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Docket No. 50-461

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

Subject: Clinton Power Station
Annual Environmental Operating Report

Dear Madam or Sir:

In accordance with Appendix B to the Clinton Power Station (CPS) Technical Specifications, Clinton Power Station's Environmental Protection Plan (EPP), AmerGen Energy Company, LLC (AmerGen) is submitting the attached Annual Environmental Operating Report. This report covers the period of January 1, 2000, through December 31, 2000.

Sincerely yours,

R J Swalgen (for)
Michael J. Pacilio
Plant Manager

RSF/krk

Attachment

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
Regional Administrator, Region III, USNRC

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Annual Environmental Operating Report

The Environmental Protection Plan (EPP) for Clinton Power Station (CPS) requires that the Annual Environmental Operating Report include:

(a) A list of EPP noncompliances and the corrective actions taken to remedy them.

(b) A list of all changes in station design or operation, tests, and experiments made in accordance with subsection 3.1 of the EPP which involved a potentially significant unreviewed environmental issue.

(c) A list of non-routine reports submitted in accordance with subsection 5.4.2 of the EPP.

(d) Any results and/or assessments for the environmental monitoring programs described in subsection 2.0 of the EPP which were submitted to the respective regulatory agencies during the annual reporting period.

The following provides AmerGen's response to each listed item for Clinton Power Station:

A. A list of EPP noncompliances and the corrective actions taken to remedy them:

1. Noncompliance:

In May 2000 a noncompliance occurred as a result of failing to collect and analyze samples required by the NPDES permit. Condition Report 2-00-06-060 was written to document the problem. The final reissued NPDES permit was received in the second week of May. It was not immediately recognized that an additional sampling requirement had been added to the Outfall 003 subsection in the Effluent Limitations and Monitoring section of the permit. The reissued permit requires that a 24-hour composite sample be analyzed for Total Dissolved Solids (TDS) weekly. TDS can be analyzed from the same sample as Total Suspended Solids (TSS), which was an existing sampling requirement in the NPDES permit. None of the TSS samples collected in May subsequent to the receipt of the reissued NPDES permit were analyzed for TDS.

Corrective Action:

As an immediate corrective action, the contract laboratory responsible for analyzing NPDES samples for Clinton Power Station was notified to start analyzing samples for TDS.

The following corrective actions were subsequently performed:

1. The NPDES Program Administrator was counseled by his supervisor on his need to be aware of new NPDES permit requirements.

2. A Preventive Maintenance (PM) item was created to remind the NPDES Program Administrator to be aware of the need to implement changes in a reissued NPDES permit immediately upon the effective date of the permit or when the permit is received, whichever is later. This PM is on a five year frequency since the term of each NPDES permit issuance is five years. The PM is scheduled to appear 30 days before the expiration date of the current permit.

2. Noncompliance:

In May, 2000, a noncompliance occurred as a result of two large peaks which were found recorded on the Discharge Flume Chlorine Recorder chart paper for 5/18/00. Condition Report 2-00-05-091 was written to document the problem. No explanation for these peaks has been determined. The Discharge Flume Chlorine Recorder records the output of the Discharge Flume Chlorine Analyzer, which continuously monitors the Discharge Flume (Outfall 002) water for Total Residual Chlorine (TRC) concentration, in accordance with the requirements of the NPDES permit. The Outfall 002 permit limit for TRC is 0.2 mg/l. The first peak started at 0000 and lasted until ~0135. It exceeded the range of the associated Chlorine Analyzer (1.0 mg/l TRC) for ~20 minutes starting at ~0025. The second peak started at 0600 and lasted until 1330. It exceeded the range of the Chlorine Analyzer from ~0820 until 1130 (3 hours 10 minutes). Neither of the peaks was consistent with Circulating Water (CW) system chlorination times. On 5/17/00, CW chlorination occurred from 0700 to 0855. A peak associated with this chlorination should have started at approximately 1254 the same day, based on 3 CW and 1 Plant Service Water (WS) system pumps operating. However, no peak was seen at this time (a peak would normally not be seen, due to the operation of the Flume Dechlorination facility during CW chlorination). On 5/18/00, CW chlorination occurred from 0815 to 1010, during the time that the second large peak was being recorded. A peak from this chlorination would have been expected to start at approximately 1526 the same day, based on 2 CW and 1 WS pumps operating (CW Pump A had been secured at 0520). Again, a peak was not seen. In addition, WS chlorination was shutdown from 5/17/00 at 1120 to 5/18/00 at 1930, so it is unlikely that chlorine could have been injected from the WS chlorination system.

Sodium bisulfite is injected at the head of the Discharge Flume as a de-chlorinating agent. It starts injecting 2 minutes before the start of CW chlorination and continues 20 minutes past the end of CW chlorination. Sodium bisulfite is not injected when only the WS system is being chlorinated, due to the large (approximately 14 to 1) dilution of WS upon mixing with CW in the Seal Well. Chlorine is injected in the form of sodium hypochlorite (bleach), chemical formula NaOCl.

The time lag between the injection of chlorine into the CW system at the Screenhouse and its arrival at the end of the Discharge Flume is based on the number of CW pumps running plus the number of WS pumps running and is known fairly accurately. Based on the lag time for 3 CW and 1 WS pumps operating (5 hours, 54 minutes), there is no correlation between the time of CW chlorination on 5/17/00 and the times of the two TRC peaks on 5/18/00 (refer to timeline above). CW chlorination on 5/18/00 actually occurred during the time the second large TRC peak was being recorded. WS chlorination was shut down during the time when an injection of bleach would have reached the end of the Discharge Flume based on lag time, so WS chlorination is also eliminated from consideration as a source of TRC.

Another possibility that was considered was that a spill of bleach had occurred. The Supervisory Control and Data Acquisition (SCADA) system for the Raw Water Treatment system logs various parameters every 10 minutes in a file that can be viewed using Microsoft Excel. Among the parameters logged is NaOCl Bulk Storage Tank level, NaOCl Day Tank A level, Outfall/Flume Sodium Bisulfite Tank level, CW NaOCl Pumps A and B running indication, WS NaOCl Pump running indication, Outfall/Flume Sodium Bisulfite Pumps A and B running indication, and NaOCl Transfer indication (when transferring bleach from the Bulk Tank to the Day Tanks). The above parameters were reviewed for the period 5/16/00 through 5/19/00 and all indications were consistent with normal evolutions (e.g., CW chlorinations, NaOCl transfers, bulk deliveries, etc.).

Calculations were performed to estimate the amount of bleach that would result in the peaks recorded, as extrapolated. The first calculation, that did not take into account the chlorine demand of the incoming lake water (i. e., the chlorine which is consumed by reaction with constituents in the water), estimated a total of 3,022 gallons of NaOCl would have had to be spilled or injected into water that eventually ended up in the Discharge Flume. The second calculation, which assumed a lake water chlorine demand of 2.5 ppm, estimated a total of 10,517 gallons of NaOCl would have had to be spilled or injected. Neither calculation took into account other chlorine demands or losses, such as the chlorine demands of the WS and CW piping and the Discharge Flume, and the chlorine lost to evaporation and reaction with sunlight, which if known would have significantly increased the total amount of bleach that would have had to be lost. A loss of 3,022 gallons of NaOCl would involve a decrease of ~60% of NaOCl Day Tank level (both Day Tanks

total 5000 gallons of NaOCl) and a decrease of ~20% of NaOCl Bulk Tank level (Bulk Tank capacity is 15,000 gallons), both very noticeable decreases that were, in fact, not seen. 10,517 gallons represents an amount which is almost the entire inventory of bleach at its highest on 5/17/00 (NaOCl Bulk Tank level - 50%, and NaOCl Day Tanks level - 83%, for a total of 11,650 gallons). The loss of either amount is not credible. Also, either amount of NaOCl calculated above which found its way into the Sewage Treatment Plant would certainly have killed the microorganisms in the activated sludge in the aeration tanks, but no such effect was seen. The Discharge Flume was inspected at its head and from the DeWitt Road down to the end, and no evidence of fish kills or the detrimental effects on other aquatic life which would have been consistent with a massive release of bleach were seen. In addition, no evidence of chemical dumping was seen at the DeWitt Road bridge over the Discharge Flume.

At this point the investigation turned to the possibility of an instrument anomaly (either malfunction or caused by external influences). The Wallace & Tiernan MICRO/2000 Residual Analyzer operates on the amperometric principle, sensing the current produced by the iodine resulting from the reaction of the chlorine species present with potassium iodide. The output of the analyzer is sent to a chart recorder and also to a datalogger. The range of the analyzer is 0 - 1.0 mg/l TRC. A calibration check was satisfactorily performed on 5/19/00. A full calibration had been previously performed on 5/15/00. In neither case was there any indication that the analyzer was acting abnormally. In order to check if there was a problem with the recorder, the contents of the datalogger were examined and found to be identical with the recorder chart. This corroborates that the chart paper represents the actual output of the analyzer. The possibility that the sample flow into the analyzer cell (where the amperometric probe is mounted) was interrupted was considered, either by blockage of the suction line under the surface of the flume, or by stoppage of the sample pump. The sample pump does not automatically restart following an interruption of power to the Discharge Flume Monitoring Building. After power is restored, the pumps in the analyzer continue to pump chemicals (pH 4 buffer and potassium iodide) into the cell, which results in a very slow and gradual increase in the output signal. A blockage of the suction line that interrupted flow to the cell would produce the same effect. However, the nature of the two peaks (very sharp increase and decrease on the first peak and fairly sharp increase and decrease on the second one), suggests that there was flow through the cell during the entire time the peaks were being recorded. At no time during the period 5/16/00 through 5/19/00 was the sample pump found to be not pumping.

According to the analyzer manufacturer, the analyzer could have a positive response due to one of the following reasons: manganese, hexavalent chromium or a stray electrical current in the water. Manganese and chromium are not present in significant quantities in the WS and CW materials of construction and corrosion product/deposit layers. Materials containing chromium compounds are available in small amounts from Stores, but probably not enough to have caused the large peaks seen. An electrical current would have had to come from the sample pump motor. Since the pump is a peristaltic pump, i.e., it operates by progressively squeezing a natural rubber hose and the water only comes in contact with the interior of the hose, there is no way for an electrical current to be transmitted from the motor to the sample water.

Corrective Action:

As immediate corrective action, the flume dechlorination facility was inspected to determine if it was operating normally and a calibration check was performed on the Flume Chlorine Analyzer.

Subsequently, a vendor performed a thorough check of the Flume Chlorine Analyzer and determined it was operating properly.

3. Noncompliance:

In August 2000 a noncompliance occurred as a result of a loss of monitoring data for Outfall 002. Condition Report 2-00-09-024 was written to document the problem. The NPDES permit for Clinton Power Station requires that monitoring data for all the NPDES outfalls be included in the monthly Discharge Monitoring Report. The NPDES permit requires that one chlorination event per week be monitored for Total Residual Chlorine (TRC) continuously at Outfall 002, which is at the end of the Discharge Flume. The TRC data are normally recorded using both a chart recorder and a datalogger. The datalogger electronically stores the data on a data card, which is removed after the end of each month. The data are downloaded to a PC using a card reader. The recorder became inoperable on 7/15/00, leaving the datalogger as the sole means of capturing the TRC data. The data card was removed as usual on 9/1/00. After several unsuccessful attempts were made to download the data, the data card was sent to the manufacturer of the datalogger to see if they could recover the data. They also were unable to recover any data. The data card had been in use since April 1999 and had not experienced any previous problems. Also, each data card is tested prior to being placed in the datalogger and this data card was tested satisfactorily. The recorder is obsolete and is no longer supported by the recorder manufacturer. Since parts could not be obtained for the TRC recorder, a new recorder was ordered. On 9/8/00 the data card that replaced the original data card was removed and data were successfully downloaded from that data card, indicating that the original data card was defective. It is believed that since the Discharge Flume

dechlorination system was in operation during all of August, there were no actual exceedances of the Outfall 002 TRC limit. This conclusion is supported by the July data, which show no TRC results greater than detectable TRC concentration, while the maximum chlorine injection rate for August was slightly below that of July.

Corrective Action:

The delivery and installation of the new recorder was expedited and two replacement data cards were ordered and received.

4. Noncompliance:

In September 2000 a noncompliance occurred as a result of a high Oil & Grease (O&G) result for Outfall 005. Condition Report 2-00-10-008 was written to document the problem. On September 18, 2000, a sample was collected from the discharge of Outfall 005 (Diesel Generator Oil Water Separator) and analyzed for Oil & Grease per the station's NPDES Permit. The analysis result was 22 mg/l O&G. The daily maximum permit limit for this parameter is 20 mg/l. The Diesel Generator Oil Water Separator collects drainage from the Diesel Generator Sumps, Diesel Generator Building Floor Drains, the Diesel Fuel unloading area south of the Diesel Generator Building and the Raw Water Treatment System SX Egress South Pit. No cause could be found for the high O&G result.

Corrective Action:

Although not strictly a corrective action, Clinton Power Station implemented an enhancement to the Spill Prevention Control and Countermeasures Plan inspections whereby an absorbent pillow in the outlet chambers of both Oil Water Separators is replaced during the monthly inspection. Since the time of this noncompliance, there have been no repeat problems.

B. A list of all changes in station design or operation, tests, and experiments made in accordance with subsection 3.1 of the EPP which involved a potentially significant unreviewed environmental issue:

There were no changes in station design or operation, tests, and experiments made in accordance with subsection 3.1 of the EPP which involved a potentially significant unreviewed environmental issue.

C. A list of non-routine reports submitted in accordance with subsection 5.4.2 of the EPP:

There were no non-routine reports submitted in accordance with subsection 5.4.2 of the EPP.

D. Any results and/or assessments for the environmental monitoring programs described in subsection 2.0 of the EPP which were submitted to the respective regulatory agencies during the annual reporting period:

There were no results and/or assessments submitted to regulatory agencies regarding environmental monitoring programs described in subsection 2.0.

E. This additional section provides the description of the new Sewage Treatment Facility (Outfall A02) as promised in the 1999 Annual Environmental Operating Report.

In October 2000 the previous Sewage Treatment Facility was superseded by a new facility that utilizes waste treatment lagoons to treat sewage from Clinton Power Station. The new facility is designed to treat the loading from 1000 personnel on the Clinton Power Station site under normal conditions, and up to a temporary peak of 2600 workers, such as would occur during an outage. The new facility consists of an Influent Pump Station, two Aerated Lagoons, an Effluent Pump Station, two tertiary Traveling Bridge Filters and associated piping and metering equipment.

The incoming waste from the Clinton Power Station site flows into the Influent Pump Station. The Influent Pump Station consists of two redundant Influent Feed Pumps, each rated at 125 gpm, and level sensing probes which provide inputs to the Supervisory Control and Data Acquisition (SCADA) system to control pump operation.

The waste is then pumped to two Aerated Lagoons, in series. The waste first flows into the larger of the two lagoons, which is known as the Primary Lagoon. The Primary Lagoon contains a total volume of 380,000 cubic feet and is provided with four floating Aerators. The majority of the processing occurs in the Primary Lagoon. The waste flows from the Primary Lagoon to the Secondary Lagoon for final processing. The Secondary Lagoon contains a total volume of 160,000 cubic feet and is provided with two floating Aerators.

When the level in the lagoons reaches a level at which discharge of the waste may occur, the waste is admitted to the Effluent Pump Station. Two Filter Feed Pumps, each rated at 100 gpm, are located in the Effluent Pump Station. Level sensing probes are also provided for operation of the Filter Feed Pumps by the SCADA system.

When a discharge is taking place, one or both Filter Feed Pumps (depending on flow) pump the waste through one or both of the Traveling Bridge Filters, which are sand filters, to reduce the Total Suspended Solids concentration of the waste. Each Traveling Bridge Filter is rated at 100 gpm.

After flowing through the Traveling Bridge Filters, the waste flows through a metering manhole, where the flow rate is measured and the sample point for the NPDES permit required compliance samples is located. The waste then flows into the Discharge Flume (Outfall 002).