

Copco's North Umpqua Project At Toketee Engineering Achievement

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phase transformers, located adjacent to the powerhouse.

The plant is fed by 2,085 feet of steel pipe, 12 feet in diameter, leading to a steel surge changer 82 feet high and 30 feet in diameter, with the water fed into the plant by 168 feet of 12-foot diameter steel penstock. The net effective head is 107 feet.

Upstream on the main river is the thin-arch type concrete dam, 126.5 feet high and 306 feet long at crest, consisting of 202 feet of arch and 106.5 of spillway. It has a pondage area of 26 acres.

Details At Slide Creek

Just above the Soda Springs dam is the Slide Creek power plant, consisting of one outdoor type 18,000-KW generator with direct connected main and pilot exciter. This plant is also supervised controlled from the Toketee powerhouse and a duplicate of the Soda Springs dam. It was placed in operation in July, 1951.

The dam, serving Slide Creek power unit, is located just below the Fish Creek plant. It has an elevation of 35 feet and length at crest of 232 feet, used for diversion only. The waterways consist of 2,136 feet of timber flume, 826 feet of concrete flume, 2,345 feet of concrete and rock flume, 4,441 feet of concrete lined canal, 300 feet of spillway and 145 feet of intake. It has approximately 374 feet of 12-foot penstock, and a net effective head of 169 feet.

A relatively small plant of 12,000 KW put in operation since June of this year, but one of the most spectacular of the entire system is the Fish Creek power system. A double purpose of diverting Fish Creek into the North Umpqua river for use in Slide Creek and Soda Springs plants, as well as operating a power unit, is served.

A steel penstock 2,300 feet long varying in diameter from 54 to 48 inches, drops water 1000 feet over a sheer rock wall from a forebay over to the plant below.

The dam, some five miles away is timber cribbed for diversion only. Its height is 31 feet, and its length at crest 215 feet with pondage area of 10 acres. The dam has installed a suitable fishway.

An open conduit 24,559 feet long connects the diversion dam intake with the forebay at the head of the penstock. The conduit consists of 16,681 feet of concrete lined canal, 7,778 feet of timber flume and 100 feet of concrete culvert at highway crossings.

The power plant consists of one outdoor type generator, vertically connected with a Pelton turbine. It is supervised controlled from Toketee powerhouse.

It is in the vicinity of the Fish Creek forebay that clay suitable for use in lining the walls and floor of forebays for each of the other projects is obtained. This is

pure clay, with moisture content of 48 percent. When dried to about 25 percent and used as lining, two feet thick it packs like cement. The clay is specially worked and transported in huge quantities as far as Clearwater No. 1 forebay 15 miles away.

Town Rises At Toketee

Principal unit in the North Umpqua power development is the 45,000-KW plant, from which each of the other seven plants, when completed, will be remotely controlled. It is located a short distance upstream from Fish Creek plant. It is in this vicinity that the Toketee settlement is located, although most of the construction workers are housed up river at the Toketee diversion dam. It is here that homes are located for the 11 permanent employees, plant operators and maintenance men, to care for the eight plants when completed. It is here that the school is located to handle some 100 children of the more than 800 employees now engaged in the power development. There is a cookhouse, a post office and general store, as well as other company buildings.

Most of the construction has been done by Copco on "force account" basis, with portions let to contractors where specialized work and equipment were required. Generators are purchased on an installed basis. Morrison-Knudsen Co. now has a contract for the Clearwater No. 1 project to speed completion to meet the time schedule.

Copco has become the largest purchaser of Umpqua Forest timber, for right-of-way purposes only. Much of this timber has been milled in a company-owned sawmill. Other sections are contracted to Briggs Logging operations.

Toketee's Situation Ideal
The Toketee plant is fed from an earth fill, center clay core wall dam, with steel sheet piling cut-

off wall in part and concrete cut-off wall in part, both extending to solid rock. The dam is 59 feet high and 1,541 feet long at its crest. Its pondage area of 100 acres makes an attractive lake, at the upper end of which is a huge, natural gravel deposit used in construction.

Its waterways consist of 1,663 feet of wool staple pipe, 12 feet in diameter, leading to a tunnel 5,390 feet in length. Of this 1,250 feet are concrete lined. Diameter of the unlined section is 16.5 feet and of the lined section, 12 feet.

A steel surge chamber, 104.7 feet high, 40 feet in diameter is located high above the plant on the mountainside, where the tunnel breaks through. A single, approximately 12-foot penstock, 1081 feet in length, branches into three penstocks, each 128 feet long with a 6-foot, 4-inch diameter.

The power plant consists of three 15,000-KVA generators with direct connected main and pilot exciters, vertically connected to turbines, each of which is supplied with 24-inch Howell-Bunger valves. Purpose of the valves are to make possible the passing of any predetermined quantity of water regardless of the load on the plant, and thus control the water discharge to the down river plants at Slide Creek and Soda Springs.

Power generated at 6.9 KV is transformed to 132 KW by nine single phase transformers and transmitted to the Dixonville switching center. Lightning arrester protection is provided at the substation. The plant has been operating since March, 1950.

On the south shore of the upper portion of the Toketee lake is the site of the Clearwater No. 2 power plant, and perpendicularly above, a distance of 745 feet, is the rock wall formation, over which the penstock will carry water

er from the forebay to the 26,000-KW generator, of the outdoor type.

Clearwater Units Described

The dam will be located on Clearwater River below the Clearwater No. 1 powerhouse. It will be a concrete buttress type on concrete slab with steel piling cutoff wall to rock with an overall length of 157 feet and maximum height of 26 feet. No ponding is contemplated at the dam.

The waterways will consist of approximately 23,720 feet of concrete lined canal and 8,870 feet of timber and concrete flumes. The conduit will discharge into a 99-acre forebay, which will serve to pond water for peaking purposes. The steel penstock, 1,170 feet long, will vary in diameter from 86 to 72 inches.

Clearwater No. 1 dam, some three miles beyond, brings together a series of spring fed rivers leading into Clearwater River. This earth filled dam with steel sheet piling or concrete cutoff wall extending to solid rock, will be 37 feet high and 1365 feet long at crest, with 36 acres pondage area.

An open conduit consisting of 13,045 feet of concrete lined canal will extend from the intake at the dam to the open forebay 2870 feet long at the head of the penstock. The forebay will have a capacity of 120 acre feet to enable ponding for peaking purposes. The steel penstock will vary from 80 to 70

inches and will have an overall of 4,773 feet. The net effective head is 620 feet.

Plant capacity will be 15,000 KW, with one generator. The plant will discharge directly into the diversion pond of Clearwater No. 2 development. All equipment is of outdoor type.

Lemolo Plants Included

The complete development of the North Umpqua project will include Lemolo Plants No. 1 and No. 2. At No. 1 it is proposed to install a dam approximately one mile above Lemolo Falls at the point where Poole Creek has its confluence with the North Umpqua River. The power plant will be located approximately five miles below the dam and it is anticipated the plant will deliver 80,000 KW under a static head of 740 feet.

It is proposed to install a second dam just below Lemolo Plant No. 1. Plant No. 2 will be located approximately fifteen miles downstream from this dam. It is anticipated the plant will have a capacity of 35,000 KW under a static head of 863 feet.

The preliminary topographic work in connection with these two projects has been projected from an aerial survey. Plans for the dams, waterways and plants have not as yet been completed.

(See picture on Toketee Page 8, Sec. 2)

Will Lecture Youth Leader

Dr. James Millar, director of the Good Citizenship Foundation, will make a lecture tour of Douglas County Sept. 15, 16, and 17 to promote organization of youth civic groups.

The Good Citizenship Foundation with national headquarters in Portland works closely with local 4-H clubs, high school, youth and civic groups to promote leadership among these groups.

Dr. Millar was an instructor and lecturer for the 4-H summer school session at Oregon State College in Corvallis.

Although the primary purpose of his lecture tour will be to organize 4-H club activities in Douglas County, Dr. Millar will speak at local high schools and before civic leadership groups in several towns.

Headquarters for the South Douglas area will be in Myrtle Creek. Millar will speak there Monday Sept. 15. Tuesday he will be in Reedsport, headquarters for the coastal region. Roseburg, headquarters for the central portion of Douglas County, will be the scene of his Wednesday lectures.

Organization and research work

on agricultural methods will be the main subject of the 4-H club lectures.

Progressives' Nominee Hallinan Given Jeers

CULVER CITY, Calif. (AP)—Vincent Hallinan, presidential candidate of the Progressive party, opened his campaign in Southern California last night with a demand for an immediate cease-fire in Korea.

The San Francisco attorney addressed a crowd in Culver City Stadium which police estimated at more than 9,000. The rally was orderly but afterward a group of teenagers hooted and jeered the crowd as it left the stadium.

Hallinan said he sent messages a few days ago to candidates of the major parties, Republican Dwight Eisenhower and Democrat Adlai Stevenson, asking them to urge President Truman to seek an immediate cease-fire order in Korea. Hallinan said he has not received replies from either candidate.

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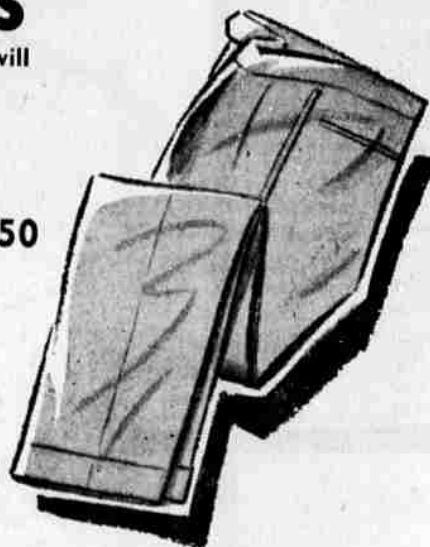
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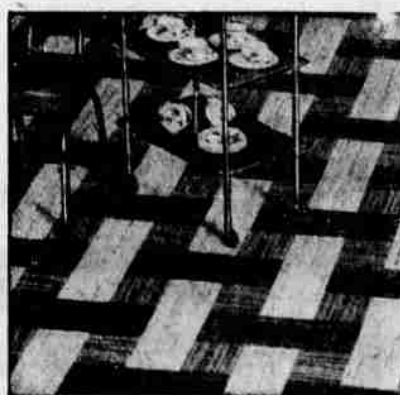
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