

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Alaska Power & Telephone Company

Project No. 10440-022  
Alaska

ORDER AMENDING LICENSE AND APPROVING REVISED EXHIBITS

Alaska Power & Telephone Company (AP&T), licensee for the Black Bear Lake Project, FERC No. 10440, filed an application for amendment of license on October 13, 1994. The licensee proposes to modify the design of the project's authorized siphon intake structure and powerhouse. The application contains a supplement to the exhibit A and revised exhibit F drawings which show the proposed changes to the two project features.

Siphon Intake

The license authorizes AP&T to construct a siphon intake structure which extends approximately 150 feet into Black Bear Lake. The authorized intake consists of five, 48-inch-diameter, 61-inch-long steel, wedge-wire cylindrical screens leading to the siphon pipe. The maximum approach velocity at each intake would be approximately 0.5 foot per second. The screened intake was designed to prevent entrainment and impingement of resident trout in Black Bear Lake.

In the application for amendment of license, the licensee proposes to extend the intake approximately 280 feet into Black Bear Lake. The proposed intake would consist of a triangular-shaped screen over an open 20-foot-long section of 36-inch-diameter pipe. The screens are to be made of stainless steel wedge-wire and would allow for approach velocities of 0.28 foot per second. The revised design eliminates the circular shape of the screens and allows the licensee to install a mechanical cleaning device to clear debris from the intake screen.

Powerhouse/Generating Units

In the license, the Commission authorized the powerhouse to contain two generating units, each rated at 2,250 kW. The licensee proposes to install only one unit with a generating capacity of 4,500 kW. The following table shows pertinent data for the authorized and proposed generating units:

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	NUMBER OF UNITS	TOTAL TURBINE CAPACITY (HP)	TOTAL GENERATOR CAPACITY (KW)	TOTAL HYDRAULIC CAPACITY (CFS)	TYPE OF TURBINE
LICENSE	2	6,350	4,500	45	IMPULSE
AMENDMENT APPLICATION	1	6,620	4,500	45	IMPULSE

The licensee states that the proposed change will not affect the operating mode of the project. The project will still meet the minimum flow regime as required by article 405 of the license. The decrease in number of units will allow AP&T to construct a 45-foot-long, 36-foot-wide powerhouse which is smaller than the authorized 67-foot-long, 44-foot-wide powerhouse. The unit and control system will have fewer components than the authorized system. The licensee expects lower operational and maintenance costs and a higher availability factor with the revised set-up.

#### Agency Consultation

The licensee submitted copies of the amendment application to the U.S. Forest Service (USFS) and the Alaska Department of Fish and Game (ADFG). By letter dated September 1, 1994, USFS stated it has no concerns or comments regarding the proposed changes. By letter dated September 9, 1994, ADFG stated it has no opposition to the proposed changes.

#### Summary of Findings

On June 25, 1992, the Commission issued an Environmental Assessment (EA)<sup>2</sup> for the development of the Black Bear Lake Project which discussed the design of the licensed siphon intake structure. The EA indicated that a maximum approach velocity of 0.5 foot per second at the licensed screened intake structure was within limits that adult rainbow trout can tolerate. The EA also stated that it would be unlikely for trout fry to be at the depth of the licensed intake. Therefore, the EA indicated it would be unlikely for the resident trout to be entrained and/or impinged on the intake screens. To ensure that project operation has minimal impact on the resident trout in Black Bear Lake, the

<sup>2</sup> Environmental Assessment, Black Bear Lake Hydroelectric Project, FERC Project No. 10440-001--Alaska, Office of Hydropower Licensing, Federal Energy Regulatory Commission, June 25, 1992. This document is available in the Commission's public file.

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Commission included article 407 in the license requiring AP&T to construct the intake structure as shown in the exhibit F-4 that was approved in the license.

The Commission's staff confirmed that the revised siphon intake structure will result in a maximum approach velocity of approximately 0.28 foot per second which is lower than the maximum approach velocity for the licensed intake structure. Also, by extending the siphon an additional 130 feet into Black Bear Lake, the intake will be at a greater depth from the top of the reservoir. Subsequently, there will be even less risk of fish impingement and entrainment due to the revised intake structure. The revised intake screen will also contain a mechanical cleaning device which will clear debris from the screen. Less debris will decrease entrance head losses at the intake structure and allow the project to operate more efficiently.

Staff finds that the change to the project's number of units does not affect the project's generating and hydraulic capacity. Nor does the change affect the project's operation. Therefore, staff concludes that the proposed changes will not result in environmental impacts significantly different from those discussed in the June 25, 1992, EA. Approving this amendment does not materially affect the Commission's determination that the Black Bear Lake Project is best adapted to the comprehensive development of the waterway.

This amendment will approve the exhibit A supplement and the revised exhibit F drawings of the siphon intake structure and powerhouse. Also, the amendment will revise article 407 to stipulate that the licensee must construct the siphon intake structure as approved in this order. This amendment does not change the installed capacity of the project or alter the Commission's annual charges for administration of the Federal Power Act.

The Director orders:

(A) The application for amendment of license for the Black Bear Lake Project, FERC No. 10440, filed on October 13, 1994, is approved effective the issuance date of this order.

(B) The exhibits filed on October 13, 1994, conform to the Commission's rules and regulations. They are approved and made part of the license:

Exhibit A Supplement: The supplement to the exhibit A entitled: "Table A-1, Summary of Project Features," dated August 30, 1994.

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EXHIBIT	FERC NO.	TITLE	SUPERSEDED/ DELETED
F-3	10440-14	Siphon Plan & Profile	10440-3
F-4	10440-15	Intake Screen Structure	10440-4
F-4.1	10440-16	Intake Screen Cleaner	-
F-7	10440-17	Powerhouse Floor Plan	10440-7
F-8	10440-18	Powerhouse Foundation Plan	10440-8

(C) The project description in paragraph (B) (2) of the license is revised, in part, to read as follows:

(2) Project works consisting of: ... (b) a submerged siphon intake consisting of a 36-inch-diameter HDPE pipe that extends approximately 280 feet into Black Bear Lake and ends in a triangular-shaped wedge-wire screen over an open 20-foot-long section of the pipe; ... (g) a 45-foot-long, 36-foot-wide powerhouse containing one 6,620 horsepower impulse turbine attached to a 4,500 kW generator; ...

(D) Article 407 of the license is revised to read as follows:

Article 407. The licensee shall construct and install the screened intake structure to protect fish resources according to the functional design as shown in exhibits F-4 and F-4.1 (Drawing Nos. 10440-15 and 16). The screens and mechanical cleaning device shall be installed and operational before commercial operation of the project. The licensee shall file as-built drawings of the siphon intake structure with the Commission, as required by article 303 of the license.

(E) Within 90 days of the issuance date of this order, the licensee shall file an original and three duplicate aperture cards of the approved drawings. The originals should be reproduced on silver or gelatin 35 mm microfilm. The duplicates are copies of the originals made on Diazo-type microfilm. All microfilm should be mounted on a Type D (3 1/4" x 7 3/8") aperture card.

Prior to microfilming, the FERC Drawing Number (10440-14 through 10440-18) shall be shown in the margin below the title block of the approved drawings. After mounting, the FERC Drawing Number should be typed in the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (F-3 through F-8), Drawing Title, and date of this order should be typed on the upper left corner of each aperture card.

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The original and one duplicate set of aperture cards should be filed with the Secretary of the Commission. One duplicate set of aperture cards should be filed with the Commission's Portland Regional Office. The remaining duplicate set of aperture cards should be filed with the Bureau of Land Management's Alaska State Office.<sup>3</sup>

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

J. Mark Robinson  
Director, Division of Project  
Compliance and Administration

<sup>3</sup> The address for the Bureau of Land Management's Alaska State Office is:

State Director  
Alaska State Office  
Bureau of Land Management  
Division of Lands and  
Renewable Resources (AK-930)  
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222 W. 7th Avenue, No. 13  
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