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USSR Report

ENERGY

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OIL AND GAS

SHALE OIL SPECIALISTS DISCUSS QUALITY CONTROL

Tallinn RAHVA HAAL in Estonian 14 May 83 p 2

[Unsigned article: "Improve Quality Control Over Oil Shale"; passages enclosed in slantlines printed in boldface]

[Text] The last meeting of the quality and standards section of the Science and Technology Council of the USSR Coal Industry Ministry was held at Kohtla-Jarve, i.e. for the first time in the Estonian oil shale basin. The meeting was attended by specialists from the production quality office of the USSR Coal Industry Ministry, and representatives of coal and oil shale production facilities, as well as of several other agencies and organizations. There are many unsolved problems regarding the quality of coal and oil shale, and these were discussed at the meeting. The outstanding operating procedures of the technical quality control staff of the Coal and Oil Shale Agency were discussed, as well as the conformance of coal and oil shale production to standards.

Below two of our republic's oil shale specialists discuss some problems concerning oil shale quality.

/Enno Reinsalu, deputy director for scientific affairs of the Branch office of the Mining Institute imeni A. Skotchinsky: "The volume and quality of production cannot be separated."/

Production, more exactly the amount of produced oil shale is and will remain the most important indicator of the work of oil shale mines and pits. But the quantity can be measured only if quality is met. If the oil shale lot does not conform to quality norms, then it will not fulfill the plan. The quality of oil shale production is primarily influenced by two factors--the deterioration of the mined shale quality and the need to improve the labor productivity of the miners.

For example, in the area of the "Estonia" mine there is considerably more limestone in the oil shale seams than in the mines of Tammiku, but the concentrating plants for these mines are standard. Consequently, for the given reasons alone the oil shale marketed from the "Estonia" mine should have a lower caloric value. And this is indeed the case. There is a most direct link between labor productivity and quality. For example, bulldozers loading

the oil shale crush it so much that the amount of pulverized oil-shale increases 5-7 percent. Pulverized oil shale is not dressed, it is sold with greater byproduct content. Thus the use of bulldozers reduces the heat value of the mined oil shale as well as the proportion of lump oil shale. But an abandonment of bulldozers would mean a great step backwards in productivity.

The same is true in the use of the highly productive combine mining--the amount of pulverized oil shale is twice as high as in mines where extraction takes place by boring and blasting. But in the future, when production must be increased, we must also increase combine mining to avoid hiring additional workers, and we must from the beginning reconcile ourselves to the fact that the oil shale quality will deteriorate.

The production must be balanced so that the necessary quantity and quality is assured throughout the basin. Here one must consider minimal expenditures for production and capital construction, plan for reducing oil shale losses, minimize the negative effect of mining on the environment, and increase production, etc.

With the aid of computers we have developed the first alternatives to improve oil shale mining technology. There are two ways for improving the quality of oil shale. We see first the continued development of oil shale dressing. This requires that concentrating plants be built in the Sirgala and Narva mines and the "Mezhdurechye" mine to be built in Leningrad Oblast so that lump oil shale can be delivered to the chemical industry. In the future Kuremae, Permiskula, and the Uus-Kivioli mines must plan for essential concentration of the ore, so as to increase the calorific value of the oil shale fuel.

The second way would be to develop thermal treatment of pulverized oil shale, and build boilers that use pulverized oil shale as fuel. The way to expand the oil shale industry is connected to an increase of capital investments and production costs in those branches of the national industry that use oil shale. Since only the oil shale from the Baltic oil shale basin is easily concentrated, this trend toward use of lower heat-value shale corresponds best to the interests of the national economy in the future.

/Marat Maisuryan, director of the technical control administration of the "Eesti Põlevkivi" combine: "Improve the technical control over oil shale quality."/

The technical quality control administration of the "Eesti Põlevkivi" has been called one of the best by the ministry. There were practically no stoppages of railway loadings due to poor quality. Every month, except for rare occasions, all the mines, pits, and the combine as a whole have adhered to the average norms for caloric content. According to energy specialists who use almost 80 percent of the produced oil shale, and also according to materials of "Eesti Põlevkivi" itself, the shale quality has been stable over the last 3 years. The same conclusion was reached by scientists of the Tallinn Polytechnic Institute who investigated the optimal quality of oil shale for every electrical station.

At the same time our technical equipment is outdated--more than half of the oil shale is handled manually.

Our mines and pits were opened without major testing stations. Oil shale is loaded on freight cars by bulldozers. Only "Oktoober" is an exception, using a conveyor belt for loading.

Consequently we must have a testing kit in every mine to take samples from the freight cars. In two mines (Tammiku and "Estonia") the OB-5 and OB-3 test kits are used, but these malfunction in the winter. Apparently for this reason their manufacture has been stopped, but they have not been replaced by new ones.

The question of automated testing is especially acute in the Sirgala pit that has an annual production of 5.4 million tons. Sampling is done manually, which requires stoppage of two conveyors having a capacity of 700 tons per hour. To solve this problem we accepted the PM 2-16 prototype for industrial testing, placing it in 1979 on one of the two loading belts at the Viivikonna pit. It has functioned well to date. The second PM 1-10 testing kit was installed in 1981 in the Tammiku mine. Now the "Eesti Polevkivi" combine has received allocations to purchase four PM 2-16 testing kits in 1983. Interesting and useful proposals were made at the meeting regarding improvements in the technical quality control of coal and oil shale, and in raising the efficiency of the quality control offices. The implementation of these proposals should help to solve several problems in the production of these natural resources.

9240

CSO: 1815/29

OIL AND GAS

CAUSES OF DRILLING ADMINISTRATION'S PRODUCTION SHORTFALL SOUGHT

Baku VYSHKA in Russian 7 Dec 82 p 2

[Article by VYSHKA Inspection Team: E. Akhmedov, foreman, well overhaul shop; S. Bagdiyan, petroleum engineer; N. Mushailov, public correspondent; V. Gol'tsev, VYSHKA correspondent; "Indebted to the Country"]

[Excerpt] At the beginning of this year the socialist pledges adopted by the collective of the NGDU [Petroleum and Gas Extraction Administration] imeni N. Narimanov were published in VYSHKA. The offshore oilmen promised to surpass the extraction plan by 7,000 tons of petroleum and 12 million cubic meters of gas in honor of the 60th anniversary of the USSR. The year is coming to an end. What progress is being made in satisfaction of the pledges?

"Unfortunately," said G. Gumbatov, the chief of the administration, "there's nothing to brag about. Since the beginning of the year 165 million cubic meters of natural gas have been shipped out for processing in excess of the quota, but when it comes to oil extraction, things are going poorly: The state has been short-changed by over 400,000 tons of liquid fuel."

The administration's management believes that water encroachment into the products of a large number of the wells was the reason behind the shortfall, causing the drop in yield. And this, in their opinion, should have been expected, considering the conditions under which the deposit was developed.

This line of reasoning does have its own logic. For many years now, water has been injected into productive horizons to maintain reservoir pressure throughout the entire deposit (Sangachaly Bay, Duvanny Bay, Bulla Island). And as the flow of water approaches the bottom holes of the oil wells, the water must encroach partially or completely into their products.

But on acquainting oneself more deeply with the state of affairs and analyzing the oilfield data, one finds that the arguments suggested as objective reasons for failing the plan and the pledges for oil extraction become insufficiently grounded.

Before getting into the essence of the matter, it should be stated that the deposit is a complex structure, one broken down into several blocks by tectonic disturbances. Therefore, the choice of the sensible scheme for exploiting the most productive horizon in this region, horizon VII, was based on considerations such as the zonal heterogeneity of the beds, the sequence and the deadlines of the drilling operations and commissioning of the wells, and the rate at which the deposit could be outfitted for operation. Under these conditions area (contour) flooding, a scheme which was introduced to all production areas in the early 1970s, was the most suitable.

Of course, injection of water on the basis of this scheme did have a positive influence upon development of horizon VII. Later on, when new wells appeared in new areas of the deposit, the process of affecting the formation with water became more complex. The task of the oilmen boiled down to preventing a decline in reservoir pressure. This required intensification of the water injection volume, an increase in the number of injection wells and systematic implementation of various measures insuring high and stable injectivity. In this case to avoid partial destruction of the bed's skeleton during operation of the oil wells, it was recommended that the depression and product uptake norms established for each extraction area not be exceeded. But serious omissions, mistakes and impermissible deviations from geologically grounded rules for developing the formations were made.

Take as an example the Sangachaly Bay extraction area. This year several producing wells were drilled in its offshore portion (block 2). This necessitated an increase in the water injection volume. Two wells, No 47 and 427, were to be converted into injection wells on the basis of the plan drawn up jointly with specialists of the "Gipromorneftegaz" [not further identified]. But neither well was appropriately converted, and they remained inactive for a long period of time. Meanwhile, the oilmen neglected to consider using other wells for this purpose. Nor was flooding in block 1, where a drop in reservoir pressure had been noted several years ago, organized promptly and, most importantly, in sufficient volume. Just in September alone, the daily losses in this extraction area for this reason were 840-850 tons of liquid fuel.

Things are no better with the Duvanny Bay extraction area, which is distinguished by high well yields. In an attempt to fulfill the plan at any price, many of the wells were operated here at the maximum fuel extraction rate, in violation of the norms, and this led to their premature flooding. For example the yields from wells No 349, 287 and 278, which had produced a joint total of about 1,000 tons of petroleum per day, declined sharply. Of course, two of them were converted for exploitation of the overlying horizon, but their yields were lower than initial by several orders of magnitude. As a result some wells of horizon VII, which were expensive to install and which could have supported the necessary utilization of the available petroleum reserves, were lost.

"We are now trying to manage injection in such a way that displacement of the oil by water would be uniform," said S. Kasumov, the administration's chief geologist. "Polymers and certain methods for controlling flooding recommended to us by scientists will go a long way to make this possible. In a word, we are doing everything possible to insure stable well yields."

But it is not all that simple to achieve the desired result. The fact is that because the skeleton of the bed was disturbed, sand plugs have started making their appearance in the wells. All of this requires efficiently organized work to prevent their formation. But as we found out, these efforts are often interrupted, which leads to serious consequences. For example a sand plug became the cause of a mishap at well No 381 of oilfield No 3, which had been producing about 100 tons of petroleum. Plans were made to correct the situation, but they were never carried out because of organizational problems. Well No 342 is also operating below its potential: A sand plug is making it difficult to analyze the bottom hole and to plan and implement steps to increase the bed's oil output.

"We could organize a more-effective fight against sand plugs," said G. Gambarov, the deputy chief of oilfield No 3, "but the lack of special equipment is binding us hand and foot."

Yes, the oilmen's demand for special equipment is enormous. It is a product of the unique features of offshore petroleum extraction, and mainly the quality of Sangachaly oil, which contains a high percentage of paraffin. And this makes operation of the wells much more complex. When paraffin accumulates in the pump and compressor pipes and in the delivery lines laid over the sea-bed, it blocks the passage of the oil. There is but one solution to the problem: pumping hot condensate through the pipes. The amount of work that must be done at the oilfields is great, especially in winter: Each month the high-paraffin wells (they represent 80 percent of the operating fund) must be subjected to six or eight heat treatments, and sometimes more. And how successful these treatments are, depends in many ways on the availability of special equipment. After all, one treatment requires a heat treatment unit, a tanker truck and a mobile steam generator. But as the inspection revealed, the oilmen are being let down substantially by the special equipment transport system.

One day for example, the brigade led by foreman Sh. Safarov had to pump condensate through wells No 511 and 62, which were located on a separate foundation. It was already well into the workday, but the heat treatment unit and steam generator had not yet arrived. Only the tanker truck stood alone beside the edge of the platform area.

"The special equipment is usually late," said Sh. Safarov. "Moreover the effectiveness of the treatments is not always high enough. I think that we should use more effective ways to control paraffin deposits. Take for example the new reagent 'Azolyat-7,' which had been tested successfully at our oilfield."

This was explained to us in greater detail by the laboratory director of the All-Union Scientific Research and Planning Institute of Gas Industry, M. Mursalova. It was her collective that developed the reagent mentioned above. It was first tested in the NGDU imeni N. Narimanov back in 1975 with positive results. At that time also, "Azolyat-7" was tested in the VNIPineftepromkhim [not further identified] (Kazan)--the coordinating center of the country's petroleum industry for controlling paraffin deposits, and in the VNIISPTneft [not further identified] (Ufa). Both institutes, which are working on the same

problem, responded positively to the reagent, which can avert deposition of paraffin, reduce petroleum viscosity and concurrently prevent metal corrosion.

Hence it is clear how much benefit may be enjoyed from using this reagent. And it seemed then that experimentation would be followed by practical steps. However, it was not until 1979 that a department commission of the Ministry of Gas Industry accepted "Azolyat-7" and ordered the "Gipromorneftegaz" to draw up plans for an experimental industrial facility to produce the reagent.

"On our part," said M. Mursalova, "our institute made the specifications of the process for obtaining 'Azolyat-7' available promptly, and it completed the work plans for the technological side of it, but this did not make things go any faster. It was only at the beginning of this year that 'Gipromorneftegaz' completed the plan, but when construction of the facility will begin, no one knows as yet."

While criticizing the oilfield operators for serious violations of the geologic laws of working the natural resources, we cannot remain silent to the fact that on occasion they lack what they need so much for systematic research--for example special cable, small pressure gauges that can operate at considerable depths, thermographs, samplers used for analysis of wells through inch-and-a-half pump and compressor piping, and much else. The oilfields do not yet have the high-output mobile machine units that can repair deep offshore wells, tools that are reliable and convenient to use, and equipment that could guide retrieval operations to free stuck piping.

11004

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OIL AND GAS

CASPIAN OFFSHORE DRILLING PROGRESS REPORTED

Moscow STROITEL'NAYA GAZETA in Russian 11 Mar 83 p 1

[Article: "Attack on the Caspian Shelf"]

[Text] Intensive petroleum extraction began on the Caspian shelf in the postwar years with development of the famous Neftyanyye Kamni, almost a hundred kilometers from the capital of Azerbaijan. Oil and gas fields have now been created at various points on the sea: Peschanyy Island, by Cape Sangachaly and the coastal area of Turkmenistan.

Implementing the decisions of the 26th CPSU Congress, builders and offshore oilmen are continually increasing the pace of their work and utilizing the latest procedures and methods of erecting and outfitting the fields, often uniquely different from those used on land. That is the subject of our collective story.

Apsheron: "Underwater Routes," by E. Gamishayev, Trade Union Committee Chairman, Construction and Installation Trust No 3, Azmornefttestroy Trust.

You won't see any of the tankers that used to deliver "black gold" to the continent from Caspian oilfields anymore. They have been replaced by underwater petroleum pipelines. The country's largest underwater route, 78 kilometers long, was laid from Neftyanyye Kamni to Apsheron.

The efforts of three trusts and six administrations were concentrated on its construction. But the powerful pipelaying ship "Suleyman Vezirov" played the principal role.

The pipeline's commissioning freed an entire flotilla of oil tankers for other shipping, made fuel transport under all weather conditions possible and excluded the slightest possibility of petroleum losses and the sea's pollution. All of this has made it possible to save 3 million rubles for the national economy in just one year alone.

Quite recently laborers of the Kasporneftegazstroy Trust laid another strand of pipeline ahead of schedule. It connects the shore to another deposit--the offshore Bulla deposit. The new route, the capacity of which is significantly superior to its predecessors, provides for fast transport of gas, gas condensate and petroleum.

Astrakhan: "City on Platforms," by N. Bragin, Assistant Chief Engineer, "Lotos" Plant.

Our collective has a direct relationship to increasing fuel extraction on the Caspian.

As readers of STROITEL'NAYA GAZETA are well aware, a deep-water platform plant is now being erected in Karadag. The stationary foundation is similar to a giant mushroom--a "stem" and "cap." In technical language these are the monoblock and the deck. Monoblocks about a hundred meters tall are being created by Baku workers at the plant under construction in Karadag, while the upper part--the working platform--will be finished at our plant. Such a platform is an entire city providing for the work and life of 200 offshore oilmen.

The plant has now initiated preparations to equip the first Karadag platforms, which will arrive at our plant in early 1984. We are now preparing the first two outfits of modules equipped with electric motors, pumps and various drilling equipment.

The attack on the sea's petroleum and gas formations will proceed from these artificial islands, which will form an entire "archipelago" on the Caspian--from the shores of Azerbaijan to the shores of Kazakhstan and Turkmenistan.

Cheleken: "Both Seamen and Builders," by V. Petrushin, Chief, SMU, Chelekenmorneftegazprom

Cheleken Peninsula is the location of Turkmenistan's offshore oilfields. The drilling rigs are marching farther and farther into the vastness of the Caspian. This five-year plan our Chelekenmorneftegazprom Association plans to increase petroleum extraction in this area by a time and a half.

The collective of the Cheleken SMU [Construction and Installation Administration] is following the lead of Baku in creating Turkmen Neftyanyye Kamni. We are erecting trestles, setting foundations on the sea and laying petroleum and gas pipelines over its floor.

The geography of the operations is continually expanding. The builders are moving ever farther from the coastal basin. The work volume is growing as well. While last year we erected three offshore platforms and laid 4 kilometers of pipelines beneath the water, this year we pledged to introduce seven individual offshore foundations and lay 5 kilometers of pipelines on the floor of the Caspian. After that, these foundations will be joined together by trestles.

The SMU collective contains many innovators and leading laborers. They include foreman M. Il'kayev, brigade leaders K. Tel'bes and G. Mirzayev and arc welders V. Vysotskiy and A. Stefanov. They combine within themselves the professional qualities of seamen and builders, and they are working creatively, with a full commitment.

Shevchenko: "From Great Depths" by G. Gasanov, Distinguished Foreman, Azerbaijan SSR

Dozens of promising structures have already been explored on the shelf of the Caspian Sea. One of these deposits--Shevchenkovskoye--is located in the coastal waters of Kazakhstan. This is now the work site of a small flotilla of specially equipped vessels ("Kirgiz," "Sudmelets" and others). Cores are being drilled from their decks.

Yet another powerful floating drilling rig, one which could reach almost the 7-kilometer mark, "feeling its way" through the ground beneath the sea, will soon begin operating in this same area.

And after the geologists pass through, the builders will follow in their footsteps. It will not be long before they will lay trestles and erect foundations, mooring facilities and tank farms in the vicinity of Shevchenko.

Neftyanyye Kamni: "Replacing Steam," by Yu. Arutyunov, Chief, Capital Construction Department, Petroleum and Gas Extraction Association imeni XXII s"yezd KPSS

Builders and installers are erecting another electric power plant in the vicinity of Neftyanyye Kamni. It will be almost five times more powerful than the presently existing one.

The new powerful heart of the city on piles will be a gas turbine and not a steam turbine plant, as is the case with the existing one. Planners estimated that Neftyanyye Kamni extracts more than enough casing-head gas to satisfy the needs of four gas turbine generators.

Commentary by Hero of Socialist Labor K. Abasov, USSR Supreme Soviet Deputy, Chief, "Kaspmorneftegazprom" Association

A significant increase in fuel extraction from offshore deposits is foreseen in the 11th Five-Year Plan. The "Kaspmorneftegazprom" Association is to play an important role in this task. The collectives of the Order of the October Revolution Azmorneftestroy, Kaspmorneftegazstroy and Kaspmorremstroy trusts, of the construction and installation administration of Chelekenmorneftegazprom and of our other construction subdivisions have already laid 420 kilometers of trestles over the sea and erected gas compressor stations, mooring facilities and petroleum and gas refining transport enterprises. And today they are continuing to create and outfit new offshore oilfields. Construction of an installation and assembly area at Apsheron to be used to create deep-water platforms is nearing completion. Giant steel islands that do not require creation of trestles and which can help us attack more deeply have already been assembled here and sent out to sea.

Before the year is out, our offshore builders will lay about 50,000 meters of steel highways, place 15 trestle platforms into operation and install a dozen individual foundations at sea.

The state displays great concern for those who extract "black gold" under the difficult maritime conditions. Prior to the end of the five-year plan 138,000 square meters of housing space will be erected for Caspian oilmen and builders. New blocks of housing will rise in the settlements of Lok-Batan, Khanlar and Patamdar. A local large-panel house building plant with a capacity of 115,000 square meters of housing per year is to be erected in Karadag.

Children's nurseries with a capacity of 420 children and a hospital with 150 beds will be erected on the island of Artem and in Lok-Batan. Another dispensary with a capacity of 320 patients will be erected in Apsheron's resort zone. A large subsidiary farm is being created. A new water pipeline will be laid to Cheleken from Nebit-Dag.

Offshore builders assumed a fast pace from the first days of the year. They are fully resolved to make an honorable contribution to raising our motherland's energy supply.

11004

CSO: 1822/243

OIL AND GAS

REJUVENATED CASPIAN WELLS SHOW HIGHER OIL OUTPUT

Baku VYSHKA in Russian 20 Jan 83 p 2

[Article by correspondent S. Bagdiyan: "The Potential of the Petroleum Bed"]

[Text] The old areas of the Kala and Buzovny-Mashtagi fields, on which the wells of the "Azizbekovneft" NGDU [Petroleum and Gas Extraction Administration] are located, have now been exploited for 5 decades. During this time the ground's fuel reserves naturally decreased significantly, and the petroleum extraction conditions themselves grew more complex. Nonetheless, the administration's laborers are working persistently and regularly on the well fund, and they are competently utilizing the available reserves.

Not far from the office of petroleum and gas extraction shop No 1, a brigade from the Apsheron Drilling Operations Administration is now completing the drilling of slant well No 1529, the planned depth of which will be 2,150 meters beneath the Podkirmakinskaya series. The drilling is proceeding ahead of schedule.

"The drillers are almost at the planned bottom hole already," said shop chief M. Asadov. "In the next few days we will take complex core samples for geophysical analysis jointly with them. Our collective is laying great hopes on this well. From the forecasts of the geologists we anticipate getting not less than 8 tons of petroleum per day."

The estimates of the oilmen are fully grounded. Two other wells drilled into these same beds last year are now operating with compressor assistance, and they are stably producing 9-10 tons of fuel per day each.

Drilling new wells at deposits that have been under exploitation for a long period of time is a great reserve in the fight to stabilize and increase fuel extraction in the NGDU. Here is what T. Aslanov, the administration's chief geologist, has to say about this:

"There are sizeable extractable residual reserves of petroleum at the Kala and Buzovny fields. Considering the low use level of the deposit's exploitation network and the present technical condition of the well fund (the flow strings of many wells are worn, and serious defects are present), jointly with the

AzNIPIneft' [not further identified] specialists of the NGDU carried out a major project to determine the geological and technical feasibility of drilling. It was determined that if the potential reserves of the petroleum beds in the Kala and Buzovny deposits are to be utilized to the fullest extent, 15-20 new wells would have to be drilled each year. The anticipated mean annual oil yield of each of them is 5-8 tons. To us, this is a lot.

"This year we intend to finish drilling and place nine wells into operation through our own efforts and with the assistance of the collective of the Apsheron UBR [Drilling Operations Administration]. Work is already proceeding at full steam at three of them. Located on the Kala field, well No 1490 is of considerable interest. Having a planned depth of 4,000 meters, it should reveal deposits of petroleum and gas in Myocene formations.

Drilling is opening up good prospects for the NGDU collective. Nevertheless the old fund of producing wells and implementation of effective geological and technical measures aimed at raising their productivity are still the main reserve.

Last year the administration's oilmen did not work too badly in this respect: They implemented 2,553 measures, 53 more than planned. This made it possible to extract almost 70,000 additional tons of liquid fuel from the productive beds. Restriction of inundation of the wells with cement foam using a procedure developed by specialists of the NGDU itself produced a good return. About 5,000 additional tons of petroleum were obtained with the help of this progressive method.

The return of inactive wells to operation following repair and restoration jobs and after creating a new producing shaft is a great reserve for intensifying extraction. Over 10,000 tons of petroleum have been obtained from 41 wells returned to operation last year; in this case more than half of this quantity of fuel was produced by 12 wells bringing petroleum to the surface through new shafts.

The thoughtful, meticulous work of the operators, foremen, geologists and engineers on inactive wells promoted a decrease in their quantity. While at the beginning of last year there were 76 nonworking wells in the NGDU, by January the figure dropped by 28 units. Before the end of the current year another 32 wells are to be restored with the help of overhaulers.

Discussing the reserves for stabilizing and increasing extraction, we cannot fail to mention the positive role played in the NGDU by introduction of a work system for underground well repair brigades not requiring the use of work orders. This had already been discussed in detail in VYSHKA. Let me simply note that owing to expansion of the service zones, the number of work shifts in the underground repair shop decreased from 56 to 50. The time of well exploitation increased by more than 9 times in the NGDU as a whole owing to improvements in work quality, attaining 47 days between repairs. Correspondingly the daily number of wells standing idle in anticipation of repairs was reduced by 11 units.

"One important result of reorganizing the repair service," said NGDU chief engineer A. Mamedov, "is the fact that we were able to reduce petroleum losses last year by more than 1,000 tons owing to a decrease in the number of wells standing idle in anticipation of repairs, and to the greater length of their exploitation between repairs."

The administration's collective finished the second year of the five-year plan with good indicators. A stable extraction level is being maintained from one month to the next. The extraction plan was surpassed by a total of 320 tons of petroleum and almost 2.8 million cubic meters of gas. "Azizbekovneft" workers have started conducting their business more carefully and expending their resources more rationally; they saved more than 2 million kilowatt-hours of electric power and 600 tons of relative fuel units.

Entering into the third and central year of the five-year plan, the collective is striving to consolidate its gains and attain new successes. This is the target set by decisions of the November (1982) CPSU Central Committee Plenum and the December Plenum of the Azerbaijan Communist Party Central Committee.

A competition with the motto "Maximum return from each well" gained new momentum in the first days of January. Effective geological and technical measures will increase petroleum yields of two wells in sections of oilfield No 1 run by foremen R. Alkhazov and A. Akhmedov. This oilfield won third prize in the sector for its results in the all-union socialist competition in honor of the 60th anniversary of the USSR. Members of foreman T. Musayev's brigade enjoyed a reasonable increase in their petroleum yield after the fluid pumping rate was increased at two wells. At oilfield No 2, foreman E. Bunyatov's brigade placed well No 1528 into operation ahead of schedule. It is now producing a yield of 4-5 tons of petroleum per day. Well overhaul brigades led by foremen K. Kafarov, G. Isabekov, Z. Shakhmardanov, I. Pasechnik and many others are doing shock work, staying ahead of schedule.

The administration's collective adopted high socialist pledges for the third year of the five-year plan. They foresee reducing consumption of resources, economizing on state assets, broadly introducing the best experience and strengthening labor and production discipline at every work station. All of this will permit the oilmen to work stably and to surpass the plan by 400 tons of liquid fuel and many millions of cubic meters of gas at their aging, long-exploited deposits.

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CSO: 1822/243

OIL AND GAS

NOVYY UZEN OILMEN SURPASS PLAN DESPITE SETBACKS

Alma-Ata KAZAKHSTANAKAYA PRAVDA in Russian 27 Jan 83 p 1

[Article by correspondent G. Dil'dyayev: "So That the Wells Would Not Go Poor"]

[Text] Since the beginning of the five-year plan oilmen of Novyy Uzen extracted 20 million tons of "black gold." Everyone here, beginning with the chief of the "Uzen'neft'" Administration and ending with the common workmen, shows heightened interest in the reports from the weathermen. This is understandable: The lower the mercury column, the harder it is to keep the operations running smoothly. After all, Uzen oil solidifies even at summer temperatures.

The weather was not going to do anyone any favors today either. Night frosts are malicious, and if an operator dares to doze for even an instant, an unattended well could find itself choked by a paraffin plug. To work the winter months without losses means to create the foundation of success for the entire year. These days, the daily yield from the oilfields of the "Uzen'neft'" Administration has been in keeping with the plan.

Operator S. Abenov was pleased as he returned from an inspection of his deep-drilled well. We were sitting in the intense heat of the operators' hut. Sabit warmed his wind-chilled hands as he spoke:

"Our associates did not let us down. Equipment has been delivered to all wells that were to be processed today."

Abenov is well acquainted with the "burrows" of each of the wells assigned to the brigade. He has now been working here for 10 years. And to put it simply, his work is excellent. Last year, together with his comrades he extracted almost 410,000 tons of petroleum. This includes 1,000 tons in excess of the plan. This top operator of the administration became a laureate of the Kazakh SSR State Prize.

The oilfields of Uzen are the best in the republic. The bulk of Kazakhstan's petroleum is extracted here. The deposit has been exploited for a long period of time. Maintaining its high productivity is an undertaking of many difficulties.

What it requires most of all is debugging the system for maintaining reservoir pressure. For the first time in many years the plans for injection of water into the bed were fulfilled last year. Over 500 million cubic meters of water were fed into the ground by injection wells.

The unique features of Uzen petroleum require introduction of certain corrections into the conventional system for maintaining reservoir pressure. Caspian water is fed to the oilfield by pipeline. When it gets here, it is heated. The hot salt water is then pumped into the bed. These "injections" are what "rejuvenate" the age-old deposits. According to the estimates of specialists, every 5 cubic meters of such water raise a ton of petroleum to the well mouth. So-called stepped thermal flooding produced a good economic impact and raised the fuel extraction factor.

The oilfields of the Uzen deposit have become a unique proving ground where many methods of artificially influencing productive beds and various recommendations of science are tested out and rehearsed. Various chemical reagents are being used successfully to increase well productivity and to control paraffin and salt deposits. Despite the fact that the deposit has entered a late stage of its development, all of these measures are making it possible to maintain a high level of crude extraction.

The finish of the last year was difficult for oilmen of Novyy-Uzen. Breaks in the Shevchenko-Uzen water pipeline required the shops responsible for maintaining reservoir pressure to work feverishly. At the beginning of December an accident occurred at the gas refinery, and delivery of compressed gas to the oilfields was halted. Over a third of the oil wells are "committed" to the gas-lift extraction system. They stopped producing.

In those days a staff was created by the Novyy-Uzen city party committee to coordinate the actions of associated oilfield, drilling, repair, power production, gas processing and transportation enterprises. No one was left out of the common effort. The staff efficiently analyzed the evolved situation and made a decision.

Work went on around the clock at the oilfields. First of all, the gas-lift wells were put back in operation. The capacities of the Kazakh gas refinery were found to be insufficient. This is why it was decided to connect the "Zapadnaya Ten'ga" deposit to the gas-lift system. A few dozen wells were converted to mechanical extraction: They were equipped with pumps. All of this was done at the fastest pace. A well came back to life, producing oil. The collective of the "Uzen'neft'" Administration surpassed the annual extraction plan by 35,000 tons of fuel. The greatest contribution to this success was made by the brigades led by Zh. Agimanov, V. Yegorov, K. Mambetov and G. Kvankevich. All oilfields fulfilled their plan.

The hard work of the Novyy-Uzen oilmen received its deserved assessment. For attaining high results in the all-union socialist competition and in commemoration of the 60th anniversary of the USSR, the oil city Novyy Uzen was awarded the perpetual Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee.

In the third year of the 11th Five-Year Plan the oilmen of Novyy Uzen decided to multiply their contribution to the country's fuel and energy balance. Their socialist pledges include the following: Surpass the annual extraction quota by 20,000 tons of petroleum.

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OIL AND GAS

'SHEL'F-2' READY TO MOVE TO OFFSHORE DRILLING POSITION

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 5 Feb 83 p 1

[Article by O. Ginzburg, Baku: "'Shel'f-2" Ready for Work"]

[Text] It takes 2 hours of travel by sea today to reach the semi-submersible drilling unit "Shel'f-2" at the intermediate site. But in several days our cutter will need twice as much time for this trip. The meteorologists have been promising for days a long-awaited "window" in the bad winter weather in the Caspian. Then five powerful tugs will pull thick cables, and the unit will slowly move towards the promising oil and gas field named after the hero of offshore oil extraction, Mikhail Kaverochkin which is located close to the legendary Neftyanyye Kamni.

The unit has impressive dimensions. In the working position it is as tall as an 18-story house. In the special passenger "pavilion" I am taken to the deck of "Shel'f" by a crane from the cutter which is dancing on the waves.

"Of course, we also feel the rocking," says the head of the unit Asim Efendiyev. "It is true that this requires stronger wind and larger waves. Eight anchors and powerful ballast pontoons help to cope with the underwater currents and waves and to hold the unit at an assigned place. Even in a six-point storm, with wind of 18 meters per second, "Shel'f-2" can drill a well up to 6,000 m deep."

The drilling foremen, mechanics and signal men came into the cabin of the unit head. The last preparations for the trip were underway. Captain Petr Alekseyev who had worked on the Caspian for over 30 years was at the main control post. The unit will move at his command. The captain now reports to the visiting representatives of the all-union production association "Kaspmorneftegazprom" about the readiness of the services.

The main power engineer Rafik Iskenderov also heads the first party organization. The party organization supervises one of the most important services, the power heart of the unit. It is a powerful service. "Shel'f" can provide for a city with population of 25,000 with its current. This possibility was verified without fail during assembly in Astrakhan when emergency disconnection of electricity occurred once. "Shelf-2" provided electricity for part of the city together with the shipbuilding association.

Someone jokingly noted that the energy of R. Iskenderov is akin to the energy of his unit. I noted the thoroughness and meticulousness with which he and senior engineer Zamir Khanakhmedov, shift mechanic Vladimir Baranenko and other specialists checked and rechecked the condition of the electric drives in the anchor and drilling winches, and the round trip equipment.

The silence of the central post for controlling diesels, pumps and compressors was shattered by shrill signals. Different colored lights lit up on the panel: malfunctions somewhere. The senior mechanic Valeriy Andronov reacted instantly. He disconnected the malfunctioning unit, started up the reserve and called the repairmen. Today's alarm is a training exercise. The mechanics are being trained to act so that in the case of a real emergency they will eliminate it quickly.

Today's driller needs more knowledge than the drillers of the depths 10 years ago had. Automatic machines and remote control require workers and engineers of the highest skill. We found the experienced driller Ivan Prokof'yev looking attentively at a television screen. The system of underwater television manufactured by the Novgorod workers now has another application: it helps the driller to coordinate the actions of the troubleshooters who are in a distant compartment. However within a certain time the television camera will permit a look at the depths where even a specially outfitted diver will not be able to dive.

"Shel'f-2" will drill its first well on a section with water mass reaching 158 m. This is not the limit however. It is capable of drilling 200 m. The work place of Prokof'yev is surrounded by numerous instruments which indicate how a certain mechanism is operating. The specialists are faced with testing the underwater well head equipment which was created for the first time in the country by the Volgograd workers.

"A total of 20 scientific research and planning institutes in the country participated in creating 'Shelf'-2'," relates the head of the department of floating drilling platforms of the offshore administration of exploratory drilling with specialized technical equipment Faik Dzhabiyev. "The second 'Shelf' took into account the omissions found during the operation of its predecessor, 'Shel'f-1'. The designers and planners went even further in facilitating the work of the drillers. Many labor intensive operations have been mechanized and automated. Even such an important problem as environmental protection was carefully thought out."

The striped marker buoys on the field imeni Kaverochkin which "Shel'f-2" is heading for are clearly seen from a distance. This is now the leading edge of the struggle for the Caspian oil.

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OIL AND GAS

'SHEL'F-2' BEGINS DRILLING IN CASPIAN

Baku VYSHKA in Russian 6 Apr 83 p 2

[Article by A. Gol'denberg, Azer INFORM correspondent: "'Shel'f-2" Begins Its Watch"]

[Text] Yet another mobile drilling unit, "Shel'f-2," has been included in fuel prospecting in the Caspian Sea. It began to drill its first well on 5 April. The shaft, 4,500 m deep, will be laid by the rotary-turbine method at the new structure which has been given the name of the renowned drilling foreman, Hero of Socialist Labor Mikhail Kaverochkin.

Wells had not been drilled on this structure, considered by the geologists to be a continuation of the promising field imeni 28 April, until now, and the explorers of the depths are faced with proving how right the geophysicists are. They assert that it is favorable for finding fuel.

"Shel'f-2" is securely attached to the sea floor by eight anchors. The water is 165 meters deep here. Drilling has not yet been done at this sea depth in the Caspian. Until now, well No 5 at the field imeni 28 April on a section with water depth of 113 meters was considered to be the deepest.

The well design is also unusual. The diameter of its upper part is 762 mm. This is the largest to date in the Caspian. The wall thickness of the string that will be lowered into it reaches 25 mm. The drillers consider these dimensions to be necessary in order to withstand the high loads expected in the well. There were no suitable series-manufactured bits available for it so they were especially made for this borehole.

The brigade of young but already experienced foremen of Rafik Iskenderov and Gidayat Geydarov has been entrusted with the important task of drilling the first well at the new structure.

They have automatic equipment at "Shel'f-2" to control all the lowering-lifting operations. The special automatic system of transporting and storing bulk materials for making the drilling solution excludes the use of manual labor to perform this operation and guarantees environmental protection.

"Shel'f-2" is the first unit which has been equipped with underwater well head equipment for sealing the wells of domestic production. The floating

borehole is supplied with a system of underwater television and has a diving complex and helicopter pad on which the rotary wing machines which continually supply changes of drillers and emergency cargo to the unit land.

Before the end of the year, the fleet of floating boreholes in the Caspian which already includes eight platforms, will be supplemented by another mobile unit of the semisubmersible type. It is now being built at the shipyards of the Astrakhan shipbuilding association.

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OIL AND GAS

GAS PUMPED FROM BLACK SEA GOLITSYNO FIELD

Moscow IZVESTIYA in Russian 23 Apr 83 p 1

[Article by S. Troyan, IZVESTIYA staff correspondent, Crimean Oblast: "Gas from the Bottom of the Black Sea"]

[Text] The Black Sea has become a supplier of blue fuel. The Golitsyno field located near the northwest coast of the Crimean Peninsula has produced gas for industrial and daily needs.

The geologists discovered the resources over 4 years ago, hidden under 35 meters of water. The first brigades of the production association "Chernomorneftegazprom" came to the coast of the Karkinitskiy Gulf and then a construction administration was set up here. Its workers specialized in the construction of the underwater section of the offshore gas pipeline.

"We were faced with a lot of work," says the director of the association, M. Petrosyan. "Everything was unusual. The construction was experimental and we had to solve many problems right on the spot."

After analyzing the situation, it was decided to weld the pipes on the shore of the nearby saline Panskiy Lake instead of on barges as previously. The lengths were then towed to sea to the butt joining site. The first steps were especially difficult. Even in the most favorable months, they did not succeed in laying more than 3 km of pipeline on the sea floor. An initiative group of engineers and workers headed by the head of the administration M. Tkachev and the builder-route worker, foreman I. Kaposzko who was famous in the country was set up. The creative search provided the necessary result: it was possible to increase the length of each length sent to the laying site from 1 to 3 km.

The brigades of installers of S. Cherkasskiy and N. Zolin, electric arc welders M. Chernenko did not shirk the difficulties. The work rates rose. In some months the gas pipeline grew 9 km.

All the main operations at sea were done under the supervision of the head of the shipment service of the expedition team of underwater-technical operations and the fleet N. Sitenko. The commands of the ships "Kapitan

Dolgopolov," "Tsentrav," "Skif," "Desna," "Entuziast" and others acted exceptionally harmoniously under the most severe conditions.

The collectives of the Ilichevskiy and Odessa ports helped the builders of the offshore section of the gas pipeline. The crews of the 300-ton floating crane "Bogatyr'" and the boat "Antaris" worked without idling. The work of the divers V. Sytnik, V. Ivlev, sailor S. Volkov was outstanding. The divers literally "felt" every meter of the 72-kilometer segment of the underwater section of the artery.

Joining of the gas pipeline on the scow and welding should have been done with sea waves no higher than two points, but such weather was rare. But no one waited for good weather from the sea.

The drilling platform "Golitsyno-2" rose in the open sea at the same time. The base of the steel giant which weighs about 3,000 T together with its equipment, rose 8 m above the surface of the water. Gas travels from here to the shore, to the unit of comprehensive fuel preparation.

The Black Sea gas will reach the consumers in a week.

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OIL AND GAS

LAND-BASED, OFFSHORE OIL DRILLING IN BALTIC DESCRIBED

Moscow IZVESTIYA in Russian 4 Mar 83 p 1

[Article by I. Kasyukov, IZVESTIYA staff correspondent, Kaliningrad: "Oil Flows from the Baltic"]

[Text] The depths of the Sambiyskiy Peninsula have preserved the secret of the oil fields for centuries. With the discovery of the Kaliningrad reserves of "black gold" the Baltic industrial region found its own source of liquid fuel. This oil is at easily accessible depths, is devoid of harmful admixtures and is used for the manufacture of high quality gasoline.

Oil extraction at the westernmost field in the Soviet Union began in 1975. It started with several wells of the Krasnoborskoye field. The first railroad car was barely filled in a month. Now every day up to 100 and more tank cars with oil are sent to the refineries from the approaches of the Znamensk station where the pipelines converge from seven operating fields which have about 150 active wells. The Slavinskoye field which will become active this summer is waiting its turn. After this Baltic oil extraction will exceed 1.5 million tons per year.

It goes without saying that the Kaliningrad workers cannot compete with their Tyumen colleagues in quantity of extracted oil. But the collective of the association "Kaliningradmorneftegazprom" has something to be proud of in the attained technical and economic indicators.

Labor productivity for extraction of oil here has risen by more than 1.5-fold since the beginning of the last five-year plan. Last year, in conversion for one worker, 4,200 T were extracted. This is a good indicator. The output of the drillers has increased by almost one-fifth. Extraction of liquid fuel at the Kaliningrad field rose by more than 10 percent in only 2 years of the current five-year plan. According to the results of socialist competition in honor of the 60th anniversary of the formation of the USSR, the collective from the association "Kaliningradmorneftegazprom" was awarded the winning place in the sector. The field workers, responding with action to the decisions of the November Plenum of the CPSU Central Committee, have been obliged to raise oil extraction in the third year of the five-year plan by another 4 percent.

The Kaliningrad fields have been operating for 7 years. This year, the total quantity of extracted oil will exceed 10 million tons. The profit obtained during this time more than compensated for all the outlays to set up and build up the westernmost field in the Soviet Union. Colleagues now come to the Kaliningrad workers for the leading experience. The drillers here, for example, have successfully used the inclined-directed drilling method. It is true that this method requires a high degree of skill and causes a lot of trouble, but then it is attractive because of its low cost, and primarily, the possibility of using smaller land areas.

Yes, the oil derricks have become a conspicuous detail in the landscape of this kray of amber and sand dunes. The presence of the oil field influences the economic and social development of the region. It is enough to say that the oblast center, the city of Kaliningrad, uses natural gas extracted in the oil field. The capital of the association and the hands of the oil workers build housing and cultural-general institutions in the cities and settlements where the field workers have settled.

However, in those same 7 years, over half of the operating fields have reached the maximum possible level of oil recovery. Almost half of the active well fund had to be switched to the mechanical extraction method. Whereas initially every hundred tons of liquid pumped from the depths of the ground had 99 tons of pure oil, now, the percentage of water and salts is over one-third. This is the other side of the field activity. What is the outlook for the future? I asked this question of the chief engineer of the association G. Puriy.

"Both are true," began Grigoriy Vasil'yevich. "Striving to pump out more oil, at our field for example, extraction in 7 years increased more than five-fold, we are now approaching the aging of the fields. But this is natural. In this situation, in order to maintain extraction, to preserve the previous percentage of 85 of oil of the first and second category, we need to apply more effort, resources and creativity wit. This is what we are doing. In particular, we are increasing the output of the oil purification units, expanding the reserve fleet, putting another field into operation, and improving production control. As for the future: we have another five untouched fields on dry land and favorable outlook in the depths of the Baltic Sea."

The first step towards the secrets of the depths of the Baltic covered by 30 meters of water was the construction of an offshore stationary platform, a unique springboard for the attack on the benthic deposits. The handmade structure resting on 48 tubular support legs and rising 12 meters above the water can be seen on the beam of the city of Baltiysk 9 miles from the shore. The platform consists of two sections, production the size of a hockey field, and the living the size of a volleyball field. During this winter the structure brilliantly withstood the onslaught of four hurricanes.

Communication with the platform is maintained by ships (there are six in the association) by radio telephone. Assembly of a helicopter pad will begin here with the onset of good weather. The cranes, welding equipment and transport vehicles have already been brought to the platform. They have autonomous power supply.

"Almost like a recreation place," the drilling foreman I. Nikonov greets us with the joking cry, indicating the group of workers comfortably settled around a color television.

After a working day it is no sin to relax, the more so since there are all the conditions for this: three televisions, table-top games and books. There are places to dry shoes and clothes. The sleeping places are a match for a good hotel. However, the sea is still the sea. The platform has a reserve of food and drinking water for a month just in case. A ship keeps watch at the mooring.

"We are now involved in additional reinforcement of the support blocks to the sea floor," relates I. Nikonov. "We are working in two shifts. With the onset of summer we will start construction of the drilling derrick."

We note, comrades, that this will be the first drilling derrick on the Baltic.

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OIL AND GAS

BRIEFS

DRILLING RIG INSTALLATION RECORD--A team of derrick installers of I. Karimov's brigade achieved a new success. Fourteen persons erected two drilling rigs within a single work shift. This result was attained for the first time not only in the collective of the derrick installation office of the Almet'yevsk Drilling Operations Administration but also in the "Tatneft" Association. No special preparations had been made for the record-breaking installation effort. It just happened that two brigades of drillers completed drilling their wells at oilfields of the "Yamashneft" Administration right together. They needed another place to work, so that they would not have to wait around idly. Installers of the team led by Yakup Usmanov decided to take on the task. They drew up a tight schedule, and they dismantled into blocks, transported to the new drilling area and installed not one, as usual, but two rigs. And so fast! Clear organization of labor, which insured literally minute-by-minute precision in the fulfillment of each operation, and maximum mechanization of the work helped. As a result the first rig was dismantled, transported and reassembled within 4 hours, and then the second was dealt with after lunch. This success is not something extraordinary for I. Karimov's whole brigade. Back on 21 October of last year this leading collective completed its plan for 2 years of the five-year plan. [By special correspondent U. Bogdalov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 15 Feb 83 p 1] 11004

OIL, GAS PRODUCTION SHORTFALL--The collective of the "Chelekenmorneftegazprom" Association fell short of its deliveries to the national economy by 7,000 tons of petroleum and over 4 million cubic meters of gas in 3 months of 1983. V. V. Lebed', chief of the association's economic planning division, replied to the question as to what was behind the shortfall: "There is probably no need to explain that the Cheleken oil deposit recently entered a natural phase of declining output. Until recently, we were able to maintain and stabilize the production level owing to intensified geological and technical measures, and to planned repair and restoration of the wells. Connection of new underground arteries also helped. However, two wells stopped gushing at the beginning of the year. This could not have been predicted. Efforts are now being made to convert them to mechanized extraction, but production has suffered considerably in the meantime. Another bad thing is that we were let down by the drillers. The administration for offshore exploratory drilling failed last year's plan for commissioning new wells, both petroleum and gas condensate. Instead of eight, the administration placed only three into operation. Nor was the

problem corrected in the first quarter. Offshore exploration continues to beg attention and real assistance from the "Kaspmorneftegazprom" All-Union Production Association. There is not enough marine transportation--floating cranes in particular. Frequent interruptions occur in deliveries of reagents, materials and piping. These are the reasons why construction of the steel foundations and assembly of drilling rigs are being delayed on the Caspian. Only by eliminating the gap between the plans for commissioning new underground arteries at sea and their actual fulfillment can we extract the full volume of petroleum and gas." [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 15 Apr 83 p 2] 11004

CHEMICAL INJECTION WELLS--The yield of old wells at the Zapadnyy Tebuk petroleum deposit in the Komi ASSR is growing. A complex that is intensifying fuel extraction has been placed into operation here. The pumping stations inject chemical reagents into the ground under high pressure, increasing the return from the bed. The same sort of complexes are also being erected at other deposits of the autonomous republic. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 8 Feb 83 p 1] 11004

CHEMICAL GAS PLUG ELIMINATION--A unique method of eliminating the harmful influence of gas was proposed by scientists of the Azerbaijan Institute of Petroleum and Chemistry imeni M. Azizbekov. They managed to almost double the yield of a group of oil wells without using any additional equipment to do it. When petroleum is extracted from the ground, casing-head gas is released. This gas plugs the pores in the petroleum reservoirs, blocks the movement of fluid and, on getting into the pumps, sharply reduces the effectiveness of their work. There are different ways of reducing the negative influence of this gas. But they all involve installing additional equipment and special devices that complicate the structure of the shaft, and they require energy outlays. Colleagues of the department of development and exploitation of petroleum deposits of the Azerbaijan Institute of Petroleum and Chemistry imeni M. Azizbekov tried another approach. With this new chemical method, it is enough to inject an aqueous solution of surfactants into the well. They dissolve the bubbles of gas and bring it up to the surface. This method, introduction of which has been started at the oilfields of the "Ordzhonikidze-neft'" Association, is much cheaper and simpler than traditional methods. The active substances used in it are being isolated from organic fertilizer production wastes by colleagues of the Institute of Organochloride Synthesis of the Azerbaijan Academy of Sciences. [Text] [Baku VYSHKA in Russian 3 Feb 83 p 2] 11004

EXPERIMENTS WITH COMPLEX FORMATIONS--The Fedorovskoye petroleum deposit at Surgut has become an experimental proving ground. Construction of West Siberia's first complex for extracting liquid fuel from so-called complex formations has begun in the northern part of this deposit. Oilmen servicing well No 1512 were the first to learn of this. On the day after the well was started up, pressure within it increased by over 10 times. And then instead of petroleum, the well began producing gas. It came out with such enormous force that it damaged equipment. "That is precisely what makes complex deposits different--traditional methods won't get the oil out," said A. Telishev, deputy director of the Siberian Scientific Research Institute of Petroleum Industry. "The

obstacle is gas, which sits on top of the petroleum layer like a huge cap and displaces the oil from the well." Tyumen oilmen prepared beforehand for construction of the experimental oilfield. The design of producing and injection wells, the protective measures to control paraffin deposits and the procedures for uncovering the reservoirs will be worked out here. The deadlines for the experiment are stiff: By as early as the end of the five-year plan these formations should support maximum extraction of petroleum from the deposit. [By TASS correspondent V. Zhilyakov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 8 Feb 83 p 2] 11004

TYUMEN OBLAST OIL EXPLORATION--N. Aksarin's brigade has completed exploration of a new petroleum formation at the Vostochno-Surgutskoye deposit ahead of schedule. This leading collective surpassed the plan for drilling exploratory wells by 15,000 meters since the beginning of the five-year plan. This was the result of an increase in labor productivity and fuller use of work time. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 18 Feb 83 p 1] 11004

ESTONIAN SHALE GAS UTILIZATION--The city of Kokhtla-Yarve, the center of the Estonian shale basin, has been completely converted to the use of shale gas. This gas differs little from natural gas. The "Slantsekhim" Association has become the supplier of this cheap fuel. Gas is obtained here during the processing of oil shale into shale tar--the basic raw material for chemical production. Before shale gas gets to consumers, it is subjected to careful cleaning. A production facility has been earmarked for this purpose. [Text] [Moscow TRUD in Russian 16 Feb 83 p 1] 11004

TYUMEN OBLAST OIL EXPLORATION--N. Aksarin's brigade has completed exploration of a new petroleum formation at the Vostochno-Surgutskoye deposit ahead of schedule. This leading collective surpassed the plan for drilling exploratory wells by 15,000 meters since the beginning of the five-year plan. This was the result of an increase in labor productivity and fuller use of work time. Remaining true to its tradition--always being in front, the collective decided to drill 25,000 meters of exploratory wells this year--6,000 meters more than foreseen by the plan. [Text] [Moscow TRUD in Russian 18 Feb 83 p 1] 11004

SURGUT-CHIMKENT OIL PIPELINE--The length of the train that arrived yesterday with crude at the "Ferganeneftteorgsintez" Association was but a tenth of its former size. This time the tank cars brought Tyumen oil not from Tyumen but from southern Kazakhstan. As before, oil is flowing here through the second generation of the Surgut-Omsk-Pavlodar-Chimkent oil pipeline. Many tank cars have been released for other work, and deliveries of crude to the enterprise have become more rhythmical, which will make more effective use of output capacities possible. [Text] [Moscow TRUD in Russian 17 Mar 83 p 1] 11004

DEEP GAS FORMATIONS DEVELOPED--Turkmenistan's gas extraction specialists have begun developing deep formations. A well brought up natural gas from a depth of more than 3 kilometers at the old Naip deposit. A new gas horizon located within a kilometer from the top formation is now being exploited. "Extraction of gas from depths of up to 4 or 5 kilometers," said Z. Khusnutdinov, chief

geologist of the "Turkmengasprom" All-Union Industrial Association, "is a new direction in the development of gas industry in the Karakum Desert. These formations are located beneath the existing gas extraction complexes and gas pipelines. Their development will not require construction of separate gas fields and transportation lines." Deep gas reservoirs are to be developed at Shatlyk and other deposits of the republic during the five-year plan. [Text] [Moscow SEL'SKAYA ZHIZHN' in Russian 30 Mar 83 p 1] 11004

DEEP GAS RESERVOIRS DEVELOPED--Turkmenistan's gas extraction specialists have begun developing deep formations. A well brought up natural gas from a depth of more than 3 kilometers at the old Naip deposit. A new gas horizon located within a kilometer from the top formation is now being exploited. Extraction of gas from depths of up to 4 or 5 kilometers is a new direction in the development of gas industry in the Karakum Desert. These formations are located beneath the existing gas extraction complexes and gas pipelines. Their development will not require construction of separate gas fields and transportation lines. Deep gas reservoirs are to be developed at Shatlyk and other deposits of the republic during the five-year plan. [Text] [Moscow TRUD in Russian 29 Mar 83 p 1] 11004

GAS EXTRACTION PLAN SURPASSED--Four hundred million cubic meters-- that is how much the collective of the "Shatlykgasdobycha" Association imeni 60-Letiye SSSR surpassed the plan for shipping gas by the Central Asia-Center gas main since the beginning of the year. Workers of the Zapadno-Shatlykskaya and Vostochno-Shatlykskaya operational production services attained high indicators in the pre-May socialist competition. The success was predetermined to a great extent by the efficient and coordinated work of the gas field administration's gas drying and scrubbing shop. Brigades led by K. Sogonov and K. Annaklychev also deserve credit for the fact that the green arteries operated trouble-free. The collective of the production association pledged to extract its 300 billionth cubic meter of gas by 9 May--the day of victory over fascist Germany. [By N. Soboleva] [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 1 May 83 p 2] 11004

NEW TYUMEN OIL DEPOSIT--Producers of the "Kombineft'" Association adopted the labor baton from the geologists who discovered and explored the Vozeykoye petroleum deposit. Columns of vehicles and tractor trains carrying the parts of prefabricated houses and production equipment have begun moving here on ice roads laid over the tundra. The new deposit is located beside the operational Usinsk fuel and energy complex and the route of the Usinsk-Yaroslavl main pipeline, which will promote accelerated development of the oilfield. Its workers are being aided by the experience of their neighbors--oilmen of the Tyumen North. The procedures for cluster well drilling and a modular drilling rig assembly method have been assimilated. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 4 Feb 83 p 1] 11004

MINE SHAFTS FOR OIL--G. Ratsev's tunneling brigade of the "Shakhtspetsstroy" Trust of the USSR Ministry of Installation and Special Construction Work completed construction of a new air shaft for an unusual petroleum mine at the unique Yaregskoye deposit in the Komi ASSR. The Komi ASSR possesses certain reserves

of heavy, highly viscous petroleum that is highly valued by petrochemists. A decision was made to increase its extraction from the Yaregskoye deposit to a million tons per year. Erection of 10 vertical mine shafts in the next few years was foreseen for this purpose: After all, extraction of such petroleum could be highly effective only if the mining method is employed. This method, which is based on directly mining the bed containing heavy, highly viscous petroleum, is a rare phenomenon in world petroleum extraction practice. The "Yareganefit" Administration has already created three petroleum mines at the Yaregskoye deposit--thus far the only ones in the USSR. Having signed a contract for creative cooperation with associates aimed at raising petroleum extraction from Komi land, mine construction specialists of the Donets Basin extended a hand of friendship across to the republic's oilmen. A mine shaft 176 meters deep was successfully punched through frozen rock in complex natural conditions by Gennadiy Vasil'yevich Ratsev's brigade, which came to this northern construction site from the Donetsk mine construction administration of the "Shakhtspetsstroy" Trust with a reputation of high quality work. Now the ambassadors of the fraternal Ukraine are preparing to tunnel yet another shaft on Komi land at another petroleum mine of the Yaregskoye deposit [By senior engineer M. Kochnev] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 16 Feb 83 p 4] 11004

DEEPEST CASPIAN WELL--Oil was obtained for the first time from an area of the Caspian where the water depth attains 113 meters. A new well has produced a gusher with a daily yield of 300 tons of liquid fuel [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 11, Mar 83 p 3] 11004

CSO: 1822/243

NON-NUCLEAR POWER

OPERATIONS REPORT FROM RAZDANSKAYA GRES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 10 Mar 83 p 1

[Article by S. Borisova]

[Text] Visible from afar are three gigantic towers faced with patterned plates -- these are the tall cooling towers of the Razdanskaya GRES, the largest thermal electric plant in Armenia.

As it turned out, Armenia this year was hardly the "hottest" point in the national energy system -- because of the unexpected cold registered in this southern republic. The average monthly temperatures this winter averaged 12-13° below the long-term figures. Even until mid-March the mercury column of the thermometer was solidly below the zero mark. Such cold weather in these warm regions, especially for such a long time, is an extraordinary event.

The residents of the cities and villages in the republic, as well as enterprises and institutions require far more heat for space heating than usual during such times. The "peaks" on the energy load schedule of the Armenian power system, primarily at the Razdanskaya GRES, jumped sharply.

"The fall-winter maximum was very hard for us", states chief plant engineer R. Chobanyan. "We were aided in providing the economy with electricity and heat under these extraordinary conditions by good preparation of the plant for winter, good organization and discipline on the part of operating personnel and an understanding by the people of the seriousness of the task facing them."

Through maximum loading of power units and better utilization of equipment the power workers produced over 30 million kilowatt hours more electricity during January and February than during the same period in the previous year. The plan for electricity and heat production was fulfilled ahead of schedule. The equipment loading factor was 0.92 instead of the ordinary 0.8-0.82.

The statistics confirm that extended operation at the maximum limit far increases the probability of power equipment malfunction. Under these conditions, each power unit mechanic and lineman must exhibit maximum attention and efficiency. The workers on plant duty engineer D. Nagdalyan's shift excel in this area: there were practically no malfunctions during their watch.

Even so, if a malfunction occurs the damage must be repaired quickly in order to prevent extended downtime. Under difficult conditions a great deal depends upon the repair teams, and these are highly reliable. For example, the boiler section repairmen from A. Saak's team recently put a damaged boiler back on line in 4 days, instead of the 10 days called for in the standards for this type of repair.

The fuel-transportation shop team also works accurately. Accelerated unloading and delivering of fuel has been set up under the supervision of foreman A. Petrosyan, which ensures uninterrupted supply to the plant's boilers.

...all of the units at the Razdanskaya GRES are operating at full load today. Senior energy unit mechanic S. Petrosyan and mechanics P. Israyelyan, G. Aslanyan and V. Unanyan are standing watch at the power unit control console. Digits flicker on the electronic frequency meter which indicate that the frequency of the current -- the basic quality indicator of electricity -- is normal. The Razdan power workers are standing their difficult watch with confidence.

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NON-NUCLEAR POWER

TUYAMUYUNSKAYA GES CONSTRUCTION REPORT

Tashkent PRAVDA VOSTOKA in Russian 3 Mar 83 p 1

[Article by Yu. Ibragimov, Uzbek Telegraph Agency Correspondent]

[Text] Druzhba (Khorezmskaya oblast), 1 March (UzTAG correspondent Yu. Ibragimov). The water of the Amudar'ya struck the turbine blades forcefully: the 200-ton top made its first turn, and soon was spinning rapidly. Today the first hydraulic unit at the Tuyamuyunskaya GES is running without load.

Plans call for it to run in this mode for 72 hours, during which experienced foremen will check the quality of the installation and test the instruments and control systems. At the end of this week the unit is to be put into triumphal operation: the plant will be producing industrial current. The first unit, producing 25,000 kilowatts, will be connected to the combined Central Asian power system.

The team of installers lead by Lenin Komsomol of Uzbekistan laureate Turapbay Sharapov won the right in socialist competition to carry out the final start-up operation -- joining the spinning turbine rotor with the generator. In the meanwhile, a tough test is in progress. Hydraulic engineer Vladislav Borovets, mechanic-adjuster Yuriy Anufriyenko, electrical engineer Anord Voronin and others are watching the needles on the control boards and telling the adjusters where to direct their attention, what to check and what to correct. Each of these individuals has experience gained during acceptance of units at the Nurekskaya and Farkhadsкая GES, as well as a number of hydraulic power plants in Siberia. "The whole country was involved in this construction", said chief of operations V.G. Dukhanin. "Installers and machine builders came from Leningrad and Kuybyshev, plants in Khar'kov and Sverdlovsk supplied transformers on time, and cable came from Dushanbe and Kishinev. L'vov and Saratov made the instruments, and the technical documentation was developed by institutes in many union republics...".

The operating personnel are now taking the baton. They have decided to bring the unit up to design power ahead of schedule, for which integrated

teams which had mastered the equipment during installation and adjustment have been formed in advance. Meanwhile, the Tuyamuyun line workers have completed installing the high voltage transmission line connecting the open distribution device of the GES to the unified power system mains ahead of schedule. The line is short, only 4.5 km long. However, it crosses a railroad, the Bukhara-Ural gas pipeline, irrigation canals, dams and other difficult obstacles. They were all overcome, and everything is ready for the start!

Next door, in the machine room, the "Spetsgidroenergomontazh" workers are already preparing the second 25,000 kilowatt unit for operation. Three more of these turbines have already been installed, and all of the work was done ahead of schedule. One outstanding crew here was that of Anatoliy Klyusov, which was the first to implement unified contract work.

There will be a total of six power units. When they are brought on line -- which will happen by the end of the five-year plan -- the power of the plant will reach 150,000 kilowatts. The water of the Amudar'ya, stored by the mighty Tuyamuyunskaya dam, will provide energy for the northern regions of two brother republics -- Uzbekistan and Turkmeniya.

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NON-NUCLEAR POWER

INTERVIEW WITH ELEKTROSILA DIRECTOR

Leningrad LENINGRADSKAYA PRAVDA in Russian 7 Feb 83 p 2

[Interview with B.I. Fomin, general director, "Elektrosila" association, by L. Ivankin: "Potential of the Firm"; date and place not given]

[Text] Last year the electrical generating capacity of the country grew by 9.5 million kilowatts. During the same period, the "Elektrosila" association manufactured dozens of turbine and hydraulic generators with a total combined power of 7.1 million kilowatts. These figures give an idea of the significant contribution which this firm is making to the development of the power complex in this country.

Even so, "Elektrosila" does not believe that their reserves have been exhausted. A steadfast search is underway for ways of increasing production and creating sophisticated new units based on the current achievements of science and technology. This was the theme of the conversation between our correspondent and Hero of Socialist Labor B.I. Fomin, general director of the association.

[Remark by interviewee] I haven't even begun to emphasize the increase in volume indicators. In my view, our achievements provide a more convincing characterization of the qualitative feat which has been achieved in the nomenclature of articles produced. When the association was formed the maximum power of the units produced was 300,000 kilowatts. This was then increased to 500,000, and then to 640,000 for the Sayano-Shushenskaya GES. Turbine generators producing 800,000, 1 million and 1,200,000 kilowatts have appeared. This increase has followed a sharply rising curve. Power engineering has accelerated significantly. I doubt that this would have come about under the former production structure. The problem is not at all a shortage of ideas, but rather the ability to implement them. We now have highly qualified scientific personnel as well as a reliable industrial base.

[Question] Boris Ivanovich, the advantages of the association are well known. Life itself has confirmed that the course of the Leningrad Party organization toward creating major scientific-production complexes is correct. Could you demonstrate this using specific examples?

[Answer] There are many examples. We have already set up series production of 500 kilowatt generators, when the requirement arose to create a million kilowatt unit especially for nuclear power plants. This means a different design treatment and other technological principles; as usual, the deadlines are firm. In developing the new machinery, the designers curtailed the number of intermediate cycles in preparing the documentation as much as possible. Existing experience, as well as an understanding of the importance of the task on the part of the producers both had an effect. Designers and producers both followed a unified coordinated schedule, so that the important order was filled ahead of schedule. This year we are to manufacture another three million-kilowatt nuclear units.

[Question] Scientific thinking is always in motion and developing. New ideas are generally associated with a break from existing technology, restructuring, readjustment, and so forth. A peaceful life can hardly be expected in this regard.

[Answer] We don't expect a peaceful life. However, the situation is not that dramatic, either. If we know in advance the direction in which science is working, production can rally its forces accordingly. For example, designers have now developed a totally water-cooled turbine generator, such as which we have never produced before. The machinery will be more compact and economical: do you think this won't be profitable for the producers? The amount of metal consumed will be lower, so that the amount of manufacturing labor will be reduced as well. The association has already undertaken the fabrication of an experimental model.

As another example, there is a requirement to develop fast nuclear million-kilowatt units. While the technical design was in progress within the walls of the institute, the production base was being adjusted accordingly. In a work, science does not present us with the unexpected. Everything is done according to plan, with calculations for the future. Fabrication of the new type of "million-kilowatt" is proceeding at full speed.

[Question] Aren't there any "contradictions" between science and practice?

[Answer] The question should not be put so categorically. There is some friction, but it is important that there is mutual interest to eliminate it. Not only does science provide fully justified additional concerns, but it also promotes improved efficiency in all of our work. A system for controlling product quality and increased labor productivity has been created within the association with the creative cooperation and active

participation of the institute. Implementation became possible thanks to the completion of a whole set of measures aimed toward improving the organization of production, technology, mechanization and automation. On the other hand, science gains a modern production base, making it possible to do research at a high level and to reduce the "development-implementation" cycle significantly. This is both an economic and a moral category. When a person sees that his thoughts are being implemented, he literally gains new wings and does not rest of questing.

Even so, it cannot be claimed that the scientific potential of the firm is being fully exploited. One thing which is not helping is the existing system of estimation indicators for the work of the teams of the institute and plants in the association. For example, the first is supposed to finish development work on schedule and provide the manufacturers with the required documentation; however, with the existing situation throughout the enterprise this issue seems to be of no concern to the institute workers. It is felt that it would be proper to pay scientific personnel in direct proportion to the economic end result. New estimation indicators are being developed within the association now. This is a difficult, but possible, project.

[Question] Boris Ivanovich, at one time the "Elektrosila" collective was among those suggesting the development of creative cooperation in constructing the Sayano-Shushenskaya GES. However, today we hear less and less about "initiative 28".

[Answer] This is not surprising: creative cooperation has become a commonplace matter of fact which is part of economic life. Furthermore, it is developing in fundamental ways. The initiative was then aimed toward solving a specific problem which, although complex, was purely local. There is now, for example, a special staff within the council of economic and social development of the Leningrad Oblast CPSU committee which deals with problems of increasing the efficiency of the national fuel-energy complex. This staff is responsible for coordinating the actions of dozens of industrial enterprises, scientific-research, construction and design organizations in creating new power equipment. We are thus talking about increasing the contribution of the Leningrad workers to the development of the entire branch. In particular, "Elektrosila" is participating in the solution of several integrated target programs: there is now no other way to go. Scientific and technical progress is moving in such great steps that there is no way to keep up without combining the efforts of many collectives.

[Question] What does this progress look like for the "Elektrosila" collective?

[Answer] It was hard for us to deal with the "million-kilowatters", but they will become old hat before long. Designs are already under development within our institute for generators producing 1.5 and 2 million kilowatts. This is dictated by economic expediency: the more powerful the unit, the smaller the specific consumption of materials; operating expenses and plant construction costs are cut significantly. However, if we stay on the beaten track, we may wind up at a dead end. It is practically impossible to manufacture generators producing more than 3 million kilowatts. The rotor of the giant generator cannot withstand the colossal centrifugal loads. In addition, there is no way to transport such units to the intended site.

Even so, we can see real ways to create 5 million kilowatt generators, for example. This horizon is being opened up by scientific achievements in the area of exploiting the phenomenon of superconductivity. In superconductivity, it is essentially the case that a number of electrically conducting materials allow current to pass with practically no losses when cooled to temperatures near absolute zero. This means that it becomes possible to create fundamentally new high efficiency power equipment. The specific metal consumption per unit of power is significantly lower than that of the most sophisticated machinery in production today.

[Question] Are you talking about cryoturbogenerators?

[Answer] Yes. The socialist obligations of the Leningrad power workers for this year call for undertaking the production of such a unit with capacity of 300,000 kilowatts. The necessary preparation is completed. The association has built a setup to test the new equipment and has organized a special laboratory. Individual assemblies of this unique generator are being fabricated now. This work involves dozens of scientific research organizations and industrial enterprises from all around the country. The complexity of the project can be judged, among other things, by the fact that the 20,000 kilowatt cryogenic turbine generator which has been developed at the All-Union Scientific Research Institute of Electrical Machine Building is now the largest machine of its type in the world. Our task is to move into a higher orbit.

Today we are talking about 300,000 kilowatts, but this is only the beginning. The day is not far off when the agenda will include the production of gigantic power units which far exceed the power of the machinery in production now. Science is opening up these prospects before us. In cooperation with science, our production base will continue to develop and become stronger.

Looking to the future, and moving forward, the association team is confidentially resolving current problems. The power industry in this country will be

equipped this year with new equipment manufactured at "Elektrosila". Its implementation will provide savings amounting to 20 million rubles. The "Elektrosila" workers are holding a firm course toward increasing production efficiency based on rapid development of scientific and technical progress.

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CSO: 1822/230

NON-NUCLEAR POWER

WIND, WATER POWER PROPOSALS REJECTED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 27 Feb 83 p 2

[Article by veteran of labor, working correspondent P. Larionov, Krasnoyarsk]

[Text] Every time I visit the Krasnoyarskaya and Sayano-Shushenskaya hydroelectric plants, I am surprised at the great leaps which our country has made in hydroelectric power development. The power of the Krasnoyarsk hydraulic power system, for example, is almost six times the total power of all of the power plants in Czarist Russia. This is not an abstract figure for me. My entire life -- nearly 85 years now -- has been connected with the miller's trade, with converting water and wind energy. While I am glad to see changes, at the same time I cannot help but be concerned that old experience is being completely forgotten. This experience contains a great deal which is useful and which has not diminished in importance today.

By the end of the 1920's there were 200,000 water-operated mills and the same number of wind-operated units in Russia. In the Urals huge water wheels were used to drive plant and factory machinery. Tens of thousands of wind-operated pumping stations were used to produce water for human needs. Hundreds of thousands of mill ponds cleaned and decontaminated small rivers, providing freedom for fish and other life....

I understand perfectly well that national industrialization requires incomparably more powerful energy sources and a different approach to the exploitation of energy resources. There can be no return to the past, but why have we begun to neglect age-old sources of energy?

On the right bank of the Yenisey, opposite Krasnoyarsk, the Panikovka flows into the river, carrying its waters from the high peak near the ancient village of Torgashina. These waters also come from a stream flowing down the steep descent. One resident of Torgashina thought to build a water mill on this stream in order for the villagers to avoid traveling to Krasnoyarsk by grinding their grain in water mills along the Kacha. A small dam was built at the selected spot, forming a pond.

Fifty lengths of 100-year old pine were split in half, the heart trimmed out and the pieces joined along the splits and drawn together with strong rings made of birch. A funnel was fashioned at one end of this wooden pipe, and the other end was smoothed. The pieces were joined together, and the joints were sealed with tarred hemp. A wooden pipe 120 meters long was run down the steep slope. From 40-50 meters below the pond water began to fall at a pressure of 4-5 atmospheres onto the blades of a high speed steel forging turbine, which turned two sets of millstones. This mill ground a great deal of grain, and when they began grinding grain on combines and the millstones became idle, the Panikovka was out of work.

A small GES built on a stream has been operating for many years at the Ush-Bel'dir resort in the Tuvinskaya ASSR. In 1979 SOTSIALISTICHESKAYA INDUSTRIYA wrote that the resort did not know where to send its excess power. However, when some gear wore out they wanted to order a new generator. It turned out that nobody in the country was dealing with such "small stuff". So the GES stands idle, and airborne tankers are hauling fuel there.

Inspired by the example of the Bryansk kolkhozniks, who had built dams, ponds and mills on small rivers I, an old hand at wooden mills, decided to promote the same kind of projects in the Krasnoyarsk area, the more so that it is painful to see idleness and degeneration of the small but powerful mountain streams in our region. I walked along the Kacha and Laletinka, and the Bazaikha and Mana. I determined their condition, capacity, head and banks. I drew up a technical-economic sheet containing calculations and a plan for design and construction work. These four rivers, even with far from incomplete regulation, are able to provide 180 million kilowatt hours of electricity annually, without requiring major allocations or funds. Strong, long lasting spillways can be build from discarded reinforced concrete construction articles which are now just used for landfill.

Steady, strong winds blow on the high banks of the Bazaikha and Mana. They should be given something to do.... The first thing to do would be to build five 100-200 kilowatt windmills, such as the ones which have long been in operation in the Arctic. This is the answer to the problem of providing electricity for numerous rest bases, recovery facilities and pioneer camps which have been built in picturesque areas but which suffer from shortages of electricity.

However, no matter where I turned I was treated as a bothersome eccentric, if not a hare-brained schemer. What's worse, some even claimed that I want to return to the patriarchy. This is how they understood the idea

of windmills and small dams....

I finally sent by technical-economic sheet to the chairman of the kray executive committee, N. Tatarchuk. And what happened? Two weeks later I received a reply from the Krasnoyarsk department of the All-Union Society of Inventors and Efficiency Experts (!) accompanied by a letter from Docent Candidate of Technical Sciences L. Chizhishin of the Krasnoyarsk Polytechnical Institute. I was offended by this comrade's attempt to undertake to teach me the business which had been the chief content of my entire life and of many years of research. This scientist suggested to me, for example, that fish hate ponds, that they like natural streams, and that free discharges during high water are harmful.... An experienced person would not reject the proposal so categorically.

I have devoted two publications in the kray newspaper KRASNOYARSKIY RABOCHIY to this problem as well. They generated considerable reader response. People recognize the need for reclaiming small rivers and to use the wind to benefit the economy. They understand the call to save the rivers surrounding us by building working dams. My suggestion of creating a volunteer social design bureau has been supported by dozens of enthusiasts. It is a pity that there have been no such initiators among the authorities who would be able to organize such an approach.

I do not wish to cast a shadow on the good reputation of the managers to whom I turned for help. They are honorable people and are doing a great deal to develop the productive forces of the kray. Even so, I cannot understand why their broad scope cannot include this small item which both the power system and the environment now needs. Probably because it is so little. If the potential of the hydraulic and thermal electric plants in the kray is measured in tens of billions of kilowatt hours per year, some feel that there is little point in worrying about the hundreds of millions of kilowatt hours annually which could be provided by a cascade of simple dams on small rivers and windmills to meet local needs.

The scale on which we are doing things has thus become gigantomania, in which we cannot see beneath our own feet and in which no allowance is made for small reserves. This is a very sad state of affairs.

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NON-NUCLEAR POWER

GES CONSTRUCTION IN GEORGIA URGED

Moscow STROITEL'NAYA GAZETA in Russian 16 Feb 83 p 2

[Article by Yu. Chediya, chief, Gruz ENERGO [Georgian Power Administration]: "For an Uninterrupted Power Supply"]

[Text] "Complete the construction of the Zhinval'skiy Hydroelectric Power Project, continue the construction of the Khudonskaya GES [Hydroelectric Power Station] and commence the construction of the Namakhvanskaya GES."
[printed in boldface]

(From "Basic Directions for the Economic and Social Development of the USSR During 1981-1985 and Through 1990")

Georgia's hydroelectric power is of the same age as the USSR. The building of the Zemo-Avchal'skaya Hydroelectric Power Station ["Zages"] began precisely in 1922.

The "Zages" had been designed and built in the virtual absence of any experience. But that extremely intricate--for those times--power station was built within a record-breaking period. Electricity from that station became a reliable support in fulfilling the plans for the first five-year plan periods.

During the 10th Five-Year Plan period the republic's hydro-power builders succeeded, on creatively exploiting the experience gained, in building a unique project--the Inguri GES with its capacity of 1,640 MW. The participants in the first ever volunteer work Saturday on the "Zages" project could hardly have imagined the inclusion of such a giant in the republic's power grid.

But the electricity demand is growing and necessitates building new hydroelectric power projects, not only to generate electricity but also to perform other tasks. For example, the Zhinval'skiy Hydroelectric Power Project is designed to regulate the runoff of the Aragvi River so as to utilize its waters for the irrigation of 52,000 hectares of cropland. In that area also a power station with an installed capacity of 485 million kwh per year is being built. The attendant construction of an impounding reservoir will assure a stable long-term water supply for Tbilisi. A 48.7 km long watercourse will feed the "Tbilisi Sea." This will also serve to utilize the Iori River to irrigate additional agricultural land adjoining Tbilisi and Rustavi.

Currently the project is already nearing completion. The underground power station will start generating electricity in 1984.

The Inguri River remains one of Georgia's largest watercourses. Its energy potential amounts to about 21 billion kwh. The opening of the Inguri GES signaled the beginning of the construction of a series of power stations on the river's rapids. Currently the famed collective of the Gruzgidroenergostroy Georgian Hydroelectric Power Construction Trust engages in preparatory work 32 kilometers upstream of the river where, in the midst of inaccessible rock cliffs, the 740-MW Khudonskaya GES will be built.

It was not by accident that the planners selected that site. The local flooded terrain is hardly if at all suitable for farming. No new construction base will have to be set up, because it had already been established during the construction of the Inguri GES. The electricity generated by the new GES upon its completion will save approximately 600,000 tons of standard fuel per year. The Khudonskaya GES is scheduled for inclusion in the power grid of the Transcaucasus during the first quarter of 1989.

Toward the end of the present Five-Year Plan period the construction of yet another power station--the Namakhvanskaya GES--will begin. The completion of that project will virtually culminate taming the energy potential of the Rioni River.

The Namakhvanskaya GES, whose design is currently developed by the Tbilisi Affiliate of the Hidroproyekt All-Union Planning, Surveying and Scientific Research Institute imeni S. Ya. Zhuk, will be sited 25 km from the city of Kutaisi, between the Ladzhanuri GES and the Gumat GES. This hydroelectric power project will supply water to Kutaisi and assure the irrigation of fertile lands in the Tskhaltubskaya zone. It will have a designed capacity of 570 MW.

Thus, Georgian hydroelectric power project builders will augment the republic's power generating capacities by one and one-half million kw within the next few years. This is definitely a substantial increment. But even so it still is insufficient for meeting the growing demand of the republic's economy. In 1981 electricity generation increased 2.8 percent, lagging by 2.4 points behind the growth of the gross national product in the republic. Consider that this disproportion arose even after the opening of such a mighty energy source as the Inguri GES. It may further increase in the future, and the degree of the mechanization of labor may correspondingly decrease--and even now it already is 25 percent lower than the Union-wide average in industry, while in the republic's agriculture it is only one-fourth as high as the Union-wide level.

What is the cause of this lag? In my opinion, it is due to the emphasis on building hydroelectric power stations, considering they cannot meet the power demand on a year-round basis. The shortage of regular power-generating capacity in the republic is felt with increasing acuteness. The conclusion that begs itself is that for the next 20 years the development of power industry in the Georgian SSR should be oriented toward the design and construction of a regular rather than hydroelectric power station with a capacity of at least 2 million kw.

A large part of the electricity shortage applies to the economically less developed Eastern Georgia. Hence the most suitable site for the future electric power station should be precisely this region, which contains major energy consumers--the Tbilisi and Rustavi industrial hubs. This is all the more justified considering that in the next 20 years four electricity-generating units with a combined annual capacity of 610 MW at the Tbilisi GRES [State Regional Electric Power Station] will become totally worn and require dismantling.

But in speaking of the expansion of regular power generating capacities we do not wish to belittle the importance of the republic's rich hydropower resources. On the contrary, the taming of such mighty watercourses as the Inguri, the Rioni and the Kura should be accelerated in all ways. It is high time to build and put into operation on schedule hydroelectric power stations. Only then can an uninterrupted supply of electricity to the growing economy and population of the republic be relied on.

1386

CSO: 1822/231

NON-NUCLEAR POWER

EKIBASTUZ GRES UNIT GOES OPERATIONAL

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 2 Apr 83 p 1

[Article by V. Stupak, special correspondent of KAZAKHSTANSKAYA PRAVDA Ekibastuz: "Capacity—Three Million! At Ekibastuz the Sixth Turbine Unit Goes Operational" under the rubric "Start-Up Projects Monitored by KAZAKHSTANSKAYA PRAVDA"]

[Text] This happened late last night. The gigantic steel body of the turbogenerator, concealed under its orange armor, awakened to life meter after meter, with each of its nozzles, valves, dials, countless instruments, until finally the quivering of the steel floor plate and the rise of the tachometer needle to the figure of 3,000 announced that the unit was in operation.

This is the sixth of the eight "500,000-ers" which are to constitute the first stage of the Ekibastuz energy cascade. The capacity of this first stage of the State Regional Electric Power Plant [GRES-1] has reached a record for Kazakhstan's power stations--three million kilowatt.

Despite the importance and responsibility of the moment, mechanics, station heads, builders and maintenance personnel were perfectly calm, exuding a confidence which had previously been lacking.

A. Mokshin, director of the GRES, declared: "Indeed, the startup is taking place in an entirely new atmosphere. The increased attention paid by installers to the quality of their performance and the steady unhurrying two months long preparations for tonight's event, as well as the finally gained operating experience--all this imbues us with confidence in final success."

This confidence was not shaken even by the appearance of excessive vibration in bearing No 10. Yuriy Sapozhnikov, the leader of fitters' brigade from the Sibenergmontazh Siberian Power Installation Trust, who had personally assembled five turbogenerators, said quietly:

"Nothing special. We'll now balance the rotor by means of weights, and the startup can proceed--the machine was assembled solidly."

Not only the turbine assemblers had worked solidly and competently. Large collectives of installers and builders advanced the quality of their labor to a new high level.

Consider the boiler assemblers' brigade under Bektemir Arylbayev from the Sredazenergomontazh Central Asian Power Installation Trust. At one time a boiler unit had been assembled by a collective of 120 and even then it had just barely met the deadline. Now Arylbayev's brigade has coped with the same volume of operation while consisting of exactly half as many members.

The accelerated progress of construction and installation operations is greatly promoted by the full utilization of the capacities of the pre-assembling site where the larger elements of turbine-boiler units are assembled into wholes before being transported to the main building. The brigade under Gennadiy Danilov, which prepared the boiler equipment, handled these operations very competently.

For the first time the power station staff has praised the suppliers of structural metal elements. Thus while previously there had been considerable delays in shipments of these elements from Novosibirsk and Yuzhnoural'sk, now that this work was entrusted to the Yermak Structural Metal Elements Plant, the delays and complaints about missing components have stopped.

Now that the new turbine-boiler unit is providing electricity to the power grids of Kazakhstan and West Siberia, the builders' brigades are working on the next, seventh unit. Soon it too should start operating.

1386

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NON-NUCLEAR POWER

SAYANO-SHUSHENSKAYA GES CONSTRUCTION PROJECT

Moscow EKONOMICHESKAYA GAZETA in Russian No 18, Apr 83 p 18

[Article by V. Shloma, EKONOMICHESKAYA GAZETA correspondent: "Expediting the Sayany Project" under the rubric "Effectiveness of Construction"]

[Text] Spring high-water is expected in Sayany. Taught by the difficult experience of previous years, the builders of the country's largest hydroelectric power station [GES] are preparing for this severe trial. The high-water should not interfere with the tense pace of operations reigning on the construction site since the beginning of the year.

The six operational units of the Sayano-Shushenskaya GES have already fed the Integrated Soviet Power Grid with 22 billion kwh of energy and by year end they will have generated several billion kwh more.

Eight million cubic meters of concrete have been poured into the dam site. The height of the dam has risen to 200 meters (designed height: 245 meters). An additional 2.5 million cubic meters of concrete will have to be poured before this project is completed.

S. Sadovskiy, chief of the Krasnoyarskgesstroy [Krasnoyarsk GES Construction Trust] said: "This year is rather unusual to our collective. We will have to prepare adequately for putting into operation the remaining power-generating units even before the present five-year plan period is over rather than during the next such period as we had originally assumed."

To attain this goal, the collective of GES builders will have to install and start four turbines of the Sayano-Shushenskaya GES and three units at the auxiliary Mayskaya GES. Already this year the operational program of the Krasnoyarskgesstroy has been expanded by more than one-third compared with the previous year.

The Sayano-Shushenskaya GES has become an all-Union school of modern hydroelectric power station construction. It is precisely here that new types of machinery and power equipment as well as new techniques for laying concrete and assembling unique equipment undergo operating trials.

Suffice it to mention that it was precisely at Sayany that the shortest ever period of assembling generators has been achieved--only 27 days--along with the fastest pace of concrete laying in the history of Soviet hydroelectric power station construction.

On the project's proving grounds self-propelled tracked machinery equipped with a set of vibrators serving to compact concrete along the entire width of a block all at once have been tested and introduced into practice. Nowadays nearly the entire volume of concreting operations on the site has been mechanized.

And the application of twin-tier bracket timbering, self-hoisting large-sized tarpaulins for concreting the dam body in winter and other devices has markedly raised output per member of the collective.

An important safeguard for putting into operation all of the station's power-generating units even before the end of this five-year plan period is the new stage in organizing socialist competition, which was conceived in Leningrad and has effectively taken root in Sayany. The cooperation agreement signed by all participants in this hydroelectric power project, including suppliers and auxiliary services, is now known to the entire country. This is a living form of worker creativity, with hundreds of thousands of people at various enterprises and in various cities across the country working for a common end-goal.

O. Shekin, secretary of the kray party committee and chairman of the coordination council, declared: "Expediting the completion and startup of four high-capacity power-generating units before the five-year plan is over imposes a special responsibility on every participant in this cooperation, which has already proved its effectiveness. And now all of its participants should display special flexibility in accomplishing new difficult tasks."

The suppliers and auxiliary services too grasp properly their responsibility for the pre-term activation of the power station. The socialist pledges adopted at the Leningrad Elektrosila [Power Equipment] Association, for example, state: "Complete a month ahead of schedule the building of hydropower generator No 8 for the Sayano-Shushenskaya GES." At the station itself, the assembling of the seventh unit proceeds full steam ahead, and the Leningrad winding installers I. Repkin and V. Dorofeyev work splendidly together with the Siberians. The rivals in the competition--the two teams of fitters-assemblers, one from the city on the Neva [Leningrad], headed by V. Antonov, and the other from the Sayano-Shushenskaya GES itself, headed by V. Demidenko, know each other well.

At Sayany everyone is expecting the high-water and the emergence of the first "millionaires"--brigades which will have poured a million cubic meters of concrete each into the dam body since the beginning of construction. The well-known record-breaking brigades of M. Polgoran and M. Mishchenko are already close to this target.

1836

CSO: 1822/231

NON-NUCLEAR POWER

BRIEFS

GENERATOR FOR TURUKHANSKAYA GES--"Perform R&D work on a hydropower generator with a capacity of 1 million kwh for the Turukhanskaya GES [Hydroelectric Power Station]." As reported by the LentASS, experts at the research institute of the Energosila Power Equipment Association have started to implement this socialist pledge. The blueprints of the generator for the first variant of the station on the Lower Tunguska River were drafted in excess of the plan for 1983. This million-kwh generator will be in many parameters a record-breaker among machines of its kind. Its weight will reach 2,500 tons--700 tons more than the weight of generators at the Sayano-Shushenskaya GES. At the same time, unit metal requirement will be markedly reduced and efficiency increased. The new power giant is so designed as to make it possible to build a series of 20 more such machines with the Association's existing equipment. [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 22 Apr 83 p 1] 1386

ZUYEVSKAYA GRES CAPACITY REACHED PRE-TERM--The personnel of the Zuyevskaya GRES-2 [State Regional Electric Power Plant, stage No 2] reached the designed capacity of the second turbine-boiler unit 7 months ahead of schedule. Its capacity is 300,000 kw. The pre-term activation of this unit will enable Zuyev power station people to provide an additional half a million kwh of electricity for the enterprises of the Donbass. [By N. Lisovenko, IZVESTIYA correspondent] [Text] [Moscow IZVESTIYA in Russian 22 Apr 83 p 2] 1386

EKIBASTUZ GRES CONSTRUCTION--The fifth turbine-boiler unit has been started under load at the Ekibastuz GRES-1. Startup operations on the sixth are under way and in July they are scheduled to be extended to the seventh unit. Little time is left for assembling the boiler and turbine. Hence, all brigades of the Sred-azenergomontazh Central Asian Power Equipment Installation Administration have adopted higher pledges. But the rapid pace of operations followed during the first few days of the new year cannot be maintained. This is because the Energostroy-azenergomontazh [Power Equipment Construction and Installation] Administration and the GRES-1 Construction Administration (chiefs: V. Kulikov and V. Khapko) failed to ensure the readiness of facilities for construction. The discussion on eliminating the shortcomings began some 3 months ago. But the heads of the Ekibastuzenergostroy [Ekibastuz Power Station Construction] Trust (director-- E. Filatov; chief engineer--Yu. Braslavskiy) have not yet taken effective steps to tighten construction discipline and the responsibility of the heads and experts of construction subdivisions. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 83 p 18] 1386

ENERGY GIANT IN EKIBASTUZ--Leningrad scientists are working extensively on the rational utilization of the enormously rich Ekibastuz fuel-energy complex. Currently the start-up complex of the first thermoelectric power station on this unique deposit has been put into operation; it consists of four 500-MW turbine-

boiler units. Turbines bearing the trademark of the Leningrad Metal Plant began to appear in the second section of the GRES. The first two such turbines already are operational, and more are being currently assembled. Doctor of Engineering Sciences V. V. Mitor, deputy general director of the scientific-production association at the Central Boiler and Turbine Institute imeni I. I. Polzunov, explained: "The difficulty in solving the problem of designing highly efficient power generating equipment for the Ekibastuz GRES consisted in that high-ash low-grade coal is chiefly mined there. Owing to creative explorations conducted jointly with the collective of the Podol'sk Machinery Plant imeni S. Ordzhonikidze and the Leningrad turbine builders, it became possible to develop reliable designs of boiler units and steam turbines." [By V. Alyushinskiy] [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 30 Mar 83 p 2] 1386

EKIBASTUZ GRES DISCUSSED--[under the rubric] "Answering the signal from the Control Post": B. Kabelev, deputy chief of the Soyuzenergostroy All-Union Power Station Construction Administration under the USSR Ministry of Power Industry, replied as follows to report No 49 for 1982: the critical comments of the control post were considered. This is to inform you that the acid flushing of boiler No 6 at the Ekibastuz GRES-1 has been carried out. To quicken the activity of the startup team, A. I. Tupitsin, Deputy Kazakh SSR Minister of Power Industry and Electrification, was dispatched to the construction site. All the principal areas for the electrical section of the unit have been released for the installation of equipment." [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 83 p 18] 1386

CHEBOKSARSKAYA GES CONSTRUCTION--Startup Soon: An important stage in installing the eighth power-generating unit of the Cheboksarskaya GES has been completed--the generator rotor was installed. This station is the last in a series exploiting the energy of the Volga Rapids. This year the station builders intend to put into operation four power-generating units, and toward the end of the five-year period all the 18 turbines with their overall capacity of 1.4 million kw should start generating electricity. [By TASS] [Text] [Moscow IZVESTIYA in Russian 12 Mar 83 p 2] 1386

VIL'NYUSSKAYA TETS UNDER CONSTRUCTION--Vilnius, the capital of Lithuania, is growing and spreading its boundaries. Each year new housing projects appear on the map of that city. The Viln'nyusskaya TETs-3 [Heat and Electric Power Station No 3] now under construction is scheduled to provide them with heat and electricity. The collectives building the TETs have begun installing the steam-boiler facility for outside utility mains. The assembling of the reinforced concrete frame of the main building also proceeds full steam ahead, and the foundation for a 180-MW turbine is being laid. The builders of Vil'nyusskaya TETs pledged themselves to put into operation the station's first section even before this year is over. The photographs [not included] show: A. Mankyavichyus, head of one of the leading combined-skills brigades of builders: the installation of piping is under way. [Photos by S. Panov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 3 Feb 83 p 1] 1386

CONSTRUCTION OF IRGANAYSKAYA GES--Irganay (Dagestan ASSR). The shortest path to the Irganayskaya GES construction site will be opened by a tunnel being laid through the mountain mass. Its excavation began from the Southern Portal. On the other side of the Gimrinskiy mountain range tunnelers have already advanced 600 meters. Tunneling from both ends will accelerate releasing the tunnel for use. This route will be used to deliver materials and equipment to the construction site and open a reliable link with the relatively inaccessible regions of the autonomous republic. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 11 Mar 83 p 1] 1386

MIATLINSKAYA GES CONSTRUCTION—Makhachkala, 3 [Apr 83]. (A. Vakhsmán, non-staff correspondent of PRAVDA.) The first few cubic meters of concrete have been poured into the future impounding reservoir of the Miatlinksya GES project. The brigade of concreting workers under G. Ubayev adopted the socialist pledge to complete ahead of schedule, on the all-Union Volunteer Work Saturday, the concreting of the reservoir's bottom. [Text] [Moscow PRAVDA in Russian 4 Apr 83 p 1] 1386

TOBOL'SKAYA TETS CONSTRUCTION—Startup adjustments of the first boiler-turbine unit at the Tobol'skaya TETs are nearing completion. The brigade of fitters-assemblers under A. Milyakov from the Uralenergmontazh [Ural Power Equipment Installation] Trust has rapidly and competently installed the generator and adjusted the turbine and other high-voltage equipment. The collectives of Hero of Socialist Labor N. Ivakin and Honored Builder of the RSFSR S. Krylov are making good progress. They are readying the startup of the steam boiler and testing gas and hydraulic systems. The first boiler-turbine unit is becoming operational and the foundation for the second has been readied--its concrete floor is now under way. [Text] [Moscow EKONOMICHESKAYA in Russian GAZETA No 13, Mar 83 p 5] 1386

PERFORMANCE OF ALI-BAYRAMLINSKAYA GRES--The Ali-Bayramlinskaya GRES imeni Il'ich has begun well the third year of the five-year energy industry plan. It has already generated some 10 million kwh of electricity in excess of the plan. The stability of work of power station personnel was assisted by reducing equipment stoppages to a minimum and strictly adhering to production and work discipline. The more complete utilization of latent potential has also helped. Responding by deeds to the appeal of the pace-setting collectives of Moscow, the personnel of all shops and services of the station these days are working with special concentration. The operators at the boiler-turbine shop maintain power equipment in perfect operating order, as do the operators monitoring the instruments at the thermal automation and measurements shop and the personnel of the electrical and chemical sectors and of the centralized repair shop. Owing to their efforts, power is generated in the optimal mode at the station. The equipment readiness coefficient has been raised to 93.2 percent--the highest indicator in the republic. This provides a reliable basis for the successful fulfillment of targets in the remaining months of the third year of the five-year plan. [By S. Garayev] [Text] [Baku VYSHKA in Russian 16 Feb 83 p 1] 1386

STAVROPOL'SKAYA GRES CONSTRUCTION--The installation of the eighth boiler-turbine unit at the Stavropol'skaya GRES has been commenced. Upon the startup of this unit the power station will reach its designed capacity of 2,400,000 kw. The unit is to go operational toward year end. (TASS, Stavropol Kray) [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 18 Feb 83 p 1] 1386

EKIBASTUZ GRES-1 CONSTRUCTION--Ekibastuz (Pavlodar Oblast), 28 [Apr 83]. A feat of labor in honor of May 1 Holiday was accomplished by the builders of Ekibastuz, where the release for operation of the sixth boiler-turbine unit at the Ekibastuzskaya GRES-1 was formally signed. The capacity of this first of the scheduled four power stations of the gigantic power complex has reached 3 million kw. Attention has now shifted toward the remaining two boiler-turbine units to be yet installed at the GRES-1. Once these are put into operation, its capacity will reach 4 million kw. [By Yu. Razgulyayev, PRAVDA correspondent] [Text] [Moscow PRAVDA in Russian 29 Apr 83 p 1] 1386

TYUYAMUYUNSKAYA GES CONSTRUCTION--The capacity of the integrated power grid of the republics of Soviet Central Asia and southern Kazakhstan has been augmented by 25,000 kw: the first power unit at the Tyuyamuyunskaya GES has started to generate electricity. Its installation and adjustments were completed ahead of schedule by experts from the Spetsgidroenergmontazh [Special Hydroelectric Power Equipment Installation] Trust. The final startup of the unit was handled by the brigade of T. Sharapov, winner of the Uzbekistan Lenin Komsomol Prize. Dozens of the nation's enterprises are participating in the erection of this hydroelectric power complex on the Amur River. Once all the six power units are put into operation toward the end of the five-year plan, the capacity of the GES will have increased to 150,000 kw and at the same time it will serve to irrigate half a million hectares of virgin land. [By R. Tell', special correspondent, Druzhba, Uzbek SSR] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 17 Mar 83 p1] 1386

LENINGRAD NUCLEAR POWER STATION CONSTRUCTION--Not only electricity but also heat will be provided by the nation's largest Leningradskaya Nuclear Power Station [AES] imeni V. I. Lenin. Yesterday 5 km of heating mains began to be laid for linking the station's technological circuits with the hot water supply system of the company town for the station personnel, Sosnovyy Bor, as well as of local enterprises and the large heating system at the "Leto" Sheep Farm. On passing through the turbine blades, the heated steam will enter a special heat exchanger. Such a system assures complete radiation protection of the heat supply. The generation of heat will serve to increase the efficiency of the Leningradskaya AES by an additional one-third of a percent. At first glance this may seem very little, but it is tantamount to saving 300,000 tons of standard fuel per year. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 17 May 83 p 1] 1386

NEW POWER LINE FOR SHEMAKHA BUILT--Shemakha (Azerbaijan SSR), 12 Mar [83]. A new power transmission line has helped to improve the reliability of power supply for the industrial enterprises and farms of the republic's south-eastern zone. Today the Akheu-Shemakha LEP-110 Power Transmission Line has started operating. It began to supply the electricity generated by the Azerbaydzhanskaya GRES and the Mingechaurskaya GES to the high-capacity substation in Shemakha--the center of a vast wine-growing region. Along its route of almost 40 km this "energy bridge" crosses quite a few steep mountain slopes and water obstacles. Their high discipline and advanced organization of labor helped the installers from the Kavkazelektroset'sstroy Caucasian Power Network Construction Trust to surmount all these barriers. The construction of this power line is linked to the rapid development of viticulture and processing enterprises in this zone of the republic. For this year plans exist for installing altogether nearly 4,000 km of power transmission lines in Azerbaijan. [By TASS correspondent] [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 13 Mar 83 p 1] 1386

KRASNOVODSKAYA TETS CONSTRUCTION--Even powerful earthquakes cannot shake the facilities and structures of the Krasnovodskaya TETs imeni 50th Anniversary of October. The station, located in a scale-10 seismic zone is being incessantly expanded. The first 210-MW unit is being installed there. The possibility of strong subterranean shocks had already been considered when selecting the site of the TETs, and designers were helped in this by seismic microregionization charts of Krasnovodsk prepared by scientists from the Institute of Seismology, Turkmen Academy of Sciences. The station is being erected on a solid granite foundation. Extra reinforcements, special installation of brick panels and suspended wall panels are widely used in this construction. The erection of a 180-meter smokestack can be called a bold solution. More than 2,000 cu m of high-grade concrete were poured into the foundation and body of that smokestack. The multi-

thousand-ton poured-on-the-spot concrete smokestack is also designed to withstand scale-9 earthquakes. Krasnovodsk is located in a vast fault zone where tectonic processes are particularly active. It is precisely here that the biggest earthquake in Turkmenistan's history took place late last century. Hence the TETs is being expanded with allowance for a high strength margin. At present the installation of the principal components and elements of the first 210-MW unit has been fundamentally completed. Preparations also have been completed for installing the second 210- MW unit, which is to be put into operation in 1984. Then the capacity of the Krasnovodskaya TETs will be tripled compared with its present level and electricity supply to the oil-bearing western Turkmenistan will improve markedly. [By TurkmenINFORM] [Text] Ashkhabad TURKMENSKAYA ISKRA in Russian 12 Apr 83 p 4] 1386

NEW TURBINES BUILT IN UKRAINE—Khar'kov. A family of turbines developed by Ukrainian machine builders has been designed for hydroelectric power stations on the rivers of the Caucasus and Soviet Central Asia. The Khar'kov Plant imeni Kirov has completed building the first turbine of this kind. This 113-MW machine is designed for the Miatlinskaya GES which is being built in Dagestan. Such turbines of differing capacity, designed for operation on different rivers, combine felicitously the unification of the principal elements and components with individual technical solutions. Thus, owing to improvements in its rotor and other parts, the new turbine displays a markedly higher efficiency and its weight is 20 tons lower compared with its predecessors. [Text] [Baku VYSHKA in Russian 1 Mar 83 p 1] 1386

NEW CABLE SHEATH ALLOY—A new alloy designed for sheaths of oil-filled superhigh-voltage cable has passed its operating trials. Its composition was developed through the joint effort of the personnel of a number of scientific research institutes and the Kamkabel' Cable Plant. They had set themselves two tasks: improving the quality and reliability of the sheath and at the same time reducing the consumption of expensive metal. Both aims were accomplished. Laboratory tests demonstrated the structural stability of the synthesized specimens. The application of the new alloy will reduce the consumption of pure lead by 11 tons per year. It is highly important that existing equipment can operate with the new alloy. [By V. Ukolov, own correspondent, Perm'] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 17 Mar 83 p 1] 1386

CENTRAL HEATING SYSTEM IN MINSK—/Last January, as known, the deadline had expired for the contest for the 1983 prize of the USSR Council of Ministers for the best project and its implementation. Today we begin publishing reports on the projects submitted./ [printed in boldface] The USSR Ministry of Power and Electrification had submitted for this contest a project for building a large-scale central heating system in Minsk. The system includes a suburban TETs, a network of large-diameter trunk heating mains and a series of district boiler plants for hot water supply converted to operation in tandem with the TETs. These boiler plants, which serve to meet the peak heat demand, helped to ensure a reliable heat supply. The system built in Minsk has opened a new stage in the spread of central heating facilities and improving their efficiency. The design was developed by the Belorussian Affiliate of the VNIIPienergoprom [expansion unknown] Institute. The construction was handled by the collectives of the Belenergostroy Belorussian Power Equipment Construction Trust, the Tsentrenergomontazh Central Power Equipment Installation Trust and the Minskstroy Minsk Construction Combine. The application of progressive technological solutions yielded savings of nearly 24 million rubles in capital outlays. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 83 p 18] 1386

PIPELINE CONSTRUCTION

DAVLETABAD-SHATLYK PIPELINE CONNECTION MADE

Ashkhabad TURKMENSKAYA ISKRA in Russian 19 Dec 82 p 2

[Article by V. Veys, outside TURKMENSKAYA ISKRA correspondent: "Underwater Bridge over the Canal"]

[Text] A 380-meter underwater inverted siphon was laid yesterday on the bottom of the Karakum Canal imeni V. I. Lenin. It connects up the main gas line from Davletabad to Shatlyk.

They have been preparing a long time for this great event, the forced crossing of the manmade river. It was necessary to lay the pipes (a reserve gas pipeline was also laid next to the main one) at a depth of 8.5 meters in a trench only 3 meters wide. This work could really be considered jeweler's work even for the experienced suction dredge operators of the construction administration "Tedzhengidrostroy." The crews of the suction dredges who were lead by the experienced brigade foreman Yu. I. Filatov should be given their due. They brilliantly coped with the difficult task.

The powerful mechanisms, removing thousands of tons of ground, did not stop for a minute. Two collectives worked as if on one breath.

The chief engineer of the Ufa specialized administration for underwater engineering work No 2 of the trust "Vostokpodvodstroy," A. Aleksandrov highly praised the work of the Turkmen suction dredge workers. He headed the entire operation for laying the bridge on the bottom of the canal. He is not a novice to this work, but he was astounded by the difficulties of crossing the Karakum River. In contrast to the slow-moving northern rivers at which he had worked, the canal has a fast current. An enormous mass of silt and sand filled the finished trench literally in hours.

The pipe-layers lift the heavy load, almost 1000 tons: pipes rolled in anti-corrosion sleeve, with two-ton rings, unique anchors which should hold the pipeline on the floor of the canal.

The command is given to storm the water obstacle. The bulldozers begin to move. From the opposite shore they pull a cable. The pipe-layers carefully carry the steel giant of an inverted siphon. The pipeline approaches the water centimeter by centimeter and slowly goes to the bottom, right into the trench. The first stage of the crossing is complete.

The inverted siphon now continues to slide slowly over the bottom. The signal buoy above the trench indicates that it is travelling precisely on the channel.

A worrisome moment occurs. The point of the inverted siphon reaches the shore. For a certain time it continues to advance, and finally, stops. The underwater gas bridge has been laid!

Now the welders begin work. In the near future they will connect the inverted siphon to the main gas pipeline, and the blue fuel of Davletabad will begin to flow in the Central Asia-center of the country gas pipeline.

9035

CSO: 1822/240

PIPELINE CONSTRUCTION

DON SECTION OF PIPELINE TESTED

Moscow SOVETSKAYA ROSSIYA in Russian 17 Mar 83 p 1

[Article by A. Pyatunin, staff correspondent, Lipetsk Oblast: "Testing by Water"]

[Excerpt] The upper reaches of the Don were still covered by ice. But in some places the ice armor had been penetrated, and the powerful pump hoses were lowered into the dark air holes in the ice. They pump water under high pressure day and night into the welded lengths of the gas pipeline. The route is being tested for strength and sealing. The builders were obliged to complete the first length on the "Tsentr-IV" section extending 322 kilometers ahead of schedule, not in the second, but the first quarter of the current year.

"The section of the export pipeline which we have been entrusted with building is small, 53 kilometers," says Dmitriy Andreyevich. "But the locality is uneven here. There are ravines, gullies and rivers on the gas pipeline route. It is a good thing that our collective is experienced. From the very first week at the new site, work was intensive, and we are very much ahead of schedule."

An important stage has been completed: the first length of the gas pipeline has been prepared for important testing, pressure testing. The Don water "checks" whether the pipes are welded strongly and the crane assemblies are reliable. The route workers are worried: how will they do on the test! But the signals coming from the trunkline are reassuring: the tests were successfully passed. After they are done and the state commission has given a good mark, the builders, without waiting for complete butt joining with the other lengths of the export pipeline, will connect the finished section of "Tsentr-IV" to the gas pipeline system which is already operating here. This will considerably improve the gas supply to many regions of the central part of the country.

9035

CSO: 1822/240

PIPELINE CONSTRUCTION

THERMAL DRILL USED IN CUTTING THROUGH PERMAFROST

Moscow KRASNAYA ZVEZDA in Russian 1 Apr 83 p 2

[Article by V. Levin, Novyy Urengoy: "Combatting Permafrost"]

[Text] There are always a lot of people in the headquarters of construction of the transcontinental pipeline which is located in Novyy Urengoy. The work front on the most important construction site of the five-year plan unfolds from here, from the zero kilometer of the trunkline to its entire giant length. But it is especially difficult for the route workers here where permafrost reigns. Its perfidy can only be overcome armed with all modern achievements of science and technology. I found out about one of these innovations from a telephone conversation.

"The first tests of the tool surpassed our expectations," engineer I. Smager reported to Moscow. "The permafrost conditions were even favorable. We are continuing to work out different variants."

When this totally incomprehensible report ended, I was interested in what kind of tool they were talking about. I. Smager explained:

"We are helping the gas pipeline workers to develop thermal drills. A group of Moscow engineers participated in their development together with the scientists of the Ukrainian Academy of Sciences. The innovation will allow the blasters of the Ministry of Construction of Oil and Gas Industry Enterprises to facilitate and accelerate laying of the trunkline trenches in the permafrost of the polar region."

"What is new here?" I asked. "Thermal drilling has been used in the national economy for several years now."

"True, but those were powerful stationary units unsuitable for the nomadic life of the route workers," my interlocutor explained. "We are introducing light-weight manual devices which are actuated by standard carburetor motors of series-produced trucks. By the way, in an 8-hour shift we can prepare 350 running meters of trench for blasting using this thermal drill."

I admit that I expected to see at least two or three dozen workers on the route, since the shift volume of work that Smager talked about could only be done by three or four crews of drilling machines. Imagine my surprise when it turned out that the entire collective consists of five people.

The workers are also the developers of the compact thermal drill: engineers N. Khodakov, Yu. Kozlov and A. Boychenko, as well as the senior scientific associate of the Institute of Geological Engineering Mechanics of the Ukrainian SSR V. Tantsura.

A standard "Ural" travelled along the blindingly white snow, along the pre-dug trench at the lowest speed. A man walked next to it, making short stops. He held a pipe from whose top a rubber hose stretched to the truck hood. A pointed prong of flame burst out of the pipe with a noise similar to the operation of a soldering lamp, only considerably stronger. In an instant the tool enters the frozen ground like a knife through butter. I note the time: 2-3 minutes for drilling a 1.5-meter shaft including passing to the next point.

What is the customer's attitude towards the technical innovation? I asked the head of the section SU-8 M. Andreykiv who supervises the drilling-blasting and all excavation operations on the line.

"The thermal drills are just passing operating checks," the experienced route worker said, looking with satisfaction on how well the specialists' work is going. "Nevertheless, even now we are ready to arm ourselves with them as they say. The tool is light, only 10 kilograms without the hoses and only requires one person to operate it. It has another advantage over the traditional drilling machines. This is that the shafts for the explosives can not only be made perpendicular, but also slanted, up to 3 meters deep. Moreover, at the end of the borehole, the thermal drill can make very large niches. It allows considerable increase in the blasting force, and at the same time, decrease in the consumption of explosives."

It remains to be added that as the specialists calculate, when the enterprises of the Ministry of Construction of Oil and Gas Industry Enterprises set up mass production of the new tool, the cost of one thermal drill will not exceed R 50.

By the way, after turning off the tool, the truck can be used immediately for its direct purpose.

After looking at his watch, I. Smager suddenly asked the driver to stop the truck.

"Look," he said.

High in the clear sky, a signal rocket made a steep arc and sprayed sparks, leaving a gray trail. A minute later, the shaggy caps of explosives shot up silently on the horizon.

This was a peaceful explosion which announced that yet another 150-meter segment of trench was ready for pipe laying.

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CSO: 1822/240

PIPELINE CONSTRUCTION

BRIEFS

RADIO RELAY TOWERS--On the route of the Urengoy-Pomary-Uzhgorod gas pipeline, the product of the Chelyabinsk plant of metal designs imeni S. Ordzhonikidze is being used. Manufacture of the first towers for the radio relay line of the northern part of the route has been completed here ahead of schedule. These structures will ensure reliable communication between the route facilities. They will operate at low temperatures, therefore, they have been assembled from cold-resistant steel. A section has been set up to fill the orders of the trunkline builders at the enterprise. The most skilled workers have been sent here. The plant designers who accelerated preparation of the technical documents assisted also. [Text] [Moscow IZVESTIYA in Russian 9 Mar 83 p 2] 9035

UDMURT PIPELINE SEGMENT--The last "red butt joint" has been welded on the Udmurt section of the Urengoy-Pomary-Uzhgorod gas pipeline. The section 210 kilometers long was fused to the gas pipeline length which was laid on the territory of neighboring Tatariya. "A rapid and steady spring complicated work on the route, nevertheless, we finished the construction schedule without corrections," said the head of the production line S. Matsko. "The rate of pipe assembly into a 'line' that was adopted by the collective, a kilometer per shift, was held until the last day. This was guaranteed by the accurate maneuvering of the equipment, increased skill and smooth work of all the brigades." [Text] [Moscow GUDOK in Russian 7 Apr 83 p 1] 9035

NADYM RIVER CROSSING--The collective of the administration of underwater engineering operations No. 7 from the trust "Surgutpodvodtruboprovodstroy" is preparing the crossings over large water obstacles on the northern segment of the gas pipeline. Now the main efforts of this subdivision have been transferred to Nadym, closer to the route. The underwater workers worked excellently last year, overfulfilling the plan from completed construction by R 2.6 million. This year's assignment is considerably higher. The complexity of building the crossings also rose. The specialists are very familiar with the perfidy of the Nadym and Pravaya Kheta Rivers through which they are faced with laying four inverted siphons of the main Urengoy-Uzhgorod gas pipeline. This assignment was given to the first section which is headed by S. Stanevich. Crossing of the reserve line of the trunkline was planned for the second quarter, but the collective decided to finish the work in the first quarter. Now six lengths on the 1700-meter inverted siphon have been welded into one line; of them, five have been insulated and reinforced by ballast. Preparatory work has been completed,

and laying of the crossing over the Nadya River has been set up. The Communists P. Osipov, A. Kutushev and candidate for membership in the CPSU S. Migulin are in the forefront of the competition. They were recently awarded the honored title "Shock Worker of Communist Labor." [Article by V. Kuznetsov] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 6 Feb 83 p 1] 9035

NEW WELDING UNITS--Lvov, 22 Mar--The first batch of the new molding-filling units were received a month ahead of schedule by the builders of the Tyumen section of the Urengoy-Pomary-Uzhgorod gas pipeline. The unit of the Lvov mechanical plant is almost twice as productive as its predecessor. Checking the butt seams on the pipes with its help, the welders accelerate shipment of the lengths to the site of their laying into the trench and guarantee advanced rise in the work of the route workers. High quality of the butt joints is guaranteed. [Article by correspondent of PRAVDA V. Vasilets] [Text] [Moscow PRAVDA in Russian 23 Mar 83 p 1] 9035

PIPELINE ADVANCES--The last pipes have been laid on the final 115th kilometer segment of the Urengoy-Uzhgorod gas pipeline on the territory of Kievshchina. The collective of the production line No 1 from the trust "Ukrtruboprovodstroy," the leader of the competition "Every kilometer of the route ahead of schedule!" has fulfilled the assignment considerably ahead of schedule. Now the builders are being sent to help their colleagues in the Vinnitsa Oblast. There are currently 16 of these lines operating in the republic. The principle of comprehensive organization of work which was used for the first time on a large scale permits a confident increase in the construction rates. The unification of the specialized subdivisions into one production unit permits better use of the builder force and to overcome a lagging in the preparatory teams. Now there are practically no delays in pipe shipments. The stationary welding bases that were developed in advance produce lengths for the route which are made of two-three segments. The crossings at the sites of intersection between the route and highways and railroads are constructed in advance. This is especially important where the gas pipeline passes through densely populated areas saturated with supply lines. A total of 23 crossings had to be made in the Kiev Oblast, but this did not hold up the work. Interruptions on the finished route were reduced to a minimum. Over 500 kilometers of pipes have now been laid and prepared for start-up testing on the Ukrainian section of the trunkline. About 750 kilometers have been welded together. The builders are trying to start up their part of the route ahead of schedule. [Article by O. Popova] [Text] [Kiev PRAVDA UKRAINY in Russian 15 Feb 83 p 1] 9035

CENTRAL ASIA OIL--The world's longest oil pipeline Surgut-Omsk-Pavlodar-Chimkent, over 3,100 kilometers, started up on 12 March. Since the time of opening of the Turkmen-Siberian Railroad half a century ago, the send-offs and meetings of the cargo echelon at the Chengildy probably have not been as triumphant as this time. There was a large meeting in Tashkent because of its departure. Guests from Chimkent (South Kazakhstan) and Siberia participated in it. The diesel engine was draped with a wide red ribbon. The Surgut-Omsk route was the first stage of this transcontinental trunkline. Construction of the second phase began in 1975: Pavlodar-Chimkent. Building

of this oil pipeline extending 1.643 kilometers through 4 oblasts of Kazakhstan became yet another bright page in the epopee of erection of oil and gas transporting trunklines, and yet another remarkable international construction site. The Tyumen oil will arrive at the oil refinery whose construction is now being completed in Chimkent. With its start-up, the outlays for oil shipment will decrease by tens of millions of rubles, and most importantly, it will reliably provide for the increasing demand for liquid fuel for the developing territorial-production complexes in south Kazakhstan and in the neighboring republics of Central Asia, in particular, in Uzbekistan and Turkmeniya. The builders had to overcome craggy sections, quicksand in the harsh desert, swamps, complicated relief, many rivers and streams and crossing of roads. They were assisted by representatives of many organizations of fraternal union republics. A unified control center was set up for better coordination of the actions of the section workers in erecting the oil line. The headquarters of the construction site headed by the deputy head of Glavtruboprovodstroy V. Dudarev formed enlarged comprehensive teams which included construction and installation brigades. By the time this issue of IZVESTIYA is published, the heavy bulk oil car on double linkage will approach the oblast center of Uzbekistan, Fergana. There is a scarlet ribbon on the diesel engine on which is written: "Central Asia, Receive the Tyumen Oil!" [Article by M. Bayzhanov and G. Dimov, special IZVESTIYA correspondents, Chimkent, Kazakh SSR] [Text] [Moscow IZVESTIYA in Russian 13 Mar 83 p 1] 9035

UDMURTIYA PIPELINE--Izhevsk, 17 Apr--Laying of the linear section of the Urengoy-Pomary-Uzhgorod gas pipeline has been completed on the territory of Udmurtiya. This line stretches over 200 kilometers from Kama to Vyatka. The main work front was provided by the collective of the Ufa trust "Vostok-nefteprovodstroy." The first lengths of pipes were welded here last summer. The route was fairly difficult: crossing rivers, forest tracts, swamps, peat bogs, ravines, railroads and highways. But now the steel line is in the trench. The route is being prepared for hydraulic tests. [Article by A. Artamonov, outside PRAVDA correspondent] [Text] [Moscow PRAVDA in Russian 18 Apr 83 p 2] 9035

PIPELINE TESTING--Kazan--The section of the Urengoy-Pomary-Uzhgorod gas pipeline on the territory of Tatariya is ready for Siberian gas. Hydraulic tests have been completed on its first 70-kilometer segment. The test for strength and sealing of the route was passed with flying colors: the quality of welding and insulating work was impeccable. The builders of the production line of Hero of Socialist Labor I. Shaykhutdinov have passed to the next section. Six powerful units pump water into the pipeline round-the-clock. Pressure up to 90 atmospheres is created in it with the help of compressors. This is considerably more than during operation. The entire section from the Volga to Vyatka will be tested and presented to the state commission by the collective from the trust "Tatnefteprovodstroy" 6 months ahead of the plan. The builders are simultaneously recultivating the land that was in the construction area. It is planned to return the entire route zone to the kolkhozes and sovkhoses. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 6 Apr 83 p 1] 9035

PIPELINE REACHES VYATKA--Vyatskiye Polyany (Kirov Oblast), 31 Mar--It only took the collective of the comprehensive production line headed by Hero of Socialist Labor I. Shaykhutdinov from the trust "Tatnefteprovodstroy" 7 months to lay the 130-kilometer section of the Urengoy-Pomary-Uzhgorod gas pipeline. The collective advanced from the west to the east from the boundary of the high mountain region of the Tatar ASSR to the shores of the Vyakta River. The route was difficult: it crosses ravines and gullies, rivers, highways and railroads. Nevertheless, because of the precise and harmonious work of the collective on individual sections, the daily advance of laying and insulating the pipes significantly exceeded 2 kilometers. At the same time, the comprehensive production line of the Ufa trust "Vostoknefteprovodstroy" was advancing from the east through the Udmurt ASSR to Vyatka. Recently both competing collectives simultaneously approached the river, connected the pipes to the prelaaid underwater inverted siphon on the bottom of the Vyatka 6 months ahead of the plan. [Article by outside PRAVDA correspondent V. Domrachev] [Text] [Moscow PRAVDA in Russian 1 Apr 83 p 1] 9035

ASHKHBAD PIPELINE--3 Feb, Ashkhabad--Construction of the first section of the second line of the Mayskoye-Ashkhabad-Bezmein gas pipeline has been completed. The 26-kilometer branch of the trunkline traversed quicksand in the desert from the field to the city of Tedzhen. [Text] [Moscow PRAVDA in Russian 4 Feb 83 p 2] 9035

PIPELINE ADVANCES--The section of the Urengoy-Pomary-Uzhgorod pipeline which is in Tatariya is ready to receive the Siberian gas. The hydraulic tests were finished yesterday on its first 70-kilometer segment. The test for strength and sealing of the route was passed with flying colors: the quality of welding and insulating work was impeccable. The last "red butt joint" was welded yesterday on the Udmurt section of the Urengoy-Pomary-Uzhgorod gas pipeline. The section 210 kilometers long was joined with the line whose laying was completed on the territory of neighboring Tatariya. The leading brigade of B. Krylov was given the honor of performing the concluding operation. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 6 Apr 83 p 1] 9035

ARYS CROSSING--Chimkent--The Arys River was successfully crossed today by the builders of the Pavlodar-Chimkent oil pipeline. It would seem to be a small obstacle for it is no more than 50 meters wide, however it was not easy to cross it. The masses of water which rush from the mountains carry an enormous quantity of sand and small stones. The bottom had to be dried by dams and pumps and the length had to be laid in the trench in sections. The oil pipeline is now ready for comprehensive testing over the entire length from Pavlodar to Chimkent. The experience of the brigades coming to Kazakhstan from the fraternal republics came in handy. Teams from Bukhara and Bryansk, Leningrad and Kuybyshev, Sverdlovsk and Tomsk left their work autographs on the oil pipeline. It was planned to start-up the oil pipeline in a month. Although the oil refinery in Chimkent is still under construction, the national economy of the Central Asian republic will benefit even now. The oil will be shipped from here in tank cars to the Fergana plant. This will sharply reduce the load on the railroad transport of the east section of the country. [Text] [Baku VYSHKA in Russian 30 Jan 83 p 1] 9035

INTENTIONAL PIPE WEAKENING--Vyksa, Gorkiy Oblast--Having solved the problem of durability of multilayer pipes for high pressure gas pipelines, the

collective of the Vyksa metallurgical plant is now developing technology for weakening them. This is not a contradiction. It turns out that the powerful energy arteries need weak links. No matter how harsh the pipe tests, the operating conditions are sometimes even more severe, and accidents on the gas pipeline are not excluded. Multilayer pipes act differently. Designed by the Soviet specialists for increased pressure, they are more resistant to ruptures. Cracks, if they even develop, are rapidly eliminated in the numerous seams of these trunklines, for here each pipe 11 meters long consists of seven butt joined ring-shells. Weakening cuts are made at the plant at a special angle on the pipe surface. A pipe with this cut normally withstands working pressure of the gas, but if a crack appears, then it will only travel to the cut, twist in it and be eliminated. [Text] [Moscow IZVESTIYA in Russian 7 Apr 83 p 3] 9035

LOMNITSA CROSSING--Lvov, 19 Feb--The builders of the Carpathian section of the Urengoy-Pomary-Uzhgorod gas pipeline overcame one of the most complicated water obstacles. Today the brigade of R. Yemanidi from the Transcaucasus administration of pipeline construction assembled a bridge across the Lomnitsa River. It is over a kilometer long. This wilful mountain stream is not very wide, but almost every year it changes its bed and often overflows. The builders were concerned with protecting the trunkline from such surprises. Reliable reinforced concrete supports were raised to 11 meters above the water for a bridge on which the pipes were laid. The builders were obliged to finish the main work on their section considerably ahead of the planned schedule. [Article by K. Chavaga, TASS correspondent] [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 20 Feb 83 p 1] 9035

GASOLINE PIPELINE--Budenovsk, (Stavropolskiy Kray), 21 Apr--By the end of this year, the route of the pipeline about 300 kilometers long will connect the cities of Budennovsk and Groznyy. The pipeline is being laid at the order of the Prikumskiy plastics plant. Its main product is high density polyethylene which is used in the national economy as a metal substitute. The raw material for this product is low-octane gasoline. It is now shipped from the oil refineries of Groznyy for the Prikumskiy plastics plant by railroad cars, but with the completion of route construction, it will arrive by pipeline. The underground supply line will save about R 100,000 every month. [Article by V. Pankratov, PRAVDA correspondent] [Text] [Moscow PRAVDA in Russian 22 Apr 83 p 2] 9035

ROS RIVER CROSSING--Cherkassy--Yet another water obstacle on the Urengoy-Pomary-Uzhgorod gas pipeline route has been crossed. The collective of the fifth specialized administration of underwater engineering operations of the association "Sozypodvodtruboprovodstroy" laid a kilometer inverted siphon on the bottom of the Ros River a quarter ahead of schedule. The experience accumulated in crossing the Dniepr accelerated the work. The builders pre-welded the pipes into lengths at a stationary base, and then sent them on rafts to the site of their laying. All brigades worked on a tight schedule. [Text] [Moscow GUDOK in Russian 16 Mar 83 p 1] 9035

COMPRESSOR STATIONS

TURBINES SHIPPED FOR PIPELINE USE

Moscow EKONOMICHESKAYA GAZETA in Russian No 46, Nov 82 p 4

[Article by EKONOMICHESKAYA GAZETA correspondent Ye. Makarov, Sverdlovsk:
"Turbines for the Urengoy-Uzhgorod Natural Gas Pipeline"]

[Text] The association's workforce has adopted additional pledges to increase shipments of equipment for the Urengoy-Pomary-Uzhgorod natural gas pipeline. These pledges specify that one above-target GTN-16 turbine will be delivered in 1982, and four in 1983.

From a resolution by party-economic
activists at the Turbine Engine
Plant imeni Voroshilov Association.

At the time when the matter of building the Urengoy-Uzhgorod natural gas main trunk pipeline was being determined, the Ural turbine builders were assigned a tough task: to design and put into production the GTN-16 gas turbine. This 16,000 kilowatt turbine is an exceptionally complicated piece of equipment. Usually it takes several years to move from design to manufacture of such a piece of machinery. But the situation required that the gas turbine go into production as quickly as possible, and the association workforce set to work. Without waiting for completion of construction of a special shop, the workforce began building the GTN-16 gas turbine alongside manufacture of regular turbine engines.

The workforce infused the project with a spirit of innovation. The equipment built by this plant employs not cast but welded drop-forged blades. It is true that they require greater labor, but they offer a service life which is half again to twice that of blades made by General Electric, for example. These blades stand up to enormous loads amounting to tens of tons at an operating temperature of 900°.

The Ural turbine builders sent one of the first experimental models to the Sysert gas industry station. Specialists concluded that the turbine had withstood all loads, many of which exceed design loads.

Many subcontractors were enlisted to help accomplish this important task, in particular the workforces of Leningrad enterprises. The Sverdlovsk turbine builders signed a cooperation agreement with all subcontractors according to

the "work relay" principle. Successfully operating at the turbine engine plant proper is a "small work relay" which encompasses the shops and brigades. The honored assignment to provide gas turbines for the Urengoy-Uzhgorod natural gas pipeline will be accomplished.

3024

CSO: 1822/232

COMPRESSOR STATIONS

SUMY PLANT SHIPS COMPRESSOR UNITS

Moscow PRAVDA in Russian 9 Feb 83 p 1

[Article by PRAVDA correspondent I. Lakhno, Sumy: "Station in Crates: For the Urengoy-Pomary-Uzhgorod Pipeline"]

[Text] The workforce of the Sumy Machine Building Association imeni M. F. Frunze has completed assembly and testing and has shipped off to Urengoy one month ahead of schedule five compressor installations of the latest design. A team of highly skilled workers and specialists from the plant is also headed there. They will assist in installing and starting up the equipment at the Pravokhettinskaya compressor station on the Urengoy-Pomary-Uzhgorod trunk natural gas pipeline. With a target of 40 units, the workforce resolved to ship 55 of these units to the pipeline in the third year of the five-year plan.

"Only five preproduction models were built last year," commented association party committee secretary V. Dunayev. "And now this big leap forward. Although, quite frankly, this is a job involving great technical complications. Each unit contains 170 tons of metal. A great number of parts must be machined with an accuracy measured in fractions of a micron. And these are pioneer units, think of it, from the unprocessed sheet up."

A silvery metal structure stands in the middle of an enormous shop, looking like geologists' mobile field quarters or a passenger railcar of unusual design. Assembler brigade leader A. Kovalev unlocks the door and invites the visitors to enter -- inside the structure is installed a compressor unit, ready to go. This is one section of a gas pipeline compressor station, brought to 100 percent operational readiness here in the shop. It is a "station in a crate," as it were. Haul it out to the pipeline, install it, and hook up the pipes.

This is an important difference between the Sumy unit and others, including imported equipment. Using the language of the specialists, it is called complete modular assembly. Only a few connections remain to be made at the station site. There is no need to lay a foundation and erect a substantial building. Sumy stations can be installed two to three times faster, while capital outlays are reduced by 40 percent in comparison with other such equipment. One can easily imagine what this means, for example, in arctic conditions.

This new unit has an additional feature: in place of a power turbine, the installation employs a TU-154 jet engine which has been retired from service. After overhauling, it is modified for operating on natural gas. The safety margin engineered into this powerplant is sufficient for many years of additional operation, and the engine is powerful enough to move tens of millions of cubic meters of natural gas per day -- three times as much as conventional units.

Five years were allocated for designing this equipment. But the design engineers, employing the step-by-step method, which demands exceptional precision and rigorous organization of labor, completed the job in only 2 years. Assembly was assigned to the famed brigade of Hero of Socialist Labor A. Kovalev. But when it became necessary to accelerate movement on-line of an electric furnace for precision brazing in a high vacuum, the finest installation and setup men were also assigned to the job. Standard construction schedules specified completing the furnace in a year, while the job was completed in 3 months.

The more you learn about these things, the more you understand the confidence and stick-to-it-iveness with which the association's compressor builders set about accomplishing the target for the third year of the five-year plan, a target of unprecedented scale. A great deal of state-of-the-art equipment was installed and brought into service in extremely rapid fashion. Large parts, such as the top of the blower housing, for example, are now machined on a numerically-controlled machine tool. Automated welding of thick parts has not only accelerated the process but has also sharply improved quality of the weld. A contract was also signed with the Electric Welding Institute imeni Ye. O. Paton of the Ukrainian SSR Academy of Sciences for employment of the most advanced electroslog casting method.

There are also a great many other new developments at the enterprise. It is immediately apparent that the people here are innovative seekers. All sections have adopted the brigade form of labor with wages based on a unified work order. Competition agreements have been signed between subcontractor workforces, and a current-operations supervisory staff has been established in compressor production. This staff and the party organizations are maintaining close scrutiny of the production schedule for components for the new equipment.

"We have an adequate production backlog," reported machinery assembly shop superintendent Ye. Rogova. "We have set up kind of an assembly line: individual assemblies have been fabricated for the next 20 compressor units. This is what helped us run substantially ahead of schedule at the very beginning of the year."

Enviably smooth organization can also be seen in the labor relations between all brigades assembling compressor installations. The teams led by G. Skupskiy, I. Serik, and G. Televnyy put together individual assemblies, while A. Kovalev's brigade has the most responsible task -- final assembly and adjustment.

Special installation brigades are being formed at the plant, which include the top workers and specialists. They perform final assembly, adjustment and start-up on the pipeline.

COMPRESSOR STATIONS

ARSKAYA COMPRESSOR STATION CONSTRUCTION REPORT

Moscow PRAVDA in Russian 11 Apr 83 p 1

[Article by A. Kosygin, Tatar ASSR: "One of 40: On the Map of Construction Projects"]

[Text] There will be 40 compressor stations along the Urengoy-Pomary-Uzhgorod pipeline. One of these -- the Arskaya -- is being erected 200 kilometers from Kazan, among fields and woods. The entire local area has become quite enlivened with the arrival of the construction and installation crews. And this is understandable: this large, important installation is to be brought into service in the fourth quarter of this year. The propinquity of a large construction project can be sensed even at the local Shemordan Station, where consists carrying Soviet and imported equipment arrive daily.

Previously there were no hard-surface roads in the area. But as soon as it became known that Arskaya would be sited 5 kilometers from the community of Shemordan, the general contractor -- the Kazankhimstroy Trust of Glavstatstroy -- proceeded to build a paved road. And now Kama Truck Plant dump trucks laden with various building materials, wheeled tractors pulling wagons, and truck-mounted cranes run along this road.

We reach the gas compressor station construction site. A good-sized town has already sprung up here. Storage buildings rise up in the distance. Two well-appointment apartment buildings are in the completion stages. Nearby there is a paved area -- an equipment yard.

I met the man in charge of this complex, F. Shafigullin, by the concrete and mortar facility. He kept looking at his watch, waiting for dump trucks to arrive with cement. Finally they appeared, coming around the turn.

"Right on schedule," Shafigullin sighed in relief. "That means things will run smoothly: today we shall be laying the last footing for installing equipment. Thus the construction crews will be completing things on schedule to turn the job over to their principal partners, the installation crews. They are presently completing construction of a storage facility for fuels and lubricants."

I should note that USSR Minmontazhspetsstroy has been given the job of handling the installation work for 17 gas compressor stations, 8 of which are to be brought into service in the fourth quarter of this year and 9 at the beginning of next year. Installation of equipment at Arskaya is being handled by the Tatneftekhimmontazh Trust. It has assigned to this construction job the finest brigades from the six Kazan, Brezhnev and Nizhnekamsk administrations.

Things are proceeding with smoothness and precision at the construction site. But living and service facilities for the workers are not progressing well. The general contractor has delayed completion of two apartment buildings and is in no hurry about setting up a dining facility and providing people with transportation. And yet if all these problems are resolved, the installation crews unquestionably will begin working even better.

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CSO: 1822/232

COMPRESSOR STATIONS

BRIEFS

KURSK COMPRESSOR STATION--Kursk Oblast (TASS)--The gas turbines have been fired up at the Kursk compressor station on the Urengoy-Kiev natural gas pipeline. Engineers from the Ukrainian Ukgazenergozemont Administration are taking part in startup procedures. Construction was handled by specialists from SMU-1 [Construction Administration-1] of the Kurskpromstroy Trust. This station has been provided with equipment of Soviet manufacture. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 83 p 24] 3024

ZAVOLZHSKAYA COMPRESSOR STATION--Krasnoarmyskoye, Chuvash ASSR--Installation of equipment has begun at the Zavolzhskaya compressor station under construction on the Urengoy-Pomary-Uzhgorod natural gas pipeline, near the Chuvash village of Krasnoarmeyskoye. The first unit at this station is scheduled for completion at the end of this year. [Text] [Kishinev SOVETSKAYA MOLDAVIYA in Russian 5 Mar 83 p 1] 3024

POCHINKOVSKAYA COMPRESSOR STATION--Gorkiy Oblast--Construction of the Pochinkovskaya compressor station, on the central section of the Urengoy-Pomary-Uzhgorod natural gas pipeline, is entering a decisive stage. Assembly of process equipment began yesterday. Although working at quite a distance from supply bases, the construction crews are ahead of schedule on construction of this shock-work installation. This is helped by the vakhta [watch -- so many days on, so many days off] method of organization of labor. The brigades travel 200 kilometers to Pochinki and for a period of two weeks live in dormitory cars adjacent to the construction site. The workforces apply the following principle: hand over the job to the relief crew without defects. All excavation and ditching work has been completed at the site, service lines have been laid, and hard-surface access roads have been built. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 16 Mar 83 p 1] 3024

GORNOZAVODSK COMPRESSOR STATION--Perm Oblast--The compressor station at Gornozavodsk on the Urengoy-Petrovsk trunk natural gas pipeline has reached design capacity. It entered service last year and has appreciably helped increase the flow of fuel to this country's central regions and for export. The Gornozavodsk Trunk Natural Gas Pipeline Administration is overfulfilling its production plan by 10 percent. The workforce is reducing consumption of oil and electric power for operations. The shifts headed by G. Kamenskikh and S. Chushkov are now leading the competition. Compressor operators V. Leonov, V. Zhdanov, and V. Merzlyakov have proven to be expert at their job. [By SOTSIALISTICHESKAYA INDUSTRIYA correspondent V. Ukolov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 16 Feb 83 p 3] 3024

PIPELINE TURBINE MANUFACTURE--Sverdlovsk--The workforce of the Turbomotornyy Zavod Association imeni K. Ye. Voroshilov has completed ahead of schedule a turbine for the Urengoy-Pomary-Uzhgorod natural gas pipeline. This unit is capable of moving more than 50 million cubic meters of gas daily. The new unit is half as heavy as previous models, while the high degree of factory-ready completion makes it possible to install the unit at the site more quickly. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 1 Dec 82 p 1] 3024

POMARY COMPRESSOR STATION--Pomary--Crews building the Urengoy-Pomary-Uzhgorod natural gas pipeline have begun ahead of schedule installation of equipment at the Pomary compressor station. A smooth, precision performance by subcontractors -- specialists from the Udmurtneftegazstroy Trust -- made it possible to begin this complex technical operation ahead of schedule. They successfully completed the footings for the powerful gas-compressing turbines and other equipment. The building was completed extremely rapidly and with excellent quality. It is no easy job to build a compressor station at a site remote from large industrial centers. It was necessary to drive hundreds of piles to support the station's main buildings, to run service lines and build roads. Artesian wells were drilled to provide water for the construction project, a helicopter pad was built, and auxiliary facilities were erected. Simultaneous construction of housing and cultural-services facilities is in progress nearby. [Text] [Moscow GUDOK in Russian 11 Mar 83 p 1] 3024

COMPRESSOR STATION HEAT EXCHANGERS--Tula, 6 Mar--The Shchekino Industrial Equipment Overhaul Plant is filling ahead of schedule orders placed by the builders of the Urengoy-Pomary-Uzhgorod natural gas pipeline. A large consignment of heat exchangers to be installed at compressor stations is to be shipped out far ahead of schedule. A heat exchanger assembly line is in operation at the enterprise. It is run by the leading combined brigade headed by V. Abrosimov. Initial processing, welding, metalworking, and assembly operations are fully mechanized. The brigade members have shifted over to work on a unified work order. Labor productivity has increased 40 percent as a result. [By PRAVDA volunteer correspondent N. Makharinets] [Text] [Moscow PRAVDA in Russian 7 Feb 83 p 1] 3024

POCHINKI COMPRESSOR STATION--Kstovo, Gorkiy Oblast (TASS)--Erection of metal structures has begun at the Pochinki Compressor station on the Central Section of the Urengoy-Pomary-Uzhgorod natural gas pipeline. Before the end of this year this station is scheduled to produce operating pressure along a hundred-kilometer segment of the transcontinental trunk line, and therefore the compressor station erection schedule is extremely tight. The job of building this important facility has been given to Kstovo Trust No 5 of Neftezavodstroy. The workforce has never before worked so far from supply and housing -- it is more than 200 kilometers from the town of Kstovo, near Gorkiy, to the southern border of the oblast, where the gas pipeline runs. It is difficult constantly to haul men, supplies and equipment such a great distance, and therefore it became necessary to radically revise the entire organization of work at the jobsite. They began with thorough preparations for fast and sequential construction of the station. An agreement was reached with the designers and clients on the sequence of delivery of documentation and equipment. The staff of the Gorkiy Giprogahtsentr Institute came through for the construction workers

and submitted all drawings ahead of schedule. The job assigned to the mobile mechanized column which was formed included building a temporary construction worker community and site preparation. At the same time in the trust they were reorganizing brigades into workforces capable of working by the vakhta [duty watch] method: two weeks with an extended workday, a week off with home leave, followed by two more weeks of shock-work labor. This approach has proven effective. Concrete-surface roads were laid down at the site in short order, a 26-kilometer power line was strung to the site, laying of service lines is proceeding ahead of schedule, and installation of the station service and maintenance unit has begun ahead of schedule. "We shall complete all ditching and excavation before the spring thaw with its mud and impassable roads, and therefore nothing will keep us from erecting the buildings and equipment precisely on schedule," states trust manager V. Kuznetsov. "New brigades are arriving at the construction worker community; by month's end there will be as many as 500 persons working here simultaneously. This will enable us not only to bring on-stream the first unit of the compressor station on schedule, but also to prepare all conditions for an equally smooth job of increasing compressor station capacity, for all six lines of the largest natural gas pipelines of this five-year plan will run through Pochinki, and in order successfully to accomplish our task, we are establishing here our own industrial base. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 24 Feb 83 p 1] 3024

PETROVSKAYA, BALASHOVSKAYA COMPRESSOR STATIONS--Construction of two compressor stations on the Urengoy-Novopskov natural gas pipeline -- the Petrovskaya and Balashovskaya -- has been assigned to subdivisions of USSR Minstroy [Ministry of Construction], and installation of equipment at these stations has been assigned to Trust No 7 of USSR Minmontazhspetsstroy [Ministry of Installation and Special Construction Work]. Both stations are scheduled to come into service by June 1983. February is already here. From time to time alarming reports come in from the construction sites. "Minmontazhspetsstroy delivered unit bays to the Petrovskaya station, for example," relates Trust No 7's chief process engineer, A. Bukhbinder, "but they cannot be installed: the general contractor, Trust No 2 of Glavprivolzhskstroy has failed to put in the footings. Nor are the footings in for the gas treating and cooling equipment, nor have pipe ditches been dug." The situation is no better at the Balashovskaya station. In spite of the fact that construction crews began working here a year ago, just as at the Petrovskaya station, no road has yet been built from the railway station to the construction site, a job which was assigned to RSFSR Minavtodor [Ministry of Roads]. It is impossible to reach the site when it is raining or muddy. Freezing weather alone has made it possible to proceed with construction. Four months remain until both stations are scheduled for startup. USSR Minstroy and RSFSR Minavtodor must take immediate, substantial measures to get them on-line on schedule. [By N. Pozhidayeva, press center correspondent, USSR Minmontazhspetsstroy] [Text] [Moscow STROITEL'NAYA GAZETA in Russian 20 Feb 83 p 1] 3024

TORBEEVO COMPRESSOR STATION--Torbeevo, Mordovian ASSR--Construction of a base settlement has begun adjacent to the Torbeevo compressor station on the Urengoy-Pomary-Uzhgorod natural gas pipeline. This settlement will house approximately 500 persons. Plans call for building not only housing but also a clubhouse, school, and kindergarten, athletic and other facilities. Prefabricated

structural components are delivered as a complete unit, which will make it possible to speed construction. People will begin moving in by the end of this year. [Text] [Baku VYSHKA in Russian 15 Feb 83 p 1] 3024

ZAVOLZHSKAYA COMPRESSOR STATION--Krasnoarmeyskoye, Chuvash ASSR, 2 Mar--The railroaders of the Chuvash ASSR have considerably more work to do. More and more equipment is being shipped in to the construction crews building the big Zavolzhskaya compressor station. It will be erected near the village of Krasnoarmeyskoye, on the Urengoy-Pomary-Uzhgorod export natural gas pipeline. "A turbine built by the Leningrad machine builders will be installed at our station," stated Zavolzhskaya station chief A. Slukin. "In addition we shall employ various equipment manufactured for this export pipeline by industrial firms in Japan, Italy, France, and other countries. The foundation for the main building has been laid. The job of erecting the station has been assigned to the construction workforce of the Cheboksary hydroelectric power complex. Soon the installation crews will also be going to work. Installation crews from neighboring oblasts and republics will come to assist their colleagues from the Chuvash ASSR." The first unit of the compressor station will be completed at the end of this year. A modern residential community is being built for the people who will be operating the Zavolzhskaya station; large-panel multiple-unit apartment buildings are going up. All the requisite materials have also been hauled in for erecting another, compact housing complex, imported from Finland and including prefabricated cottages and cultural-services buildings. [By PRAVDA volunteer correspondent Yu. Knyazev] [Text] [Moscow PRAVDA in Russian 3 Mar 83 p 1] 3024

KARAGANDA PUMPING STATION--Karaganda--The Trudovaya oil pipeline pumping station in Karaganda Oblast has come on-line. The last pumping station, No 46, and a settlement for operating personnel have been completed ahead of schedule. The new facility will boost operating pressure on the central section of the 1642 kilometer Pavlodar-Chimkent oil pipeline. Tyumen oil will be shipped through this pipeline to the southern part of Kazakhstan where, by decision of the 26th CPSU Congress, the Chimkent Oil Refinery and the Chimkentshina Association will be built. These enterprises will fully meet the requirements of the Central Asian republics in fuel and tires for motor vehicles and agricultural equipment. On the final pipeline run a KazTAG correspondent met with the head of SU-6 [Construction Administration-6] of the Moscow Welding and Fitting Trust, Hero of Socialist Labor V. Bevzyuk. His crews took part in laying the first pipe and are now welding the final kilometer of the oil pipeline. "The work pace has increased by a factor of 1.5 in comparison with the initial stage," stated this distinguished construction worker. "Organization of uniform spreads helped speed up the pace. Previously each construction organization worked on the right-of-way on the basis of its own schedules. Certain ones ditched, others aligned and welded pipe, while still others coated and wrapped. Uncoordinated operations affected the overall rhythm of pipeline construction." Interministerial obstacles were removed by the oil pipeline construction coordination center. Combined detachments were formed at its suggestion. The brigades of all construction and installation trusts which formed these detachments began working better toward achieving the end result -- completion of this section of the pipeline. Construction project headquarters ensured uninterrupted delivery of materials and organized centralized equipment repair. Now

the operating personnel are taking the labor relay baton from the construction and installation crews. Testing crews are pressure-testing the completed pipeline, which will make it possible to provide uninterrupted supply of crude oil to the giant petrochemical plants. [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 10 Mar 83 p 1] 3024

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