



February 2, 2004

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BY FACSIMILE and US MAIL

Mr. Constantine G. Tjoumas PJ-13
Director, Division of Dam Safety and Inspection
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

**Re: Independent Consultants Review Panel Report on Release of Silver Lake
(May 14-15, 2003) [FERC Project No. 10855]**

Dear Mr. Tjoumas:

On behalf of the Project Licensee, Upper Peninsula Power Company (UPPCo) we appreciate the opportunity for review and comment on the Independent Consultants Review Panel Report No.2.

UPPCo believes that some of the statements made in Panel Report No. 2 may be misconstrued or misinterpreted and will benefit from clarification. This is not intended to address every point of possible disagreement, but to address key issues that could be the basis for misunderstanding.

FERC's "Order Issuing Original License" dated October 4, 2002, [101 FERC ¶ 62,013], Order Part (b)(2) specifies that the Silver Lake Development has a reservoir of 1,464 acres and a normal water surface level of 1,486.25 feet NGVD. Such order gives the Silver Lake Reservoir a storage capacity of 33,500 acre feet as noted in Panel Report No. 2 at § 2.1, page 5. The Panel further correctly states that the FERC licensing order of the same date incorporates Article 402 and the Water Qualifications Certification issued by the Michigan Department of Environmental Quality (MDEQ) under section 401 of the Federal Clean Water Act. Both Article 402 and the Michigan DEQ requirements incorporated in Appendix A to the license are specific in stating that UPPCo's obligation at Silver Lake is to maintain the Silver Lake Storage Basin at all times above the minimum water surface elevations required in the order. No "maximum" elevation requirements exist for Silver Lake in the license. Moreover, no "normal maximum operating level" (NMOL), as used by the Panel, is contained in the license.

Article 403(1) does prescribe "minimum flows" from Silver Lake Dam, along with stated "maximum" allowable discharge values (150 cfs from Silver Lake when such discharge is under the Licensee's control, with the further exception that up to 200 cfs may be discharged if necessary to prevent loss of service, or if necessary to maintain target elevations downstream). Releases from the project may be temporarily modified if required by operating emergencies.

¹ FERC also noted the normal elevation for Silver Lake to be 1,486.25 feet NGVD in footnote 4 of FERC Order on Rehearing and Modifying License issued February 4, 2003 [102 FERC ¶ 61,114].

beyond the control of the Licensee, or for short periods upon mutual agreement between the Licensee, the Michigan Department of Natural Resources (MDNR), the Michigan Department of Environmental Quality (MDEQ), and the U.S. Fish and Wildlife Service (FWS), but discharge of more than 200 cfs to achieve a perceived "maximum" level of 1,481.5 feet (above the "minimum" elevation specified in the license) would not be permitted as part of any "normal" operating procedure under terms of the license.

Further, the statement in § 2.3.2, page 17 (the last sentence of the fourth paragraph of this section) indicating that the MDEQ regulations required reservoir levels at Silver Lake to be operated "within a relatively small range between a level of 1,477.0 in December and 1,481.5 in July" is an error. The actual "minimum" elevation for December as specified in the license is 1,478.5 feet NGVD, with a target elevation of 1,479 NGVD. However, more importantly, the license requirements and the Michigan water quality certification do not require "the reservoir levels to be operated within a relatively small range," but rather require that the Silver Lake Storage Basin be maintained above the specified minimum elevations. Such is also more consistent with the desired objectives of optimizing fish habitat and in maintaining desired flow and water levels downstream of Silver Lake.

Based upon review of the Panel's report, and more specifically the submission of Montgomery Watson Harza (Harza), it appears that the design engineers now claim that they intended Silver Lake to be operated with a "maximum" reservoir level at Silver Lake of 1,481.5 feet rather than the normal water surface level of 1,486.25 provided in the license. From the perspective of the Licensee, UPPCo does not understand how it could achieve a "maximum" water level at 1,481.5 feet given the remote location of this facility, the limited control features in place, and the operating parameters specified in the license. Such would also have been inconsistent with historical operations and the use of Silver Lake as a storage facility.

The express terms of the Project License, project historical data, the use of Silver Lake as a storage facility, and correspondence all suggest that 1,481.5 feet was never intended or appreciated as the "maximum" water elevation for Silver Lake. Such could not be readily achieved within the operating parameters of the license and with the facilities and procedures in place. While 1,481.5 feet might arguably be construed as an acceptable assumed starting point for calculation of a Probable Maximum Flood (PMF) routing study, it was never communicated by the design engineer that such was a maximum elevation critical to the fuse plug design or operation of Silver Lake. Had such been the understanding, appropriate amendment of the license to include the requirements of Articles 402 and 403 in consultation with state agencies would have been required.

Clarification also needs to be made in characterization of the weather event as a preliminary to the release of Silver Lake. More specifically, as assessed in the Washington Group International (WGI) report and in the Panel analysis, this was, by all accounts, a multi-day event, and at least a 48-hour precipitation event.

The Panel Report relates in the last paragraph of § 3.4 that the rain event preceding the fuse plug operation of Silver Lake had an "annual frequency evaluated as less than 1:100." While a true statement, it should be clarified that this rain event was substantially less than a 100-year

precipitation event. The Panel Report utilized a 24-hour precipitation table published as Figure 2.13 in the ASCE Hydrology Handbook (1996), which in turn republished some 1961 data published by Hershfield (Hershfield Technical Paper No. 40). The Panel Report admittedly referenced such as a "rough indication" of the frequency of precipitation by reference to the isopluvial map derived from the Hershfield data; however, it is not accurate to characterize a 48-hour event through use of dated 24-hour data.

As detailed in the WGI summary, use of actual data from rain gauges from surrounding areas and Doppler radar images obtained for this storm event, indicated that this was between a 4- to 5-year 24-hour storm and a 6- to 7-year, 72-hour storm. WGI further used the Huff and Angel Atlas (1992). UPPCo is advised that the latter publication is generally regarded as being more current, and a better developed data source than the 1961 Hershfield data, particularly for this area.

While the Panel estimate of 4.1 inches of rainfall over a 48-hour period should not be assessed by reference to a 24-hour table to determine annual frequency, if compared with the more recent Huff and Angel Atlas data 4.17 inches, even in a 24-hour period, would have a recurrence interval of 25 years. UPPCo submits while perhaps appropriate as a "rough estimate" to confirm that this rainfall event was less than a 100-year event, the point of clarification is that as confirmed by STS and WGI, this precipitation event was substantially less than a 1:100 annual frequency. Moreover, this event produced a 7.5-year flood (24-hour) or a 9-year flood (72-hour) United States Bureau of Reclamation (USBR) guidelines indicate that fuse plugs should not be designed to breach for floods with recurrence intervals of less than 100 years.

By way of further comment on the Panel findings, of necessity UPPCo relied upon one of the most reputable dam engineering design firms in the world. These consulting engineers were selected because they had intimate familiarity with Silver Lake and the Dead River Project, dating back to their previous work while then with Stone & Webster in the early 1990's. At no time was UPPCo advised that a previous Harza publication had indicated that fuse plugs were inappropriate for soil conditions similar to what existed at Silver Lake. UPPCo had no understanding or appreciation of the exit velocities found by the Panel to exist at the fuse plug pilot channel and downstream, and had no appreciation or assessment from the design engineer that such exceed accepted design criteria. UPPCo also had no understanding that the Silver Lake fuse plug, constructed at significant cost, would effectively become the primary spillway.

As assessed by WGI and the Panel, had this fuse plug operated appropriately to its design level, the result would have been the loss of an expensive fuse plug (and required replacement) but the release would have been well within the existing capacity of the Hoist Reservoir and safely contained. The root cause for what did occur was the result of exit velocities acting upon the existing soils to produce erosion well beyond the intended design level with the resultant loss of the Silver Lake Reservoir.

UPPCo would also comment that one positive demonstration from this experience was the operation of the Emergency Action Plan (EAP) put into effect with these events. Fortunately, there was no loss of life, and implementation of these procedures undoubtedly prevented loss of life or personal injury, and minimized property damages.

One element not addressed in the Panel Report is the root cause for failure of the Tourist Park facility, and the status and implementation of its Emergency Action Plan. Given that the majority of inundation and damage in the Marquette area occurred with the failure of Tourist Park Dam, the Tourist Park failure should also be the subject of an evaluation.

From UPPCO's perspective, the fuse plug, as designed, now appears to have been inappropriate for Silver Lake. Having now had the benefit of the design engineers' explanations UPPCO suggests that where substantial changes in operation are necessitated by a design which now appears to contemplate significant departures from past operation practices, any such change in operation must be directly and adequately communicated by the design engineer to the Licensee and FERC, and that a changed operation plan should be prepared and in place before the fuse plug is constructed. Further, better geotechnical analysis should be required, and, consistent with accepted engineering design standards, fuse plugs should not be recommended or utilized for soil conditions of the type present at Silver Lake, and particularly without required geotechnical assessment.

UPPCo thanks you for the opportunity for review and comment of the Panel Report. Should you or the Panel have any specific questions regarding the information provided here, please contact me at (920) 433-1264.

Sincerely,



David W. Harpole
Vice President - Energy Supply (for WPSC)