respectively. They use various means of detection of RCS leakage. Included in those methods are input from the containment atmospheric particulate and noble gas radiation monitors (RD-3-11, RD-3-12, RD-4-11 and RD-4-12) to detect and evaluate RCS leakage, and using a mismatch in the charging and letdown flow as a means of detecting and evaluating leakage. Procedures 3-OSP-041.1 and 4-OSP-041.1 are the implementing procedures for RCS leak rate calculations. These procedures use input from the containment atmospheric particulate and noble gas radiation monitors in performing a Level 1 RCS Leakage Investigation in addition to input from various plant parameters that could indicate RCS leakage. Note that both the RCS visual leak rate and RCS leak rate calculation procedures (3-OSP-041.2, 4-OSP-041.2, 3-OSP-041.1 and 4-OSP-041.1) implement Boric Acid Wastage Surveillance Program document PTN-ENG-LRAM-00-0028, “Boric Acid Wastage Surveillance Program – License Renewal Basis Document.”

A review of procedures and documents that implement the boric acid monitoring program for Turkey Point, including those for aging management under the License Renewal and Subsequent License Renewal, concludes that the containment atmosphere particulate radiation monitors are credited to support identification of RCS leakage, along with other means, but they do not credit the RVHLDS monitors RAD-3/4-6458.

Based on the discussion above, the commitment revision deleting the RAD-3/4-6458 (RVHLDS) monitors from FPL's Turkey Point Licensing basis and to instead reference the containment atmosphere particulate radiation monitors, RD-3/4-11, for RCS leakage detection that could lead to the boric acid wastage, is acceptable.

The containment atmosphere particulate radiation monitors are already credited in the implementing documents for the boric acid wastage surveillance program. The commitment for use of the RVHLDS in letters L-88-239 and L-2002-061 was implemented, but the RAD-3/4-6458 monitors were used on an as needed basis whereas the containment atmosphere particulate radiation monitors provide a continuous monitoring with control room indication.

Even though the RVHLDS provided a "targeted" monitoring of the reactor vessel head leakage via the CRDM ventilation flowpath, the containment atmosphere particulate radiation monitors, RD-3/4-11, provide commensurate assurance of leak detection given the unreliability of the RVHLDS monitors RAD-3/4-6458.

Again, it is emphasized that neither FPL Letter L-88-239 or L-2002-061 considered RAD-3/4-6458 (RVHLDS) as a primary means to identify and mitigate boric acid deposits. The primary means credited are the implemented procedures and programs for inspections to monitor and to identify boric acid deposits addressing thus the concerns of NRC Generic Letter 88-05 and NRC Bulletin 2002-01. Eliminating these monitors and relying on containment atmosphere particulate radiation monitors, RD-3/4-11, is evaluated as a credited method for identifying potential RCS leakage that can result in boric acid deposits and wastage on equipment and piping.

If you have any questions or require additional information, please contact Mr. Robert Hess, Licensing Manager, at (305) 246-4112.

Sincerely,



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Turkey Point Nuclear Plant

cc: USNRC Regional Administrator, Region II
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