

**FEDERAL ENERGY REGULATORY COMMISSION**  
**Washington D.C. 20426**

**OFFICE OF ENERGY PROJECTS**

Project No. 2332-054, 066, 067 and 070—  
North and South Carolina  
Gaston Shoals Hydroelectric Project  
Duke Energy Carolinas, LLC

**July 23, 2015**

Mr. Jeffrey G. Lineberger, PE  
Director, Water Strategy and Hydro Licensing  
EC12Y/P.O. Box 1006  
Charlotte, NC 28202

Subject: March and April 2015 monthly reservoir elevation progress reports and April 22, 2015 notification of deviations from minimum flow requirement

Dear Mr. Lineberger:

This acknowledges receipt of your March 31 and April 30, 2015 monthly progress reports for maintaining the project reservoir elevation at the Gaston Shoals Hydroelectric Project (FERC No. 2332).<sup>1</sup> The monthly progress reports are required by the Commission's May 23, 2014 letter to you following a series of events that have prevented you from consistently maintaining the normal minimum reservoir elevations required by Article 401 of the project license.<sup>2</sup> Both progress reports also include notification of deviations from Articles 401 and 403 of the project license. This letter also acknowledges a deviation report, filed on April 22, 2015, pursuant to Article 403 of the project license.

**March 31, 2015 Progress Report**

According to your March 31 monthly progress report, you maintained the normal minimum elevation in the project reservoir for the entire reporting period of February 24-March 31. With regard to maintaining the required minimum flow, you stated that

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<sup>1</sup> Order Issuing License. 60 FERC ¶ 61,281 (issued September 25, 1992).

<sup>2</sup> The Commission's May 23, 2014 letter describes these events in detail.

generating Unit 4 tripped twice on March 27, resulting in two 30-minute deviations from the seasonal normal minimum flow requirement (i.e. minimum flow requirement) of 868 cubic feet per second (cfs). In the first instance, a gate control problem caused the unit to trip offline at 7:28 EST. In response to the trip, you immediately started Unit 5, which had been shut down due to low streamflow rates. In the process of doing this, the streamflow dropped below the minimum flow requirement during two 15-minute intervals, as measured by the U.S. Geological Survey (USGS) stream gage located downstream of the dam. The lower of the two readings, 799 cfs, was eight percent below the minimum flow requirement. Later the same day at 20:07 EST, Unit 4 tripped again under the same circumstances. You brought Unit 5 online within seven minutes of the trip; however, despite doing this, you still deviated from the minimum flow requirement for a 30-minute period. The lowest recorded flow during this time was 844 cfs, which is less than three percent below the minimum flow requirement. You notified the U.S. Fish and Wildlife Service (FWS) and the South Carolina Department of National Resources (South Carolina DNR) via electronic mail following the incidents; however, neither agency provided comments. You concluded that there were no adverse environmental impacts as a result of the deviations.

According to your March 31 letter, you suspect that gate control problems were the cause of the two 30-minute deviations from the minimum flow requirement. Your letter does not include any details about the gate control problems; therefore, we are requesting that you provide more detail about the problem, as well as what actions you have taken to prevent this problem from re-occurring in the future. In order for us to complete our review of your compliance with article 403, please describe specifically what you meant by gate control problems and the short and long term correction measures you implemented. Please provide this information in your next monthly progress report to the Commission.

#### **April 22, 2015 Deviation Report**

Your April 22, 2015 report states that you deviated from the minimum flow requirement in two instances on April 13, 2015. In both cases, Unit 4 was operating during low-flow conditions in the Broad River, as indicated by the upstream USGS gage. You state that under low-flow conditions, Unit 4 is not well-suited to make continuous adjustments in generating unit output to maintain the required minimum flow while simultaneously providing the required reservoir level defined in Article 401. During part of the low-flow period on April 13, Unit 4 was generating at such an output that you were able to provide slightly over the 868 cfs requirement; however at 18:00 EST and 19:30 EST, the flow dropped to 862 cfs, or 0.7 percent below the minimum flow requirement. Upon becoming aware of the deviation, you intermittently ran Unit 5 starting at 20:00 EST and continued running Unit 4, which brought you back into compliance with the

minimum flow requirement. You notified the FWS and the South Carolina DNR via electronic mail following the incident and neither agency provided comments. You concluded that there no adverse environmental impacts occurred as a result of the deviations.

Upon review of the available information, we conclude that the deviations from the minimum flow requirements on April 13 occurred as a result of low flows and operational constraints of Unit 4, and will not be considered a violation of Article 403. Once Unit 6 is operable, the potential for similar incidents should be considerably reduced. These incidents will be made a part of the compliance history for the project and taken into consideration regarding any future similar events.

### **April 30, 2015 Progress Report**

According to your April 30 monthly progress report, you maintained the minimum flow requirement for the entire reporting period of April 1 to April 30. With regard to maintaining the required reservoir elevation, the project remained in compliance the with elevation specified in Article 401 until April 22, when the hydraulic capacity of Units 4 and 5 were overwhelmed due to heavy precipitation in the Broad River watershed. In an attempt to relieve the stress on Units 4 and 5, discourage pond level rise and prevent damage to, or loss of, dam flashing, you opened a total of four spillway gates at the middle dam between April 16 and 19. As of the date of the report, April 30, the reservoir levels remained low and will remain that way until a drawdown is facilitated to close the four open spillway gates. Given the typical rates of inflow to the reservoir, you expect the drawdown to 95 feet to take place the week of May 4. No adverse environmental effects were observed as a result of the deviation.

You notified the FWS and South Carolina DNR of the incident and the need for a future drawdown on April 22. In the same letter, you committed to keeping the agencies apprised of your progress towards completing the drawdown. Neither agency provided comments.

Upon completing our review of the available information, we have concluded that the deviation from the required reservoir level will not be considered a violation of Article 401 of your license. The incident occurred due to heavy rainfall and high flows, and was further exacerbated by the operational constraints of Units 4 and 5. Further, your decision to open four spillway gates was done in an attempt to prevent damage to the dam's flashing. You are working quickly to bring the project back into compliance with Article 401. You notified the appropriate resource agencies of the deviation and continue to keep them apprised of the status of reservoir elevation in relation to the

necessary drawdown. These incidents will be made a part of the compliance history for the project and taken into consideration regarding any future similar events.

### **Status of Unit 6**

Both your March and April progress reports contained an update on the status of Unit 6. Currently, the estimated return to service date is December 31, 2015. Once operable, Unit 6 will operate over a broad performance curve and should provide a significant increase in generation flow control at the project. This should dramatically improve your ability to effectively manage variable inflow levels over time.

### **Environmental Inspection Protocol Following Flow and Reservoir Deviations**

In response to our March 11, 2015 request to provide additional information regarding your method of determining whether impacts to the environment have occurred as a result of minimum flow or reservoir deviations, you provided a tailwater inspection protocol, developed in consultation with the FWS and South Carolina DNR in your April 30 filing. The protocol outlines steps you will take to determine whether environmental impacts have occurred during periods when you deviate 10 percent or more from the required minimum flow requirement. The protocol, if implemented as described in your filing, should adequately determine whether environmental impacts have occurred.

Although your inspection protocol is sufficient, it is unclear how you are able to determine whether any environmental impacts occur as a result of minimum flow deviations that are less than 10 percent of the minimum flow requirement. For example, your March 31 and April 22 reports summarized deviations from the minimum flow requirement that were less than 10 percent, and in them, you concluded that no adverse environmental impacts occurred. However, since your inspection protocol does not apply to these circumstances, we do not know how you came to these conclusions. Therefore, please explain your method for determining whether environmental impacts occur during minimum flow deviations of less than 10 percent of the flow requirement. Please include this information in your next monthly report.

### **Summary of Follow-Up Actions**

In summary, we have requested that you provide additional information regarding two aspects of your March 31 and April 30 reports. First, we ask that you provide additional details regarding the gate controls referenced in your March 31 report in your next monthly report. Second, we ask that you explain your method of determining whether environmental impacts occur during minimum flow deviations of less than 10 percent of the flow requirement in your next monthly report.

Thank you for your monthly reports and cooperation. We appreciate you providing the requested information. If you have any questions regarding this letter, please contact Joy Kurtz at (202) 502-6760 or via email at [joy.kurtz@ferc.gov](mailto:joy.kurtz@ferc.gov).

Sincerely,

Thomas J. LoVullo  
Branch Chief, Aquatic Resources Branch  
Division of Hydropower Administration  
and Compliance