Testing of Plant Components Underway

The first smoke came from the 250-foot smokestack at the Leland Olds plant the last week in August when the boiler was fired up with fuel oil for "boil out," a cleaning process which assures that harmful minerals do not get into the turbine blades.

Smoke has been coming from the stack off and on ever since, during other test procedures.

The first week in September, steam was again generated in the boiler when Plant Superintendent Robert E. Peck's crews blew out the main steam lines of the plant. A temporary outlet for steam was led outside the door of the turbine-generator room. Steam under 600 pounds pressure was blown out the pipe—creating a roar that sounded like a flight of jets at low altitude.

Later in September, the safety valves atop the plant were tested—another process that creates an unbelievable noise, as this reporter, who was atop the plant when one of the valves blew off, can testify.

The first coal from the Truax-Traer Coal Co. Glenharold Mine was delivered to Basin Electric September 13, in preparation for full-scale test operations of the plant in October and commercial operation in November.

The Truax-Traer Coal Company's Lauchhammer Mining Wheel is in operation at the mine removing overburden so that a more conventional shovel can come in behind and remove the coal. The coal is then loaded into 100-ton trucks for delivery to a hopper, thence to a crusher and onto a conveyor for delivery to Basin Electric.

The heating boiler for the plant is in operation and the plant is ready for winter, Peck reported. The plant water (continued on page 2)
HALT RURAL EXODUS

Aiken Urges Low-Cost Money for Rural Electrics

Rural electric cooperatives continue to need low-cost capital, Sen. George Aiken, R-Vt., told the Annual Meeting of East River Electric Power Cooperative in Madison, S. D., September 15.

In an obvious reference to proposals for alternative financing methods for rural electric cooperatives made by the National Rural Electric Cooperative Association, Aiken said, "... it is my belief that rural electric cooperatives still require low-cost capital. Any cooperative which needs new equipment should be able to secure capital at a rate which will enable it to do its part in the development of the national economy."

The future of our national economy depends largely on our ability to develop the rural areas, Aiken told the Annual Meeting of East River.

"Instead of continuing the drain from rural America to the urban areas, we should make the conveniences of the cities, provided for with Federal funds, also available to the smaller cities, the town and the rural communities," Aiken said.

"Only in this way can we maintain a healthy national growth and prevent the undesirable features of congested human existence from getting worse."

The continuing success of the rural electrification program is one of the essentials to creating a healthy rural economy and to preventing the drain to urban areas, Aiken continued. The continued success of rural electrification, in turn, depends on low-interest capital, he said.

A lot of study is being given to this matter by friend and foe, alike, but whatever these studies may show, we must insist that any cooperative which needs new equipment, whether for distribution lines or generating equipment (Editor's emphasis), should be able to secure that capital at a rate which will enable it to do its part in the development of the national economy.

"Although I have made no personal study, it is my belief that the great majority of the 996 rural electric cooperatives in the United States will require low-cost capital."

The United States faces a desperate situation unless its increasing population can be spread out over the country instead of being concentrated into urban areas, Aiken said.

"Many of our great cities today are hopelessly bankrupt ... city after city in America is enabled to show a tolerable degree of prosperity only because of government contracts, government controls over its industries and government relief checks. ..."

Only by stopping the rural drain and enhancing the health of the rural areas can we maintain a healthy national growth and prevent the undesirable features of congested human existence from getting worse, Aiken asserted.

"Rural electrification has taken the lead in making decentralization of industry, population, wealth and power possible," he said.

"Except for the REA, a thousand communities in the United States would be little more than ghost towns today."

PLANT TOURS DRAW VISITORS FROM WIDE AREA

Visitors from far away came to the Basin Electric Leland Olds plant Sept. 1. They were two officials of the Malawi Government of Central Africa, W. U. Mwalwanda and S. J. Zimba.

The two officials were brought to the plant by B. E. Morgan and R. E. Ellman of the U. S. Bureau of Mines.

Other tours during the month included two groups from East River Electric Power Cooperative of Madison, S. D., a Class-A member of Basin Electric.

The two groups were employees of East River, the first group coming on Sept. 11 and the second on Sept. 18. On both nights before the tours, special dinners were held at the Holiday Inn in Bismarck. The tour groups—32 in the first and 21 in the second—had lunch at the Stanton Lutheran Church after touring the plant and the Trux-Lauchhammer Mining Wheel. Employees and directors of the North Dakota Farmers Union toured the plant on Sept. 9.

There have been a number of individuals and small groups coming to the plant on informal tours. These include Basin Electric directors and officials of member systems. Remember that you are welcome to tour the plant—just let us know in advance and we will be happy to make the arrangements. It's your plant!

PLANT TESTING (continued from page 1)

Laboratory went into service Sept. 20. The coal laboratory will go into operation later and coal samples are now being sent to Bismarck for analysis.

Delays in the first full-scale test operation of the plant came because of a shortage of electricians to make connections to the main control room of the plant, Peck said.

The number of construction workers at the plant is declining each month as the completion date nears. Average number of workers in July, 1965, was 327. This decreased to 275 in August and 197 in September. About 100 are expected in October and by November most workers will be off the job.

Highest average number of workers was in March, 1965, when there were 516. In July of 1963, the first full month of construction, there were 53 men.

The 230,000 volt transmission line running 12 miles from the Leland Olds plant to the U. S. Bureau of Reclamation substation at Washburn has been accepted by REA, and the Bureau is now making the connection at the substation.

More than two million rural consumers will benefit from REA electrification loans made during 1964 to rural electric distribution borrowers. Loans were also approved for 10 power-type borrowers, whose members serve more than 580,000 consumers in rural areas.
Editor's Note: Lignite coal resources in the Upper Missouri Basin and their potential for electric power production are getting national attention. The following editorial was reproduced from Power Engineering, regarded by engineers as one of the most important publications in the electric power industry. It is described on the masthead as "The Only Complete Power Field Magazine."

**EDITORIAL COMMENT**

**WILL LIGNITE BE OUR NEXT MAJOR POWER FUEL?** It might very well be, if Basin Electric's 200-Mw Leland Olds Station produces the economy it's designed to get.

It is estimated that lignite amounts to some 25% of the remaining U.S. reserves of solid fossil fuel—on a tonnage basis. This is about 15%, on a Btu basis.

Largest reserve of lignite is in North Dakota. If the Basin Electric experience proves to be as satisfactory as expected, a whole new industrial development might be created in this region of the U.S. Also, if the generation cost is sufficiently low, other large power stations might be built in the area. If the demand for this capacity is not already in that region, the surplus capacity could be sent out to other parts of the country on appropriate interconnections.

The burning of lignite presents some problems not experienced in normal bituminous pulverized coal stations. Of course, the lignite would have to be mined economically, and the plant would have to be designed to handle the peculiar characteristics of this fuel. Lignite has low heating value, high moisture content and a tendency for ash to build up on boiler surfaces. However, the type of lignite found in North Dakota does not have the high ash content which is normally found in lignite in other parts of the world.

It is expected that the entire power industry will be keeping a close watch on the Leland Olds Station. Consultants, manufacturers and utility engineers should all be interested in the operating experience at this plant. A feature article about this station will appear in the October issue.

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*Bob McCaw*
Rising to startling height above the North Dakota prairie near the Leland Olds plant is a mammoth machine that never fails to surprise visitors.

The machine is a "Lauchhammer Mining Wheel," a giant mining machine owned by the Truax-Traer Coal Company. The machine will be used to mine lignite coal to supply the Basin Electric Leland Olds power station three miles away from the mine.

The machine resembles nothing so much as the resurrected and reconstructed bones of some prehistoric monster. Actually, it is one of the most efficient machines ever designed for strip mining. As long as a football field and as high as a 10 story building, the Truax-Traer machine is unique in the Upper Midwest.

The machine has been at the Truax-Traer Glenharold Mine now for about two months. It was assembled near the mine site beginning last November. It took more than 80 railroad cars to bring components to the site. Many of these came from Germany via the St. Lawrence Seaway and Duluth.

The prototype of the Lauchhammer Wheel was invented in Germany where the machines are common. The basic Truax-Traer machine was manufactured by the Lauchhammer Company in Germany. The crawlers which propel the machine were made by the McDowell-Wellman Company in the United States and the electrical equipment was fabricated by the General Electric Company.

Operation of the machine is basically simple. A wheel with eight toothed buckets 29 feet in diameter turns against a bank of earth. The buckets bite off great clumps of earth which fall from the wheel to a conveyor belt. The belt carries the earth to the rear of the machine where it is dumped into piles.

The machine does not actually mine coal. It removes the 25 to 70 feet of overburden which cover the 8½ to 10 feet thick coal seams. A more conventional dragline comes in behind the machine and picks up the coal. Coal is loaded into 100 ton trucks which haul it to a conveyor which takes it to the power plant.

The Lauchhammer Wheel is powered by electric motors totalling 3,446 Horsepower. There are motors on each of the six treads, on the wheel itself and on the three conveyor systems which carry the earth to the rear of the machine. Electricity is supplied from a cable the machine pulls behind it on the ground.

The Lauchhammer Wheel is particularly suited to levelling "spoil banks", unsightly mounds of overburden ordinarily created by strip mining. Basin Electric has in its contract with the Truax-Traer Company a provision that mined areas be restored to "rolling countryside."

One man operates the machine from a cab mounted next to the mining wheel. The cab has closed circuit television screens so the operator can see where he is dumping removed earth. There are two other men in the crew, one an oiler and the other a groundman who operates a diminutive appearing bulldozer next to the giant machine.
Systems Reduce Rates

PANHANDLE REMA MEMBERS GET 10 PER CENT REDUCTION

Panhandle Rural Electric Membership Association, Alliance, Neb., a Class C member of Basin Electric, has announced rate reductions amounting to $59,400 per year.

The reduction amounts to more than 10 per cent.

PREMA has reached the goal of one-cent electricity—in one area at least—and all sales of over 1,000 kilowatt hours per month for a given customer will be at this rate. This is a one-third reduction from the old cent-and-a-half rate.

Irrigation rates have been reduced for users of over 300 KWH per horsepower by $1.50 per horsepower.

In addition, there is a reduction of 80 cents per month for all customers. There will be other reductions for customers in special circumstances up to $2 a month.

A higher commercial rate has been eliminated and commercial rates will now be the same as for residential accounts.

"The members can be very proud of their Board of Directors for its decision to lower the rates," PREMA Manager Paul Phaneuf said. "This was a voluntary action which it undertook without an order or urging from any regulatory agency or the Rural Electrification Administration. The Board's action represents its sense of responsibility to the consumer members."

Phaneuf pointed out that an assured source of low-cost power, including that from Basin Electric, was one of the things which made the rate decrease possible.

NIPCO WILL ABSORB USBR RATE INCREASE

E. J. Dickinson, general manager of Northwest Iowa Power Cooperative, LeMars, Iowa, a Class A member of Basin Electric, announced recently that NIPCO will absorb the rate increase for U. S. Bureau of Reclamation power for NIPCO's 10 members.

"We have known for more than a year that this increase was coming and we here at NIPCO are prepared for it," Dickinson said. "There will be no increase to power users on the NIPCO system."

The increase was announced for the Eastern Division of the USBR Missouri River Basin marketing area by Kenneth Holum, Assistant Secretary of the Interior for Water and Power.

WHEATBELT RATES REDUCED BY $70,000 ANNUALLY

The Wheatbelt Public Power District of Sidney, Neb., a Class C member of Basin Electric, has reduced its rates by $70,000 a year, Manager Charles Ham announced.

The new rate represents a simplification of billing by using only one rate where before seven were used, as well as the reduction.

The new rate includes an "end rate" of one cent per kilowatt hour on a monthly usage of over 2,000 KWH. On electric heating installations, for example, the new rate will mean a reduction of up to 33 per cent.

Two New Members Accepted By Board

Basin Electric gained two new members when the Board approved membership applications of West Plains Electric Cooperative and North Central Electric Cooperative at the September meeting.

West Plains of Dickinson, N. D., was accepted as a Class A member. North Central, a member of Central Power Electric Cooperative, was accepted as a Class C member.

Generation and transmission cooperatives, and distribution cooperatives unaffiliated with Basin Electric member G & Ts, join Basin Electric as Class A members and are eligible for long-term firm power contracts.

Class C members are affiliated with Basin Electric member G & Ts, and have voting rights at Basin Electric annual meetings. Each Class A member also has a vote at annual meetings.

East River Annual Meet Held, Director Elected

One new director was named and six re-elected at the East River Electric Power Cooperative Annual Meeting in Madison, S. D., Sept. 15. East River is a Class A member of Basin Electric.

Robert Johnson, Groton, was elected to replace Foster Rix, also Groton, who has retired.

Directors re-elected include President Arthur Jones of Britton, S. D., also President of Basin Electric; J. E. Rasmussen; Earl Pike; Ralph T. Dennis; Max Farrar and Otto Krapf.

Dennis Lindberg of Odebolt, Iowa, Basin Electric Secretary-Treasurer, chairman of the Missouri Basin Systems Group and President of Mid-West Electric Consumers Association, was given an Eminent Service Award at the East River meeting. Lindberg was commended for his "many years of service and dedication to the ideals of regional planning for low-cost power supply in the Middle West, and his unwavering faith in cooperative principles."

Resolutions passed by the East River meeting included a request to President Johnson for a $650 million appropriation in the 1967 REA budget, which also asked that there be no change in the present method of financing REA loans.

A total of 18 other resolutions were passed at the meeting, including one supporting the extension of the U. S. Bureau of Reclamation transmission system in Minnesota.

Nebraska Rurals Urge Unit No. 2

The following resolution was passed by the Nebraska Rural Electric Association at its semi-annual meeting August 17, 1965:

WHEREAS, feasibility studies have been conducted on the No. 2 Unit and the size of the No. 2 Unit considered is another 200 or a 400 Megawatt unit;

NOW, THEREFORE BE IT RESOLVED that the Nebraska Rural Electric Association at its semi-annual meeting in Lincoln, Neb., on August 17, 1965, do hereby urge that Unit No. 2 of Basin Electric Power Cooperative be timed to permit the 400 Megawatt Unit to be installed so that the maximum benefits may accrue to the electric users of the Upper Missouri Basin area.

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NOW, THEREFORE BE IT RESOLVED that the Nebraska Rural Electric Association at its semi-annual meeting in Lincoln, Neb., on August 17, 1965, do hereby urge that Unit No. 2 of Basin Electric Power Cooperative be timed to permit the 400 Megawatt Unit to be installed so that the maximum benefits may accrue to the electric users of the Upper Missouri Basin area.
Hazen and Beulah Plan Housing Projects

Hazen and Beulah, N. D., both towns near the Leland Olds plant site, have begun to find some answers to their housing problems.

Their answers could apply with equal effectiveness in rural counties anywhere, the Rev. David Genter of Hazen, chairman of the Mercer County Housing Authority, said.

Both towns have problems of housing for low-income groups, for the elderly, and, because of power plant activity in the county, for the general population.

A Federal Housing and Home Finance Agency program to provide housing for low-income and elderly people promises a solution. Under the program the Federal government lends money at low interest to a community housing authority such as the Mercer County one.

The housing authority then goes ahead and builds modern three to five bedroom units and rents them. The rent is on a sliding scale according to income, but it is sufficient to pay for the project within a 40-year period. Rents on housing for the elderly average $40 a month.

A local executive secretary is hired to operate the housing projects.

Reverend Genter — credited by the community with starting the program — says the Federal housing will take pressure off the community in several ways. It will provide housing for those now living in substandard units. It will encourage elderly people (over 62) to sell their present housing, thus making available generally more houses in the community.

Tentatively planned for the project are 26 units each in Beulah and Hazen, both towns under 2,000 population. Fourteen of these would be for the elderly and 12 for low-income people in each town. Other towns in Mercer County are eligible for the program, too. These include Stanton, the nearest to the plant site, Zap, Golden Valley and Pick City.

The Mercer County projects became possible under Federal law because the housing authority was formed and because a county planning commission exists. This commission has hired a consultant, another requirement. (The consultant is R. W. Beck and Co., Basin Electric's engineering consultant.)

An initial HHFA loan for the 52 units of about $550,000 will be required. The interest rate is around 2 per cent. An initial grant of $200 per unit for planning, hiring architects and other purposes is expected soon, Reverend Genter said. He is hopeful that actual construction can begin sometime in 1966.

Houses will probably be of brick construction and will be designed to "last a long time."

Mercer County is the first in North Dakota to begin a housing project under this program on a county-wide basis. The North Dakota Economic Development Commission worked closely with Mercer County leaders in formulating plans.

The housing units need not all be in one location, but they can be scattered throughout the towns. HHFA encourages the housing authority to dispose of substandard housing as the new housing is built. The HHFA loan will include curbs, gutters and landscaping, as well as the units themselves.

Basin Electric worked closely with the authority in planning for the units. Reverend Genter said. He gave special credit to Mr. Harry E. Jacobs, resident construction engineer for Burns and Roe, Inc., on the Leland Olds plant. Mr. Kenneth Ervin, manager of Oliver-Mercer Electric Cooperative of Hazen, a Class A member of Basin Electric, is a member of the housing authority.

Two-thirds of the cost of the county planning program is paid for by the Federal government. This is a separate program, but one required before the housing program can be approved.

"We are very enthusiastic about the program," Reverend Genter said. "As soon as we get one project rolling, we can begin application for another. This is a badly needed program, not only in Mercer County, but in many rural areas."

The Basin Electric Annual Meeting will be held in Bismarck, N. D., the afternoon of November 19. A tour of the Leland Olds plant will be held the morning of the 19th. There will be a luncheon and dinner, with speakers at both occasions.

The Basin Electric Board of Directors will meet on November 18.

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