

Herb Jenkins
Grant County PUD
5-16-58

(Photo No. 2982 - Unloading Generator Equipment for Priest Rapids Dam)

PRIEST RAPIDS ---Pictured above is the first major piece of generating equipment to be shipped to the Priest Rapids Dam project, which is being constructed for the Public Utility District of Grant County. It was unloaded here May 13. This item is a quarter section of the turbine stayring and weighs 32 tons. The stayring, which is sectionalized because of its large dimensions, together with 500 tons of smaller components, represent the first shipment of an approximate total of 20,000 tons which will be unloaded at the Port of Longview, Washington. The equipment was sent by ship from England through the Panama Canal to the Port of Longview.

The turbines, generators and transformers are under contract to the English Electric Export & Trading Co., Ltd., and are being manufactured by its parent company, The English Electric Co., Ltd., Stafford, England.

The Port of Longview was selected for unloading this equipment primarily due to its heavy lift facilities. Included in the total shipment will be 35 lifts in excess of 60 tons, the largest of which will be the 5 transformers which will weigh 127 tons each. Movement to site will be by rail over the facilities of the Milwaukee Road. Customs clearance and onward shipping is being coordinated by George S. Busy & Co., Portland.

Remainder of the equipment will arrive in shipments of 500 tons each and will extend to the end of 1960. An interesting sidelight is that the total amount of the contract, which is in excess of \$25 million, will be almost exactly offset by British purchases in this area during this period based on the 1957 import/export records of the Washington and Oregon Customs Districts. (Grant County PUD Photo)

PROPOSED LIFT OVER WANAPUM BOON TO SALMON

By
Dr. F. A. Davidson, Biologist

Before the Columbia River's course was blocked to harness it for power and irrigation, its flow, although varying with the terrain, continued without interruption to the sea. There were stretches where the current was reduced by broad deep pools and there were also rapids and falls where the velocity stepped up to many feet per second. It was under these conditions that the salmon learned to find their way up the river to the many tributaries on their spawning migrations from the sea.

What is happening to the Columbia's flow with the installation of dams throughout its course? Its fast moving waters are being impounded into extensive reservoirs, the flow through which becomes almost imperceptible as it approaches the crest of the dams. The only places where there is a semblance to the rushing waters of former days is in the discharge channels that extend a short distance downstream from the dams.

In order to assure the continued upstream migration of the salmon, fishways are being built into the dams to provide safe passage over them. They are built according to the recommendations of the fishery conservation agencies and include the latest design for the efficient passage of the fish. However, in spite of the best efforts of the engineers and biologists in the perfection of the fishways, each dam retards the upstream movement of the salmon from a few hours to three or four days.

Large flows that are attractive to the salmon issue from the entrance to the fish ladders into the waters below the dams. Some of the salmon upon approaching the dams move readily into the fish ladders and over them. Others are wary of the strange obstacle in their course and spend time locating the entrances to the ladders and in passing over the ladders to the forebays above the dams.

What happens to the salmon when after ascending the ladders they find themselves in the lake-like pools of the forebays? All of the rush of water is gone and with it the stimulus that led the salmon upstream to the dam. Time is also lost at this point by the random movement of the salmon in locating the slow moving water entering the forebay which again guides them on their upstream journey. Some of the salmon, in their attempt to orient themselves in the forebay, are swept back over the dam and lose additional time in again locating and ascending the ladders.

Energy Lost Enroute

If the salmon encountered only two or three dams on their journey up the river the delay in arriving at the locations where they spawn might not impose too serious a handicap upon them. However, when they must pass nine dams enroute, as those that spawn in the uppermost tributaries of the river will eventually be obliged to do, the delay in arriving at their destined locations may run into weeks.

What effect will such a delay have upon the survival of the salmon enroute and the chances of their successful spawning at the end of their long trek up the river?

When the salmon leave the sea and enter the river they cease to feed and rely upon the energy stored in their bodies for nutrition during their upstream migration and through spawning. Nature has provided for the storage of greater amounts of energy in the bodies of those races of salmon that spawn in the farthestmost tributaries from the sea. It is for this reason that the early spring run of chinooks that spawn in the upper Columbia have a greater body fat content than the fall run of chinooks that spawn in the lower Columbia tributaries.

The stored energy in the bodies of the salmon provided by nature's selection through the ages was ample to care for their nutritional needs through their entire spawning cycle. However, when this energy supply is dissipated by the salmon through extra exertion and delays in passing the dams, their chances of survival through spawning are considerably lessened. In fact, the passage of a large number of dams enroute upstream may eliminate many of the weaker individuals that would normally ascend the river and spawn successfully.

Injuries Incurred

The dissipation of the salmon's energy in passing the dams is not the only hardship that lessens their chances of survival through spawning. Although the fishways are constructed so that the salmon can pass through them without injury there are always a number that become bruised about the head and body in probing around in their efforts to find their way into and over the fish ladders.

During the time the river is flooding and spilling over the dams many of the fish plunge into the fast boiling water below the spillways in an attempt to find passage upstream. In most cases these salmon are not seriously injured but some incur scratches and bruises on their bodies.

While the salmon are in the sea a scratch or bruise readily heals, but when in fresh water such injuries do not heal too readily and are apt to be attacked by a fungus growth. It is for this reason that many salmon on the spawning grounds in the upper areas of the river have their heads and bodies partially covered with a white fungus growth. This is due in part to injuries incurred on their upstream journey. Although the salmon may sustain such injuries in the river due to natural causes, they are subjected to greater chances of injury in the passing of each dam enroute to the spawning grounds. By the time the salmon have spawned most of them are completely covered with the white fungus which gives them a ghostly shroud as they drift exhausted and helpless until death overtakes them.

Elimination of Hardships

Can these hardships imposed upon the salmon in passing the dams be eliminated? In those stretches of the river where tributary streams enter between the locations of the dams all of the salmon must be permitted to move upstream unhindered. By so doing those fish bound for the tributaries between the dams may separate from the general run and enter into them.

However, where two or more dams follow in succession with no tributaries entering the river between them, the salmon may be caught in traps in the lower dam and transported in tanks to a location some distance above the upper dam where after liberation they are free to continue their upstream journey. In this way the hardships imposed upon the salmon in passing the intervening dams may be eliminated. Such a lift to the salmon is especially advantageous where they must pass many dams enroute to their spawning areas.

The Public Utility District of Grant County is building two dams on the Columbia River, one at the foot of Priest Rapids and the other 18 miles upstream from this location. These two dams will be known as Priest Rapids and Wanapum dams. No tributaries that support populations of salmon enter the river between these two dams. The District proposes to trap the salmon at the lower Priest Rapids dam and give them a water-borne ride over the upper Wanapum dam. In this way the hardships imposed upon the salmon in passing through the fishways of Wanapum dam will be eliminated and the fish will be spared an undue loss of energy and incurred injuries that normally follow in passing through a fishway. This waterborne ride of the salmon over Wanapum dam will be exceedingly helpful to the salmon because Priest Rapids dam is located above three existing and two proposed dams over which they must pass enroute up the river.

Proposed Lift

The method proposed by the District in trapping and transporting the salmon is one that will provide for the minimum disturbance of the normal upstream movements of the fish.

Large tank barges will be anchored at the upper end or exit of the fish ladders in the Priest Rapids dam. While loading the barge the water passing into the fish ladder will flow through it. In this way the salmon moving up the fish ladder will be led into the barge by the water flowing through it. A grill gate at the upper end of the barge will prevent the salmon from swimming out of it. When a sufficient number of fish have entered the barge, water tight gates will be closed at each end and it will be ready for the trip upstream.

The loaded barges will be moved by powerful tug boats 18 miles upstream to Wanapum dam. Here they will be lifted bodily over the dam, taken in tow by another tug and continue upstream to a point where there is enough current to enable the salmon when released to orient themselves and continue on their upstream journey without confusion.

Benefits Cited

The barge trip upstream will require a maximum of 8 hours in comparison to an average of two or three days believed to be the normal time required for a fish to swim the same distance and ascend the fish ladders in the dam.

During the entire barge trip the salmon will never leave the Columbia River water. Fresh river water will be constantly circulated through the barges and no problems will be involved in controlling the oxygen content or temperature of the water surrounding the fish. At the end of the trip the gates of the barges will be opened and the salmon will be permitted to swim out of them at will.

This method of releasing the fish will avoid any shock to them which might disturb their orientation and cause them to lose their sense of direction.

In short, the water-borne ride over Wanapum dam will enable the salmon to reach their "port of debarkation" in a rested and tranquil condition and not worn and scarred from battling up another series of fish ladders in Wanapum dam.

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Herb Jenkins
Grant County PUD
7-3-58

EPHRATA ---The construction of Wanapum dam moved one step closer Tuesday July 2, when the Commissioners of the Public Utility District of Grant County instructed the Harza Engineering Company of Chicago to proceed with the preparation of detailed construction drawings and specifications for use in building the Project, G. A. Smothers, PUD Manager, said today.

The action followed the meeting last week in which 10 of the 12 purchasers of Priest Rapids power agreed to take their pro-rata share of Wanapum power that had been declined by Seattle City Light and Kittitas County PUD. Seattle had an option on 8 per cent of the power, and Kittitas County PUD on .4 per cent of the Wanapum power, but both said Wanapum power would not fit into their schedule.

With all Wanapum power allocated, Smothers said the tentative schedule ~~called for the~~ ^{was to} call for bids on construction of the dam in December of this year, with the bid opening in February, and actual start of construction in May of 1959.

Wanapum is located 18 miles upstream from the Priest Rapids dam, which is more than 50 per cent complete. Present plans call for the initial installation of eight generators with a rated capacity of 612,000 KW.

Herb Jenkins
Grant County PUD
7-28-58

EPHRATA - The Grant County PUD Commissioners in a special meeting today (Monday) accepted the resignation of Glenn Smothers as manager of the District. Smothers said: "I feel that for the benefit of the District you should accept my resignation. I want it understood that the investigation should be carried on and completed adequately."

Smothers was obviously referring to a statement by Nat Washington of the firm of Washington and Wickwire, former legal consultants for the PUD, that he was requesting an investigation of the PUD. At a meeting of the Commission last Friday Smothers also asked for a "complete investigation" of the affairs of the PUD.

The Commissioners appointed E. B. Gibbons, assistant manager of the District, as acting manager for the distribution system, and R. R. Ries, chief engineer for the District, as acting manager of the production system, which covers the marketing of wholesale power and the building of Priest Rapids and Wanapum dams.

Darrell Ries (who is not related to R. R. Ries), an attorney from Moses Lake, was hired on a temporary basis as attorney for the District to replace the firm of Washington and Wickwire, the legal firm that was discharged by the Commissioners last Friday, July 25. Attorney Ries will be paid the same retainer as the former firm, \$500 a month for the Distribution system and \$800 a month for the production system.

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Smothers' resignation is effective today, and the appointments of the others take effect today. Smothers said he would continue to make his home in Ephrata and do consulting work. He said he would be available (for a limited time), without compensation, to assist the new managers if they wished to consult him.

Smothers has been manager of the District since 1945 when the District had four employees, 551 customers and 24 miles of line. The District now has about 14,000 customers, 1,530 miles of line and 145 employees in the distribution system. The District is building Priest Rapids dam and plans are under way to start construction of Wanapum dam in May of 1959.

Gibbons started in Ephrata with the Washington Water Power Company in 1926. He was manager of the WWP company office in Ephrata until the system was purchased by the PUD in 1945. Since that time he has been assistant manager of the District.

Ries, the engineer, is a graduate electrical engineer from the University of Idaho. He has been with the District for 13 years, and has been chief engineer for 11 years.

Darrell Ries, attorney, is a graduate of the University of Washington law school. He has been a practicing attorney in Moses Lake for the past 9 years.

The PUD Commissioners are F. Wm. Arlt, president, William Schempp, secretary, and George Schuster. All were present at the meeting today.

Herb Jenkins
Grant County PUD
7-31-58

EPHRATA----- Engineering and design features of the proposed Wanapum dam were discussed here Wednesday at a regularly scheduled meeting with Grant County PUD officials. R. R. Ries, acting manager of the Production System for the PUD, presided at the meeting which was attended by engineers and other representatives of the utilities purchasing power from the dam.

E. Montford Fucik, executive vice president for the Harza Engineering Company of Chicago, the designing and consulting engineering firm for the Project, presented the proposed design for Wanapum dam and reviewed the progress of the construction plans.

Fucik said that after study of both the straight line and "dogleg" design for Wanapum, his firm recommended the adoption of the "dogleg" design to take the best advantage of the bedrock at the site, and the economy, ease and flexibility in construction. The method of cut-off under the embankment areas ^{also} was discussed.

Following Fucik's review of the construction plans a general discussion was held, with the consensus appearing to favor the plans.

The possibility of installing ten generating units instead of the originally proposed eight units in Wanapum was considered, but action was deferred for further study.

Herb Jenkins
Grant County PUD
8-29-58

EPHRATA---C. R. Simmons, Chief of the Palisades Field Branch, Power Division, Minidoka Project, Idaho, has been named Plant Superintendent at Priest Rapids dam, it was announced today by R. R. Ries, Supervisor of Production for the Public Utility District of Grant County. Simmons will start his new job in October.

Jess Barksdale, Assistant Chief of Operations and Maintenance, U. S. Corps of Engineers, McNary, Oregon, has been appointed Assistant Plant Superintendent at Priest Rapids dam, Ries said. Barksdale will move to Grant County the first week in September.

These are the first two operating employees to be hired for the Priest Rapids Project, Ries said.

Herb Jenkins
Grant County PUD
9-22-58

EPHRATA - - - The placing of the Grant County PUD's reserve share of power under withdrawable contracts insures that all normal industrial power requirements can be met at any time, PUD Commissioners F. Wm. Arlt, William Schempp and George Schuster said today. The PUD can handle each year an industrial plant that would require the total combined power load of the Boeing Flight Center, U & I sugar factory and Larson Air Force Base and still have power left for other expansion. Under the terms of these contracts, the power may be withdrawn as needed by the PUD.

No public announcement of this matter has been made by the PUD, as the District is awaiting signatures on two of the contracts.

The Grant County PUD's share of the power from Priest Rapids and Wanapum dams is 36 1/2 per cent of the output of the dams, or approximately 438,000 KW. Our responsibility for the operating costs of the dams is also 36 1/2 per cent, or about \$6,500,000 a year.

At the present time, the total annual income of the PUD from sale of power to the people of Grant County is approximately \$2,900,000 for a load of some 98,000 KW, or less than one-half enough to pay the PUD's annual share of the generation bill of the dams.

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Under these circumstances the Commission felt it was obvious that the thing to do was to sell this power on withdrawable contracts to firms who could use it until such time as the PUD would need it. In other words, it was equivalent to placing the power in a "savings account" to be withdrawn at intervals as needed.

By the negotiation of this short-term sale of the power the District is now free to establish as high an amount of use of low cost Bonneville Administration power as its loads will require. (It is expected that BPA will not be able to supply additional power to its customers after 1971. The amount of power taken by any public body the year previously will determine its permanent share of BPA power.)

When no more power is available from BPA, and other public agencies are looking to steam plants and other high cost sources of power, the PUD will have its reserve of some 438,000 KW of cheap power to draw from as needed. This represents an amount of power equal to more than four times the amount of power now used in the county. Based on the terms of the contract for selling its share of the power from the dams, the PUD will have the right to withdraw up to 140,000 KW by the time of the BPA "freeze" in 1971. The remaining 298,000 KW can be withdrawn at intervals up to 1982.

Tomorrow and on succeeding days other phases of the power situation will be discussed by the PUD Commissioners.

Herb Jenkins
Grant County PUD
9-23-58

EPHRATA - - - In this second of a series of articles on various phases of the power situation, Grant County Public Utility District Commissioners F. Wm. Arlt, William Schempp and George Schuster tell of negotiations conducted with industries in regard to the sale of power:

In 1956, when the Priest Rapids Project was assured, the District approached a number of major industries for the sale of a large part of the PUD's power. As a result of these contacts negotiations were opened with one aluminum company, and a great deal of work was done in an effort to arrive at a contract. This firm spent several months investigating the use of Priest Rapids power, but found, in spite of higher power costs, that locating in the East was more economical due to savings in freight costs and being closer to the major markets.

Although the Northwest utilities wanted this power, the Commission continued in an effort to bring industry into the area to use power from the Priest Rapids Project. A series of meetings was held, both in the East and in the Northwest, with another aluminum company which was willing to place a fabrication plant in Grant County in return for the right to purchase a large share of the PUD's power to be used in their existing plants outside of Grant County. The Commission was never able to get a firm commitment from the company as to the number of men it would employ, or as to the continuous operation of this plant throughout the life of the contract.

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As negotiations proceeded it became apparent that because of certain construction features and increasing construction costs, Wanapum power might be more expensive than Priest Rapids power. The aluminum company requested that it be furnished basically with Priest Rapids power and did not wish to commit itself to firm Wanapum power.

Negotiations finally stopped when it became apparent that the terms which the aluminum company wanted would be at the expense of the power users of Grant County. Had the company's terms been accepted, the PUD, when the Bonneville power supply was exhausted, would have had to use higher cost power to supply its customers, and at the same time sell its lower cost power to the aluminum company. The Commission felt that this was, in effect, a subsidy to the company. The Commissioners believed that the advantage of having the fabrication plant in Grant County, even under the most favorable conditions of operation, was far outweighed by the disadvantages to the District and the people of the District under the terms insisted on by the company.

The PUD is continuing to contact industries and keep them informed as to the advantages of locating in the Columbia Basin. In addition, the PUD has cooperated closely with individual communities in their efforts to attract new industries to the area. Individual business firms have also requested and received assistance from PUD staff members in regard to starting or expanding their business operations.

(The third of this series of statements will follow later this week)

Herb Jenkins
Grant County PUD
9/25/58

(In this statement, the third of a series, the Grant County Public Utility District Commissioners, F. Wm. Arlt, William Schempp and George Schuster, discuss why they decided to build the Priest Rapids dam, and why they believe the construction of Wanapum dam should start in 1959.)

EPHRATA - - One of the provisions of the District Power Law providing for the creating of a Public Utility District is that the district shall "make adequate provision for the needs of the district, both actual and prospective."

The construction of Priest Rapids and Wanapum dams is a part of the plan to assure the power users of Grant county an adequate supply of power in the future.

The Grant County PUD was granted a license in November, 1955 by the Federal Power Commission to develop, for power purposes, that stretch of the Columbia River from Rock Island to the foot of Priest Rapids. The Priest Rapids dam, now more than half completed, is the first step of this program.

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To comply with the FPC license and effect comprehensive development of this part of the river, Wanapum dam must also be built.

Based on load forecasts, the share of power from the Priest Rapids and Wanapum dams which the investment bankers would consent to finance as a responsibility of the District, assures an adequate power supply for Grant county power users until the early 1980's. If only Priest Rapids were build, Grant county would not have an assured source of power beyond about 1974.

A general plan for the regional development of power has been worked out and is accepted among the utilities of the Northwest. Wanapum is a part of this plan, and is intended to fit into the area load requirements during the mid-1960 period.

The power from Wanapum has been sold by the PUD on the same basis as the power was sold from Priest Rapids. As is true with Priest Rapids, the Grant County PUD pays only for the share of power it actually uses from Wanapum in any one year.

"The cheapest dam you can build is the one you can build today" is a commonly accepted statement among utilities. It is well known that with constantly advancing construction costs, every year's delay in building a power dam makes it a more costly project, with a resultant increase in the cost of power.

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If Priest Rapids dam had been started in 1959, rather than having been started in 1956, the power from it would have cost the users, including the people of Grant county, an additional \$961,000 per year over a period of 50 years--which is the life of the bond issue financing the dam.

Delay in building Wanapum will result in higher cost power to the people who will use the power.

(A fourth article will follow on Friday. Starting next week, there will be a series of articles on the history of the Priest Rapids Project.)

Herb Jenkins
Grant County PUD
10-7-58

Immediate Release

(Aerial Photo No. PX444, Priest Rapids dam)

Squeezed into less than a third of its normal channel, the Columbia River flows between the piers of the first 11 spillway bays at Priest Rapids dam. The area behind the cofferdam (extreme left) is being unwatered so that construction can start on the next 11 spillway bays, which will be built complete with aprons and gates. In the large area at right is the 1,025-ft-long powerhouse, with the left bank fish passage facilities crossing the "T" at top. The "fingers" at lower right are construction ramps for use by equipment in excavating for the tailrace.

Priest Rapids is about 58 per cent complete, and is months ahead of its construction schedule. The dam is being built for the Public Utility District of Grant County. The Harza Engineering Company is the designing and supervising engineering firm on the Project and Merritt-Chapman & Scott is the contractor. (Grant County PUD Photo)