98 FERC ¶ 62, 105
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Central Vermont Public Service Corporation) Project No. 2731-023

ORDER MODIFYING AND APPROVING PROJECT OPERATIONS PLAN UNDER ARTICLE 404

(Issued February 13, 2002)

The Central Vermont Public Service Corporation (licensee) for the Weybridge Project filed with the Commission on November 5, 2001, its project operations plan under article 404 of the project license.[1] The Weybridge Project is located on Otter Creek in the towns of Weybridge and New Haven and in the county of Addison, Vermont.

Article 404 requires the licensee to prepare, after consultation with the U.S. Fish and Wildlife Service (FWS), the U.S. Geological Survey (USGS), and the Vermont Agency of Natural Resources (VANR), a project operations plan to monitor headpond

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1 Order Issuing New License (Major Project), August 1, 2001, 96 FERC ¶ 62, 097.

elevations and the minimum flows required by articles 401,[2] 402,[3] and 403.[4] The plan shall include: (1) a schedule for installing all flow and elevation measuring devices; (2) the planned locations of the flow and elevation measuring devices; (3) specific measures that would ensure that the monitoring system would operate under all conditions (including loss of external electric power to the project); (4) the design of the devices, including any pertinent hydraulic calculations, technical specifications of proposed instrumentation, erosion and sediment control measures, as appropriate, and design drawings of the system; and (5) the method of data collection, and provisions for providing data to the regulatory agencies in a timely manner. The licensee is to include in the filing comments and recommendations from the resource agencies on the proposed plan, and specific descriptions of how the agencies' comments are accommodated by the plan. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on site-specific information. The Commission reserved the right to require changes to the plan. No ground disturbing or land-clearing activities for

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2 Article 401 requires the licensee to release into the bypassed reach a continuous minimum flow of 125 cfs through an existing taintor gate, with a provision that the licensee will release a continuous minimum flow of 250 cfs for walleye spawning during April and May after the VANR notifies the licensee that walleye have been introduced into this reach of Otter Creek. The licensee is required to release 250 cfs during periods of project shutdown, ensuring that 125 cfs is passed into both the east and west channels around Wyman Island.

3 Article 402 requires the licensee to file for Commission approval, a plan for construction of a diversion structure at the downstream end of Rock Island. The structure is to: (1) distribute flows with 125 cfs to the east and west channels around Wyman Island during non-generation periods, and 125 cfs to the west channel during generation periods; (2) be permanent and low maintenance; (3) allow for fish movement; (4) have the ability to adjust flow distributions; (5) not create a safety hazard; (6) not result in unplanned channel or bank erosion; and (7) blend in with the surrounding environment as much as possible.

4 Article 403 imposes operational constraints. Peaking under normal operations is limited to no greater than a 4.5:1 ratio between maximum and minimum flow in a 24-hour period. To enhance fish spawning opportunities, no reservoir drawdowns are permitted between April 1 and June 15, and no 4-foot drawdowns are to occur (emergencies excepted) between October 15 and April 1. Reservoir drawdowns are to be restricted to 2 feet or less during normal operations to enhance wetland development and protect other shoreline aquatic resources, with drawdowns greater than 2 feet (for annual maintenance) to be scheduled in consultation with the agencies, during a biologically non-critical time period. Existing downramping and upramping procedures are to be maintained when reducing flows to, or increasing flows above, the minimum flow of 250 cfs.

installation and use of monitoring devices shall begin until the licensee is notified the plan is approved.

LICENSEE'S PROPOSED OPERATIONS PLAN

The licensee proposed to release minimum flows through a motorized taintor gate in the west spillway. This gate can be opened at the site or remotely, from the licensee's dispatch office in Rutland, Vermont. Further, the gate can be manually operated should the need arise during a power failure. The licensee proposed to install a programable logic controller (PLC) at the project powerhouse. The PLC would monitor the headpond elevation, read the gate's position, and note the turbine operating status. The PLC would signal to adjust the gate position to maintain the required flow releases, based on headpond elevation and turbine status, and record these measurements every 15 minutes. Calibration and maintenance of the system would be addressed after a system has been selected.[5] The licensee's filed plan included discharge curves for the taintor gate opening at various headpond elevations, and technical specifications of the headpond level sensor, gate position indicator, and mechanical gate operator. The licensee plans to field calibrate the gate discharge curves within the coming year. The gate position and headpond elevation records stored in the PLC would document compliance with the article 401 minimum flow requirement.

Article 402 requires the licensee to submit a plan for a diversion structure to be placed downstream from the project's release point to redistribute flow releases. Because the design of this structure has not been finalized, the licensee's monitoring plans to validate its performance are still preliminary. The licensee plans to install a staff gauge in the diversion structure to monitor flows released under the article 401 requirements. This gauge would be observed three times weekly (Monday, Wednesday, and Friday) initially to verify that 125 cubic feet per second (cfs) is discharged into the west channel at all times and that sufficient water flows over the diversion during period of non-generation, in compliance with the minimum flow requirements. This monitoring would also focus on checking the diversion structure and adjacent channel for debris, particularly after high spring flows.

The diversion structure would be initially assessed using standard open channel flow measurement techniques in the lower west channel at Wyman Island. This

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5 In the licensee's November 2, 2001 e-mail response to agencies' comments, it stated necessary maintenance and calibration of the PLC system with the headpond level sensor and the gate position indicator would be determined and undertaken when a PLC system has been selected and installed.

measurement would be related to the gauge at the diversion structure, to ensure that at least 125 cfs flows in the west channel during periods of non-generation when 250 cfs is released from the taintor gate. Because of the potential for annual shifting of gravel in the original opening to the west channel, the licensee proposed to measure west channel flows annually to ensure that flows are evenly distributed. These annual measurements would be performed during the first five years that the diversion structure is in place. The annual flow measurement would take place in the summer after high spring flows have subsided, when minimum flows can be consistently provided for several hours without generation. The licensee would make adjustments to the diversion structure or the channel opening as needed to assure that the 250 cfs release is evenly distributed, 125 cfs into each channel. The licensee would submit an annual report on the performance of the diversion structure to the VANR as required by the water quality certificate. Following five years of operation, the licensee and the VANR would meet to discuss the functioning of the diversion structure.

The licensee proposed to incorporate openings for fish movement into the diversion structure. Flow and movement through these openings would occur at both the 125 cfs and 250 cfs flows. The licensee does not expect water flow through these openings to reduce the flow in the west channel below 125 cfs, because some amount of flow enters the west channel from its original opening during generation.

The licensee stated it has already implemented operation protocols to comply with the peaking, drawdown, and ramping limits of article 403. The licensee would program the PLC to allow a maximum of 1000 cfs generation flow within 24 hours of a project shutdown,[6] in compliance with the flow change limits of article 403. Project operators will maintain this requirement during any periods of manual operation.

The licensee would operate the project in a run-of-river (ROR) mode from April 1 to June 15, maintaining the headpond surface at the full pool elevation of 174.3 feet, within plus or minus one inch. Headpond elevation would be assessed with the headpond level sensor and maintained by programming of the PLC. This will eliminate drawdowns in this time period, as required by article 403.

The full pool headpond elevation is 174.3 feet. The normal minimum operating elevation would be 172.3 feet. The PLC would track the headpond elevation and change the generation flow to keep the headpond within the specified limits.

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6 The generation flow of 1000 cfs plus the 125 cfs minimum bypass flow equals 1125 cfs. In a ratio to the non-generation flow of 250 cfs, this gives the 4.5:1 ratio between maximum and minimum flows in a 24-hour period.

The licensee stated it would not schedule maintenance drawdowns without consulting the VANR. To the extent possible, maintenance drawdowns would be scheduled to occur during cloudy or overcast conditions or early in the day, and would be of limited duration. During periods of low flow, up to 10 percent of inflow would be used to refill the reservoir, as specified in the water quality certificate. The licensee noted[7] that, at other times, inflow in excess of the required minimum flow could be used to refill the reservoir.

The licensee proposed to maintain the existing ramping procedures as required by article 403. For downramping, generation flow would be reduced to the minimum (450 cfs) at the end of any generation period, and the taintor gate opened from its minimum release position (providing 125 cfs) to about 18 inches (adjusted for headpond elevation as necessary) to pass 434 cfs as generation ceases. The gate opening would then be reduced over a 30-minute period to release the continuous minimum flow of 250 cfs required for non-generation periods, providing a smooth transition from generation to spill flow. For upramping, the licensee would reduce the taintor gate flow down to 125 cfs over a 20-minute period while initiating generation at the minimum possible flow of 450 cfs.

The licensee would demonstrate operational compliance with the article 403 peaking, drawdown, and ramping requirements by maintaining the PLC records of headpond elevation, gate opening, and generation. This data would be submitted to the VANR on a quarterly basis initially, and may be submitted on an extended schedule upon future consultation with VANR.

The licensee proposed to calculate inflow daily by calculating the project's hydraulic discharges. Turbine discharge would be determined by using the turbine's rating curve (included in the filed plan). Taintor gate discharge would be calculated from the recorded headpond elevations and gate openings using the gate discharge equation. Spillway discharge will be estimated with the standard weir equation when the hinged and inflatable flashboard sections are in their full height position. Spillway discharge will be estimated for periods when the hinged flashboards are tripped or the inflatable section is partially deflated. These periods are typically times of high river flows exceeding the project's capacity, when the project would be operated in a ROR mode, with outflow matching inflow.

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7 This observation was included in the licensee's November 2, 2001 e-mail response to agencies' comments.

The licensee would compare its calculated inflow values with the combined inflow recorded at the USGS gauges on Otter Creek at Middlebury, and on the New Haven River at Brooksville, as requested by the VANR. Generation, spill, and headpond elevation data would allow the licensee to calculate daily inflow and outflow, and account for storage in the reservoir.[8] Calculated inflow data would be submitted to the VANR on a quarterly basis initially, and may be submitted on an extended schedule upon future consultation with VANR.

Project operators check the Weybridge Project daily during the week, and would visually assess the condition of the diversion structure and the flow distribution. To ensure compliance with the minimum flow requirements, if the project trips off line with the taintor gate releasing 125 cfs, either the taintor gate opening would be manually adjusted to increase the flow to 250 cfs or the rubber dam would be deflated, to provide the additional 125 cfs. Rubber dam deflation was judged to be the quickest, most reliable method to provide the additional flow. The licensee proposed to program the PLC to partially deflate the rubber dam when the project trips off line. The PLC would be attached to an uninterrupted power supply.

During low flow conditions of less than 250 cfs, the licensee proposed to pass inflow over the east and west spillways[9] to improve downstream water quality. The east and west spillways are of approximately the same length,[10] therefore, spill flow will be divided with approximately half to each side of the spillway and subsequently to each side of Wyman Island.

The licensee included in its plan a projected time line for implementing the requirements of articles 401, 402, 403, and 404. The licensee noted that some items were dependent on installation of the PLC, contingent upon Commission approval of the filed plan, and tentatively planned for installation in June 2002. Items related to the diversion structure are contingent on preparation and approval of the final design. The projected

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8 As noted in the licensee's November 2, 2001 e-mail response to agencies' comments, at the 2-foot drawdown level, the reservoir has a storage capacity of approximately 115 acre-feet.

9 The project spillway is divided into east and west sections because of a mid-river island at the location of the project dam.

10 East spillway is 110 feet, and west spillway is 116 feet. The east spillway accounts for 48.7 percent of the length, and west spillway for 51.3 percent; spill flow will be proportion to the length.

time line concludes with completion of the diversion structure construction and initial field calibration in October 2002.

RESOURCE AGENCIES' COMMENTS

The licensee included record of an October 11, 2001 conference telephone call with representatives of VANR.[11] The licensee's filed plan incorporated the VANR's comments, except the recommendation to establish survey points to monitor debris buildup and changing hydraulics. The licensee proposed to check the diversion structure and adjacent channel three times weekly to ensure those areas are free of debris, particularly after high spring flows. Because of the potential for annual shifting of gravel in the original opening to the west channel, the licensee proposed to measure west channel flows annually to ensure that flows are evenly distributed. The licensee's proposal did not include establishing a benchmark and set of specific survey points to quantitatively assess the changes that may occur in relation to the diversion structure over time. Copies of November 2, 2001 e-mail consultation with the VANR and the FWS, subsequent to the conference call, were included in the filing.

The USGS did not comment on the licensee's proposed plan.

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11 The USGS and the FWS were invited to participate in the conference call but did not.

DISCUSSION AND CONCLUSIONS

The licensee's plan and schedule generally meets the requirements of article 404. However, the filed plan and schedule did not adequately address the requirement to monitor the flows created by the diversion structure required under article 402, to assure that they meet the minimum flow requirements of article 401. The licensee's filed plan included a schedule for implementing the requirements of articles 401, 402, 403, and 404. According to the proposed schedule, the licensee would file the diversion structure design for Commission approval at the end of January 2002, with completion of construction and field calibration of the structure to take place in October 2002. However, a simple field calibration may not be adequate to demonstrate that the diversion structure, as constructed, provides the minimum flows required under article 401. The licensee should perform flow measurements in an organized and planned manner, to document the functioning of the diversion structure across the range of probable flow conditions.

After consultation with the USGS, the FWS, and the VANR, the licensee should prepare a plan to perform flow measurements documenting and demonstrating that the diversion structure designed and constructed under article 402 partitions and directs the flows as required by article 401. The licensee should file, for Commission approval, by June 30, 2002, a plan to document that the diversion structure functions as necessary to meet the flow requirements of article 401. The licensee should include in the filing comments and recommendations from the agencies on the proposed plan. The licensee must allow a minimum of 30 days for the agencies to comment on the proposed plan. Based on the results of the flow measurements performed under the plan, the Commission should reserve the right to require changes to the diversion structure to improve its performance to assure that the minimum flow requirements of article 401 are met under all flow conditions.

Because of the potential for annual shifting of gravel in the original opening to the west channel, the licensee should establish a benchmark and set of specific survey points to quantitatively assess the changes that may occur in relation to the diversion structure over time. This will allow the licensee to have a better grasp of the channel configuration and flows. The licensee should include documentation of the benchmark and survey points in its plan to document function of the diversion structure, to be filed with the Commission on June 30, 2002.

The licensee's filed plan did not include provisions for providing data to the consulted agencies in a timely manner, as required by article 404. The licensee should provide to the FWS, the USGS, and the VANR its project operations data within 30 days of an agency's request for the information.

If the minimum flow release deviates from the requirements of article 401 or the project deviates from the operational constraints of article 403, the licensee should file a report with the Commission within 30 days of the incident. The report should, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident.

With the modifications discussed above, the licensee's filed plan should meet the requirements of article 404, and assure that the licensee operates the Weybridge Project in compliance with the operating requirements of articles 401, 402, and 403. The plan, with the discussed modification should, therefore, be approved.

The Director Orders:

(A) The licensee's project operations plan, filed under article 404 on November 5, 2001, as modified in paragraphs (B) through (E), is approved.

(B) After consultation with the U.S. Geological Survey, the U.S. Fish and Wildlife Service, and the Vermont Agency of Natural Resources, the licensee shall prepare a plan to perform flow measurements documenting and demonstrating that the diversion structure designed and constructed under article 402 partitions and directs the flows as required by article 401. The licensee shall file, for Commission approval, by June 30, 2002, a plan to document that the diversion structure functions as necessary to meet the flow requirements of article 401. The licensee shall include in the filing comments and recommendations from the agencies on the proposed plan. The licensee must allow a minimum of 30 days for the agencies to comment on the proposed plan. Based on the results of the flow measurements performed under the plan, the Commission reserves the right to require changes to the diversion structure to improve its performance to assure that the minimum flow requirements of article 401 are met under all flow conditions.

(C) The licensee shall establish a benchmark and set of specific survey points to quantitatively assess the changes in the channel that may occur in relation to the diversion structure over time. The licensee shall include documentation of the benchmark and survey points in its plan to document function of the diversion structure, to be filed with the Commission on June 30, 2002

(D) The licensee shall provide to the U.S. Fish and Wildlife Service, the U.S. Geological Survey, and the Vermont Agency of Natural Resources its project operations data within 30 days of an agency's request for the information.

(E) If the minimum flow release deviates from the requirements of article 401 or the project deviates from the operational constraints of article 403, the licensee shall file a report with the Commission within 30 days of the incident. The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident. The report shall also include 1) operational data necessary to determine compliance with articles 401 and 403; 2) a description of any corrective measures implemented at the time of the incident and the measures implemented or proposed to ensure that similar incidents do not recur; and 3) comments or correspondence received from the resource agencies regarding the incident. Based on the report and the Commission's evaluation of the incident, the Commission reserves the right to require modifications to project facilities and operations to ensure future compliance.

(F) Unless otherwise directed in this order, the licensee shall file an original and seven copies of any filing required by this order with:

The Secretary
Federal Energy Regulatory Commission
Mail Code: DHAC, PJ-12.3
888 First Street, NE
Washington, DC 20426

In addition, the licensee shall serve copies of these filings on any entity specified in this order to be consulted on matters related to these filings. Proof of service on these entities shall accompany the filings with the Commission

(G) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 CFR § 385.713.

George H. Taylor
Chief, Biological Resources Branch
Division of Hydropower Administration
and Compliance