



Illinois Power Company
Clinton Power Station
P.O. Box 678
Clinton, IL 61727
Tel 217 935-8881

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March 6, 1992

10CFR50.36

Docket No. 50-461

Domestic Control Desk
Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Special Report: Inoperability of the Meteorological Tower
Differential Air Temperature Instrumentation at Clinton
Power Station (CPS)

Dear Sir:

CPS Technical Specification 3.3.7.3, Action "a", requires that inoperabilities of meteorological monitoring instruments on channels for more than 7 days be reported to the Commission within 10 days pursuant to Technical Specification 6.9.2, SPECIAL REPORTS. From February 18, 1992 until February 25, 1992, the 10-meter to 60-meter differential air temperature instrumentation was declared inoperable. This SPECIAL REPORT is being submitted in accordance with the CPS Technical Specifications to provide information regarding the cause of the malfunction and plans for restoring the instrumentation to OPERABLE status.

Cause of Malfunction

On January 9, 1992 it was discovered that a discrepancy existed between the meteorological data provided in the CPS Updated Safety Analysis Report (USAR) and recent data reported by CPS. Specifically, the baseline site meteorological data recorded at the meteorological tower between 1972 and 1977 and documented in the USAR yielded Pasquill Stability Class frequencies significantly different than the data provided by CPS in the 1990 Annual Radiological Environmental Monitoring Report. Condition Report 1-92-01-006 was written to document this discrepancy and initiate an evaluation of the problem.

Preliminary indications were that the "A" Stability Class was predominant when solar radiation incident on the 10-meter temperature sensor was at a maximum (i.e. during sunny periods). This phenomenon has occurred even on days when atmospheric turbulence was less than what would be expected for "A" conditions. Based on the USAR, "A" Stability Class conditions should occur approximately 4.4% of the time; however,

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the 1990 CPS meteorological data indicated the "A" stability class occurred 32.4% of the time. A review of all past CPS Annual Radiological Environmental Monitoring Reports (1987-present) indicated that this condition has existed since 1987. However, the current instrumentation was installed following removal of the instrumentation previously used to obtain the CPS baseline meteorological data and it is not known if the condition existed prior to 1987. Immediate action taken as a result of the condition report included development of an interim plan for correct determination of the existing stability class utilizing alternate methods. This would ensure that appropriate protective action guidelines are utilized in the event of an accident at CPS.

Personnel who utilize atmospheric stability class data to determine offsite doses were informed of this issue and alerted to the meteorological conditions under which the atmospheric stability class determination would be questionable. Until the identified problem was corrected, these individuals were directed to verify any stability class determinations on sunny days by using an alternate method. The alternate methods are identified in Emergency Plan Implementing Procedure (EPIP) RA-01, "Manual Radiological Dose Assessment."

The initial evaluation by Engineering indicated that the 10-meter temperature probe was being affected by sunshine and thus was providing inaccurate temperature indications (i.e. too high). This in turn was providing inaccurate differential temperature values resulting in the high frequency of "A" stability class occurrence. Maintenance Work Request (MWR) D15996 was written to perform troubleshooting on the 10-meter temperature sensor to determine the cause of the incorrect differential temperature indications.

Control and Instrumentation personnel began troubleshooting on March 2, 1992 in accordance with MWR D15996. They determined there was a problem with the aspirator on the mounting arm at the 10-meter elevation of the meteorological tower. The aspirator draws air across the temperature and dewpoint sensors to provide for high heat transfer from the ambient air to the sensing element, while at the same time affording maximum protection from incoming short-wave solar radiation and outgoing long-wave radiation. The 10-meter mounting arm was removed from the meteorological tower to facilitate troubleshooting, thus making the 10-meter temperature and dewpoint sensors inoperable, as well as the differential temperature instrumentation. Measurements performed for the existing configuration indicated no airflow over the sensors. It was discovered that a ducting tube was missing from the aspirator which resulted in the observed lack of airflow over the sensors.

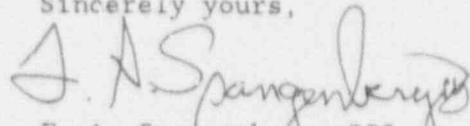
Discussions with the vendor indicated that the missing ducting tube (a rigid plastic hose on the downstream side of the fan) is important to the operation of the aspirator. The ducting tube directs air out of the unit to the discharge duct, and if the tube is missing, air may be getting lost in the output housing. The vendor provided dimensions for the tube and one was manufactured onsite and installed on March 3, 1992. After installation of the missing ducting tube, proper airflow was observed over the temperature sensors.

Plans for Restoration

On March 4, 1992, further data was obtained in accordance with MWR D15996 to verify that the problem had been corrected. At 0131 hours on March 6, 1992, the meteorological tower 10-meter temperature and differential temperature instrumentation was declared operable.

Illinois Power is currently evaluating the impact of the differential temperature instrumentation problem on the previous Annual Radiological Environmental Monitoring Reports. A determination will be made as to whether the previously reported data should be corrected or annotated. Radiation Protection will establish administrative methods to ensure that future Pasquill Stability Class frequencies are in agreement with the CPS baseline meteorological data.

Sincerely yours,



F. A. Spangenberg, III
Manager, Licensing and Safety

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cc: NRC Clinton Licensing Project Manager
NRC Resident Office
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety