# TRIP REPORT

# LEVY COUNTY, SAFETY SITE VISIT

## REVIEW OF THE PRE-OPERATIONAL AND OPERATIONAL ONSITE METEOROLOGICAL MONITORING PROGRAMS

**March 19, 2010**

## Subject

Visit to Progress Energy's Levy County COL site to review the pre-operational and operational onsite meteorological monitoring programs.

## Travel Dates

November 03-07, 2008

## NRC Staff Participants

- Henry Jones, NRO/DSER/RHEB

## Applicant Staff Participants

- Paul Snead, Progress Energy
- George Howroyd, CH2M Hill

## Purpose

The purpose of the visit was to (1) become familiar with the applicants site and site selection process, plans, schedules, and initiatives, (2) observe and review the pre-operational onsite meteorological monitoring program and (3) review the prospective applicants plans for its operational onsite meteorological monitoring program.

This trip report documents the staff's safety site visit conducted at Progress Energy's Levy County, Florida COL site. The information presented in this trip report was gathered through interviews with the applicant's staff and contractors as well as a review of the applicant's system documentation and procedures.

## Activities

On Tuesday, 04 November 2008, Progress Energy provided the NRC staff with a project overview and a general site tour of the proposed Levy County COL site. The tour included extended stops at various locations across the site including the site's meteorological tower. Later in the afternoon, informal discussions were begun with the Progress Energy staff listed above. Topics included:

- general tower exposure
- instrument siting
- meteorological sensors

- data recording
- instrument surveillance
- data acquisition and reduction
- quality assurance program
- meteorological data requirements for emergency preparedness
- meteorological data submitted in support of the COL application

## Discussion

### Site Location

The Levy Nuclear Plant (LNP) is green-field site located near the geographical west central portion of Florida in the Gulf Coast region. Two units are proposed for the site.

### Pre-operational Monitoring Program

The LNP on-site meteorological measurement program began in February 2007 with the installation of a 60.4-m (198-ft.) guyed, open-latticed meteorological tower. The tower has been used to monitor meteorological parameters at two levels above ground level, and has operated continuously since it was first installed. One year of continuous and consecutive meteorological data from the on-site tower for the period from February 1, 2007, through January 31, 2008 was submitted with the COLA in the electronic format recommended in Appendix A of Regulatory Guide 1.23, Revision 1. See Progress Energy letter Serial NPD-NRC-2008-021 of 28 July 2008 (Supplemental Meteorological Data in Support of Combined License Application for Levy Nuclear Power Plant United 1 and 2 NRC Project Number 756).

### General Tower Exposure

*Regional and site topographic features* - The local terrain is relatively flat within several miles of the site with no appreciable or noticeable variation in terrain that would have a significant influence on the observed meteorological parameters. This was noted during the site visit on 04 November 2008.

*Existing and planned plant structure layout and potential release points* - The current pre-operational meteorological tower is located approximately 1.4 km (0.9 mi) WSW from the proposed main power block. Two banks of mechanical draft cooling towers are proposed for LNP 1 and LNP 2, with each bank being approximately 17.1 m (56 ft.) high, 29.6 m (97 ft.) wide, and 181.4 m (595 ft) long. The orientation of the proposed cooling towers relative to the meteorological tower is illustrated on Figure 2.7-2 of the FSAR. Refer to FSAR Figure 2.1.1-203 for orientation of the meteorological tower relative to the proposed plant layout.

*Distance and bearing to nearby ground features/obstructions to flow* - As noted during the site tour on 04 November 2008, there are no structures or ground obstructions on the proposed Levy County site or within a mile of the meteorological tower that would cause or contribute to any influence on meteorological parameters. The Gulf of Mexico is approximately 7-8 miles

west of the site and has been observed to have a diurnal influence (sea breeze effect) on wind directions which are predominantly out of the east and west.

**Instrument Siting**

*Type of Tower* - The meteorological tower is open lattice and manufactured by Valmont (See ER Section 6.4 and FSAR Section 2.3).

*Sensor orientation and distance from tower* - The meteorological tower sensors are mounted on 12 ft (wind) and 10 ft (temperature) booms which are oriented to the ENE of the tower and upwind based on the most predominate wind directions (See ER Section 6.4 and FSAR Section 2.3).

*Heat reflection characteristics of surface under tower base* – As noted during the 04 November 2008 site visit, there is a small area at the base of the tower that is covered in light colored gravel for weed control. The surrounding area is covered in natural vegetation. No unusual heat reflection or absorption surfaces are near the tower.

*Nearby sources of heat and moisture* – There are no sources of heat or moisture within at least one mile of the tower that could influence meteorological measurements on the tower.

*Nearby structures and vegetation* - As noted during the 04 November 2008 site visit, there are no structures or vegetation within the 10X obstruction criteria specified in RG 1.23, Rev 1. The tower is located in a very large clearing and there are no structures or trees that would influence the tower measurements.

**Meteorological Sensors**

*Parameters measured and sensor elevations* – This is described in detail in ER Section 6.4. It was also described in the information provided in the reading and reference area during the site audit.

*Sensor types, manufacturer and model numbers, performance characteristics* – This information was provided in the reading and reference area during the site audit. All instrumentation is industry standard and consistent with the requirements of RG 1.23, Rev 1.

**Data Recording**

*Type of recorders (digital versus analog)* - This information was provided in the reading and reference area during the site audit. The data logger is a solid state digital device, manufactured by Zeno (Model 3200).

*Location of recorders (including environmental conditions)* - The data logger (recorder) is located in a sealed NEMA enclosure that is mounted to the base of the tower. This was viewed during the site visit on 04 November 2008. The instrumentation is solid state and requires no environmental conditioning other than protection from water.

*Recorder accuracy and performance specifications* – This information was provided in the reading and reference area during the site audit. The data logger accuracy is stated by the manufacturer to be ±0.5%.

**Instrument Surveillance**

*Inspection, maintenance, and calibration activities and frequencies* – This is described in ER Section 6.4. The data logger is remotely interrogated on a daily basis and the system performance is checked for inconsistencies. Indicated maintenance and repair is performed on an as-needed basis and calibrations are performed every six months (Murray and Trettel, Inc.)

*Maintenance logs and data sheets* – Maintenance logs were provided for review during the site audit.

*Historical system problem reports* – Maintenance logs and problem reports were provided for review during the site audit.

**Data Acquisition and Reduction**

*Sampling frequencies and averaging times/algorithms* – The data logger samples the instrumentation electronically once per second and the data are stored in individual information channels as 15-minute averages, except for precipitation which is stored as 15-minute totals.

*Overall system accuracy* – System accuracy is within the requirements of NRC RG 1.123, Rev 1 as described in ER Section 6.4.

*Data review procedures (identification and handling of suspect data)* – The system is interrogated daily and evaluated for consistency (among redundant or similar systems on the tower) and also compared with regional data (Ocala municipal data system and the Crystal River Nuclear Plant meteorological monitoring system) for potential outliers. This is described in ER Section 6.4.

Data reduction process (e.g., reformatting to NRC standard formats) – The data is reformatted to meet the NRC standard format as specified in NRC RG 1.23, Rev 1. The system has operated since 01 February 2007. One full year of data was submitted with the COLA (01 February 2007 – 31 January 2008). See Progress Energy letter Serial NPD-NRC-2008-021 of 28 July 2008 (Supplemental Meteorological Data in Support of Combined License Application for Levy Nuclear Power Plant United 1 and 2 NRC Project Number 756).

**Quality Assurance Program**

The Progress Energy meteorological contractor (Murray and Trettel, Inc.) operates under a QA program.

**Additional Meteorological Data Requirements and Availability for Emergency**

**Preparedness Planning**

The system will be integrated into the Levy Nuclear Plant emergency preparedness program once the plant becomes operational.

**Period-of-Record of Onsite Meteorological Data Submitted in Support of COLA**

One year of onsite data was submitted with the COLA for the period 01 February 2007 – 31 January 2008. Data recovery meets the NRC requirements specified in RG 1.23, Rev 1.

**Operational Monitoring Program**

Per the meteorological consultant (Murray and Trettel, Inc.), the pre-operational monitoring program will continue as the operational monitoring program when the plant becomes operational.