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# USSR Report

ENERGY

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## OIL AND GAS

### RE-EQUIPPING OF MINISTRY OF CONSTRUCTION OF OIL, GAS INDUSTRY DISCUSSED

Moscow MATERIAL'NO-TEKHNICHESKOYE SNABZHENIYE in Russian No 8, 1982 pp 9-13

[Article by K. Smirnov deputy minister for construction of Oil and Gas Industry Enterprises: "Based on Technical Re-equipping of the Sector"]

[Text] In the decree adopted by the CPSU Central Committee "Work of the Ministry of Construction of Oil and Gas Industry Enterprises for Technical Re-equipping and Introduction of Progressive Methods for the Construction Industry" it is noted that the Ministry of Construction of Oil and Gas Industry Enterprises has activated work to increase the rates of construction of oil and gas facilities based on an improvement in construction and control. Our construction organizations, for example, in building pipelines widely used the effective line method of construction of oil and gas pipelines by large mechanized complexes. In the build-up of oil and gas fields, erection of compressor and pumping stations, the set-block method is used which makes it possible to enhance two-three-fold labor productivity and improve the quality of work. Light-weight designs of production buildings, watch housing complexes with facilities of social-general purpose have been developed and introduced. Their installation requires half the labor outlays as compared to standard construction.

In addition to reducing the periods for construction of large main pipelines, decrease in labor intensity of construction compressor and pumping stations, the ever increasing technical equipping, improvement in organization and control of construction make it possible to efficiently use material resources.

It is known that Vladimir Il'yich Lenin gave enormous importance to conservation. Back in the first days of existence of Soviet power he appealed to the workers to conserve as the apple of one's eye the earth, its depths, grain, factories, tools, products and transport, all the national property. The Leninist instruction about conservation and economy has become an important component part of the economic policy of the Communist Party. They have been reflected in the decree of the CPSU Central Committee and the USSR Council of Ministers "Intensify and Work for Conservation and Efficient Use of Raw Materials, Fuel and Energy and other Material Resources."

Our ministry is constantly focusing steady attention on questions of the prudent and zealous consumption of raw materials and materials. The regime of conservation as a method of socialist management guarantees the achievement of the best results with the minimum outlays. The measures adopted in the 10th Five-Year Plan to reduce specific consumption of material and fuel-energy resources made it possible to conserve over 60,000 T of rolled ferrous metals, more than 100,000 T of cement, about 140,000 m<sup>3</sup> of lumber, almost 160,000 T of conventional fuel and about 100 million kW-h of electricity.

In fulfilling the decree of the USSR Central Committee and the USSR Council of Ministers, the board of the ministry has developed a plan and organizational-technical measures for conservation of material and fuel-energy resources in the 11th Five-Year Plan. The assignments for decrease in the average standards of consumption of the most important types of material are established every year on their basis for the main administration and associations. Based on these assignments, as well as with regard for the need to reduce above-standard reserves and remains of goods and materials, a distribution is made of the funds to the organizations under their jurisdiction.

The plan and organizational-technical measures are directive documents. The main administrations, associations and enterprises are guided by them in developing five-year plans for reducing material-energy-intensity of the products and in forming the annual plans for introduction of new equipment.

It is known that materials conservation begins with planned solutions. Consequently, the board of the ministry and the trade union central committee of workers of oil and gas industry at the end of last year approved measures to improve the technical level of projects and to decrease on this basis the cost of construction of facilities, conserve labor and material resources. According to these measures, annual thematic plans were formed for the planning institutes and design offices.

The basis for development of the scientific-technical policy of the sector for efficient use of material and fuel-energy resources is the recommendations of the USSR Gosstroy for introduction of progressive resource-saving technologies and achievements of sector scientific research, design and planning organizations. Their activity is aimed at improving the planned solutions, calculations and methods of planning, technological processes, forms and methods of organizing the construction industry, introduction of economical methods of materials and substitutes.

As a result of the efforts of the collectives from the Experimental Design Office of the Ministry of Construction of Oil and Gas Industry Enterprises, the Siberian scientific research and planning institute Gazstroy, and other organizations, outlays of materials have been reduced for insulation of pipes, their reinforcement, fabrication of forming sections of unified complete buildings, module blocks of variable height, foundations of oil and gas pumping units. Studies in the field of transporting the cooled gas on pipelines of diameter 1420 mm revealed the possibility of decreasing the consumption of metal by 15-16 per cent. The introduced ballasting of pipeline by ground with the use of nonfabric synthetic materials will permit conservation of 30 kg of metal and 220 kg of cement for each meter of pipeline.

The ministry is focusing a lot of attention on the examination of the proposed planning solutions. Each of them defines the level of application of progressive volume-planning arrangements, effective design solutions, materials and their substitutes. Thus, in an examination of the drafts for in-house capital construction and analysis of the adopted general plans of planning arrangement, progressiveness of the architectural-design solutions of buildings and structures in the last 2 years, the possibility has been revealed of<sup>3</sup> saving about 2,300 T of rolled ferrous metals, 15,000 T of cement, 2,500 m<sup>3</sup> of rough timber, 400 T of metal pipes.

Questions of improving the organization and control of construction occupied an important place in the activity of the ministry. This also promotes conservation of material resources and their efficient use. The set-block method of working is being further developed, the brigade forms of organization of labor are expanding, and more advanced economical technologies are being introduced.

The block-set construction by improving the planning solutions, reducing the volume of construction-installation operations, decreasing the built-up areas, and making the structures more light-weight achieves considerable conservation of materials. In calculation per unit of output of the oil pumping station, for example, it is about 5 tons of metal. The total weight of the construction materials at these facilities has been cut by more than half. In this five-year plan, the volume of work using the set-block method of construction is considerably rising. Whereas last year the area of the production facilities created with the help of block-boxes numbered 150,000 m<sup>2</sup> in 1985 it will be 300,000 m<sup>2</sup>. The area of the same buildings constructed from collapsed sections increases from 70,000 to 90,000 m<sup>2</sup>, and housing and administration-general building constructed with the use of blocks of full-plant preparation from 63,000 to 108,000 m<sup>2</sup>.

Now plans are being developed made of blocks of single weight to 400 T. By the end of the five-year plan, a base will be created for producing such blocks on a floating base. It will not be inferior in its equipping to a ship-building plant. Transportational resources are being prepared on an air cushion for shipping blocks on shallow water and dry land. Their annual output will reach no less than 40-50. As a result each enterprise will save over 20 per cent of the metal.

At the construction sites of the ministry, the brigade contract has become widespread. As experience has indicated, this progressive form of labor organization makes it possible to save a lot of materials, work with a smaller number of equipment. We are taking measures to improve the brigade contract and to increase the volume of construction by this method. In 1985 it will be used to fulfill 55 percent of all the work versus 35.6 percent last year.

At the construction of the line section of main pipelines, it is planned to switch to a qualitatively new level of brigade contract. Labor has been organized on its principle for a comprehensive production line which numbers several hundred people. In order to improve the interest of this large collective in the final results of labor, stable prices have been established for 5 years for producing work in constructing a kilometer of pipeline.



Both the workers and engineering-technical personnel will begin to work on a unified contract. Their equipment will be rented to them. By the end of the five-year plan, all the main pipelines made of pipes diameter 1420 mm should be constructed with the use of comprehensive production lines and the principles of brigade contract. It is expected that this will result in a rise of the rates of construction no less than double, increase in the conservation of materials, and decrease in the need for machines, mechanisms, fuel and other resources.

A large reserve for reducing outlays in construction is the strengthening and improvement in material-technical base of the ministry. Our machine construction enterprises are doing a lot of work to improve the qualitative indicators of the manufactured machines, units and machine tools. A new rotary trench excavator has been introduced into pipeline construction. It is 17 T lighter than the previously manufactured and uses 40-45 percent less fuel. A new pipelayer is being created with lifting capacity of 63 T with extension-type caterpillar tracks. The metal-construction of the pipe layers in calculation for one insulation-laying column is reduced by 56 T, and the fuel consumption by 100 T per year.

The set of new machines for welding pipelines diameter 1420 mm has been used at the construction of the Urengoy-Novopskov gas pipeline. It will make it possible to conserve 900 T of welding materials and 2.6 million kW-h of electricity.

We consider one of the most important measures to be construction of in-house production bases for trusts created in the regions of West Siberia. These bases provide for progressive technological processes, plans of servicing equipment and trucks. In order to increase the percentage of shipment of complete products, the experimental association "Sibkomplektmontazh" is being developed. It will produce items at its enterprises and will perform complete shipment and installation of them in the West Siberian region.

Energy-saving technologies are being systematically introduced at the active enterprises of the construction industry. They include thermal treatment of reinforced concrete in a medium of products of combustion of natural gas, rotary-pulsation method of preparing finely-dispersed mixtures of mazut, monitoring the regime of steam supply to steaming chambers and improvement in the thermal insulation at plants of reinforced concrete structural parts.

We consider a source of conservation of metal and fuel to be the proper organization of repair of machines and mechanisms. For these purposes the ministry has created a special association which controls repair of imported equipment, and local administrations which repair machines and mechanisms, replacing whole assemblies and units. Restoration of parts has been set up by fusing metal by methods developed by the scientific research institutes of the Ukrainian USSR Academy of Sciences. After this fusion, the wear stability of the working mechanisms of construction machines exceeds similar characteristics of new parts.

The ministry attributes great importance to the development of new materials which make it possible to create effective designs and simultaneously conserve material resources. One of these materials is the heater PSF-VNIISKh created by welding polystyrene by a special composition including furfuryl alcohol. A new monopanel has been made on its bases for roofing of industrial buildings. As a result, the previously employed similar panels were replaced and 14 kg of zinc-plated planking for each square meter of roofing were saved.

Materials based on liquid gas, sotosilipor and silipor successfully replace polystyrene. They are not afraid of fire and are less expensive. By the end of the 11th Five-Year plan, the volume of their output, will reach 30,000-40,000 m<sup>3</sup> per year.

In the Tyumen Oblast, a mobile unit has been created for producing vermiculite which is used instead of foam plastic to produce pipes with bituminous-claydite insulation. At the Surgut house-building combine a new heater, ozerite has been developed. It surpasses in its heat-protecting properties the currently employed corynite. By 1985 about 150,000-200,000 m<sup>3</sup> of ozerite will be manufactured.

In this five-year plan, the ministry is faced with fulfilling a considerable volume of work in regions of West Siberia of difficult access. For this it is necessary to bring in millions of tons of cargo there. In order to reduce the number of shipments, guarantee preservation and conservation of materials and fuel, modern support bases are being created locally made of light structural parts, and a warehouse industry is being developed. In regions of oil and gas extraction, construction of small plants which produce propane, several grades of gasoline, and diesel fuel is proposed. Mass use of gas for a fuel for truck transport is planned. For this purpose it is necessary to create points for liquefying natural gas along the gas pipeline routes.

In all their activity for conservation and efficient use of material resources, our main administrations, associations and enterprises are working in close contact with the territorial agencies of the USSR Gosstnab, union main administrations for supply and marketing, and union main administrations for outfitting. They gave us a lot of help in planning economy for the five-year plan. A series of work was done for numerous indicators and forms of the USSR Gosstnab with regard for the changing directive assignments, pinpointed volumes and structure of construction-installation operations to be done by the ministry.

It is consequently appropriate to note the need for unifying the indicators and forms of calculating the plant numbers of conservation of resources which are given to the higher agencies, including the USSR Gosstnab. This would free the ministry and the department of numerous and labor-intensive operations to determine the outlays of raw material, materials, spare parts and their saving.

The decree of the CPSU Central Committee notes that the work done by ministry for technical re-equipping, introduction of progressive methods of construction still does not correspond to increasing tasks facing the sector. Mechanization and automation of construction-installation work are being done at insufficient

rates. The auxiliary operations have been poorly mechanized. There is unfinished work in the use of the set-block method of construction. We did not reach a radical improvement in the quality of building pipelines. Often violation of the construction norms and regulations, deviations from the planned solutions, and introduction of objects into operation with unfinished work are permitted.

All of this has a negative effect on the conservation of material resources. Individual organizations of the sector are not coping with the assignments, and are permitting overconsumption of metal, lumber, cement, electricity and fuel. Last year the Glavneftegazsnabkomplekt checked 13 enterprises of the ministry and found everywhere serious shortcomings in calculation, storage and consumption of materials. Large above-standard reserves were found in some places. According to the results, measures were developed aimed at eliminating the violations resulting in the rebasing of material valuables.

Despite the fact that the board of the ministry back in July of last year obliged the economic services in production subdivisions to intensify monitoring the observation of the order for accounting and reliability of the accounting data, there are still omissions in this question. An improvement is required in the order of accounting for the influx and consumption of steel main pipes. It is necessary to enhance the efficiency of the inspections of preservation and use of materials at the sites of their storage.

There is a significant shortcoming in the information presented to the organizations and enterprises regarding the attained saving of material resources. It does not have an analysis of the specific measures which guarantee the fulfillment of assignments to reduce material-consumption of construction work. This limits the dispersal in the sector of the leading experience of struggling for conservation and economy.

It should be noted that inefficient substitutions and reduction in the allocated funds as compared to the necessary demand sometimes interfere with economical use of material resources. Last year alone, for example, the ministry did not receive 210,000 m<sup>3</sup> of sawed logs. The enterprises of the USSR Ministry of Ferrous Metallurgy instead of the stipulated fitting steels of class A-III shipped 9,000 T of rolled metal of class A-II. As a result, our construction organizations did not achieve an additional reduction in metal consumption for 1,600 T. The short delivery of lumber materials and the low quality of the obtained commercial lumber resulted in underfulfillment of the assignments for conservation by roughly 35 percent.

The decree of the CPSU Central Committee stresses that the most important task of the ministry, its board, economic leaders, party and trade union organizations, administrations, associations and enterprises, is guarantee of a further acceleration in technical re-equipping and broad introduction of progressive methods and the leading experience of construction industry as the main and decisive condition for successful realization of the tasks of intensive development of the oil and gas complex of the country, and the forced increment of gas and oil extraction in West Siberia.

Guided by this instruction, the board of the Ministry of Construction of Oil and Gas Industry Enterprises is achieving acceleration of the transfer of the sector to intensive methods of management based on new equipment and leading methods of production, successive growth in labor productivity, improvement in efficiency of capital investments, implementation of the strictest regime of conservation in all lengths of construction in industry. We should educate cadres in the spirit of innovation, high responsibility for the entrusted work, guarantee fulfillment and over fulfillment of the planned assignments for 1982 and the five year plan as a whole. For these purposes it is necessary to expand scientific and production activity for a set of questions of technical progress, improve the set-block and other highly efficient methods of construction. Especial attention should be focused on broad mechanization and automation of the production processes, and decisive reduction in heavy manual labor.

The workers of the ministry, the leaders of the construction organizations and enterprises are obliged to reveal more completely and to put into operation more boldly the reserves of production. Based on the experience of the leading collectives, they should more effectively use the production funds, construction, transport and other equipment, and improve its coefficient of shift work.

The collective of the ministry has adopted the decree of the CPSU Central Committee as a guide for action. We see our task as intensifying organizational and educational work to develop in the central apparatus and labor collectives creative activity of each worker and specialist to accelerate scientific-technical progress, generalization and broad dissemination of the leading experience of construction, efficient and economical use of material and labor resources.

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## COAL

### DONBASS MINERS CALL FOR BETTER, MORE EQUIPMENT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 21 Sep 82 p 2

[Article by N. Koval', secretary of the Donetsk Ukrainian Communist Party obkom: "Complex Bed, Creators of Mining Equipment in Debt to the Donbass Miners"]

[Text] A detailed conversation about the work of the coal enterprises recently took place in the oblast party committee. The discussion was held about the noted trends towards decrease in the load on the stoping face and decrease in the rates of coal extraction. These problems cause serious alarm in the party organizations of the mining kray. They are often discussed at the meetings and production conferences.

At the same time, it is impossible not to note that enormous capital is allocated for the reconstruction of the active and construction of new coal enterprises, and the creation of favorable conditions in the stoping and preparatory faces. A new manifestation of the constant attention of the party in government to the miners has become the decrees on technical re-equipping of the mines, increase and improvement in wages of the workers of the coal industry.

The degree of equipping of the faces with mining equipment is also rising. In recent years the production of mechanized timbering, stoping and tunneling combines, belt conveyers and spare parts for mining equipment has increased. Now every third-fourth face in the Donbass is equipped with a mechanized complex. Over 50 percent of the fuel is extracted from these longwalls.

Generally and on the whole, as we see there are no special reasons for worry. However, this is only "generally and on the whole." If we analyze deeply the work of the coal industry of our oblast, then it becomes clear that fuel extraction is seriously lagging behind the needs of the national economy. In the last 5-7 years, the volume of coal extraction and labor productivity of the miners in the Donbass diminished, and labor outlays increased.

This is explained most often by objective reasons. And in fact, the coal industry of the Donbass is now undergoing a difficult period. The thick beds have already been worked. Many mines are going to deeper levels where the working conditions are quite different: ventilation of the mine shafts, transporting of cargo and control of mine pressure are complicated. All of this, it goes without saying, is an objective process and man is not capable of changing anything here. However, he is obliged to foresee a lot, and based on modern science and technology, to solve these complicated problems.

Unfortunately, the union and republic ministries of the coal industry are not equal in this sense. For it did not become known yesterday that the reserves of thick beds in the Donbass were limited, and the miners had to readjust their work with regard for completely new conditions. This should have been prepared for in advance, the efforts of the scientist and designers should have been mobilized at the creation of new equipment, and questions of efficient working of the reserves at deep levels and much more should have been thought about. But they did not hurry to do this and this resulted in negative consequences.

The majority of mechanized complexes do not operate well in the changing thickness of the bed and operate, as the miners say, with "cutting of the side rocks." This increases the accident rate of the machines and impairs the working conditions. Colossal human and material resources are spent on extracting and transporting the rocks from the stoping faces. In analyzing the use of the production facilities of the mine fund, it was established that currently they are used by 112-113 percent for removal of the rock, and only 96 percent for removal of coal. In other words, the rock "displaces" the coal, which naturally is one of the basic reasons for loss of extraction. There is only one solution here: it is necessary to have a new generation of coal-extracting machines, and there is a serious lagging in their development and fabrication.

The miners place great hopes on the new complexes "ADK," "KD-70," and the combine "A-70" and others. All of them have passed tests at the coal enterprises, but none of them has received a ticket to life. The combine "BKT," for example, designed to extract beds of thickness of 0.55 m and more, has been tested for 15 years, but has not yet been recommended for series production. Last year work on its finishing was stopped altogether. The same situation occurred with the production of equipment for preparatory operations. There are no combines which could drill shafts through hard rocks.

The collectives of the institutes "DonUGI" and "Dongiprouglesh" have extended the schedules for creating stoping complexes for thin sloping and steep beds with unstable side rocks, heading units with mechanization of the timbering of coal-descending crosscuts and making of installation niches. In the 10th Five-Year Plan these institutes were guilty of permitting interruptions of the fulfillment of the directive assignments for creating new equipment for the coal industry. The problem of creating and introducing automated equipment for extracting fuel without the constant presence of people in the stoping faces is being solved unsatisfactorily.

The solution to this is the following: the planning-design institutes of the sector are poorly concentrating their efforts on the most important problems, on accelerating development and introduction of new machines and mechanisms. Moreover, recently the rates of creation and development of new equipment have slowed down. Whereas in the beginning of the 1970's all the types of mechanized timbering were in series production for no more than 5 years, now many types of timbering, combine and grading units have not been updated for over 10 years. The narrow-range combines manufactured by the Gorlov Machine Construction Plant imeni S. M. Kirov, the mechanized timbering of the Druzhkovka, Kamenskiy and Kiselev plants, and the scraper conveyers of the Kharkov and Skopin plants are outdated.

It is my opinion that special accounting should be made of the plants of coal machine construction. They cope poorly with the fulfillment of the orders for the miners and do not satisfy the demand even for series manufactured equipment and spare parts. As for the new machines, here the leaders of the enterprises usually refer to the shortage of facilities and the poor work of the builders.

It goes without saying that the builders of course need to accelerate the construction of facilities of coal machine construction. However, they should think about something else. Complaining about the shortage of production areas, the machine builders are poorly using that which they already have.

On the whole for "Soyuzuglemash," the production facilities are only used by 88 percent. At the same time, this indicator has a tendency to drop. The plants make poor use of the metal-working equipment, the coefficient of shift work fluctuates in limits of 1, that is the enterprise practically works in one shift. The losses of working time are great here because of accidents of the equipment, many shortcomings in materials supply, and great turnover in personnel.

The following numbers indicate the situation at the enterprises of the "Soyuzuglemash." Over 60 percent of the products here are manufactured in the last 10 days of the month which has a negative effect on its quality. It is no accident that many plants of coal machine construction do not manufacture products with a sign of quality, and the norms for output for one person have even diminished here in recent years.

Little attention is focused here on problems of unifying parts, development of specialization and cooperation in production of mining equipment. The high-pressure sleeves, for example, in the Ukraine are manufactured by no more and no less than 11 plants. As a result of this scattering, the labor intensity of fabricating this type of product increased three-four-fold.

The circumstance that there are over 20 types of suspension equipment for scraper conveyers currently in series production, and the Gorlov machine construction plant manufactures about 20 different types of combines cannot be considered normal. This variation in types complicates the work of the machine builders and interferes with their efficient use of their potentials. The impression is created that practically no one is involved in regulating the production of mining equipment.

In a word, there are reserves and many, both for increasing production of series equipment, and for fabricating new equipment. However it is still used poorly.

This year the miners of the Donbass have sent to the consumers 1.5 million tons of fuel above the plan and overfulfilled the program for realization of products. However, one should not place too many hopes on this. There is great and complicated work in all directions. As is known, by the end of the 11th Five-Year Plan, the coal extraction in the country will be no less than 770 million tons. The miners of our oblast should extract one-eighth of this volume. In order to reach this mark, it is necessary to take efficient measures for accelerating the rates of technical progress.

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COAL

MINERS COMPLAIN OF POOR EQUIPMENT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 5 Aug 82 p 2

[Article by I. Porokhnenko, chairman of the group of people's control of the mine "Sokurskaya" from the association "Karagandaugol": "Like Water off a Goose "]

[Text] We at the mine still remember the article published in SOTSIALISTICHESKAYA INDUSTRIYA on 6 October of last year "Among Other Omissions." It stung to the quick, forced us to look more attentively around and indicated that the people's controllers should apply themselves.

This especially concerns the removal from the shafts of the inactive equipment, metal timbering and other materials which have not been used for a long time. After the article was published, we cleaned many of the shafts. But it is still early to say that we are through with poor management.

During the surprise inspections and checks, the people's controllers received from the workers and specialists many complaints against the plants who manufacture equipment and mechanisms for the mines. The reliability of the equipment is insufficient, the electric motors, chains and chutes often malfunction prematurely. A lot of time and effort is spent on replacing them.

Take the line chutes of brand "KM-81-025M-ZA." It is extremely necessary in the mining industry, but it seems that the Karaganda plant for repair of mine-transport equipment and the Kharkov "Svet shakhtera" do not understand this. According to the certificate, each chute must serve for 15 months before the planned replacement. This is precisely the time we need for working the longwall. The chutes malfunction much earlier in fact because of the low quality welding.

One item costs R 115-147 and weighs 355 kg. Replacement of the chute and removal of the old to the surface costs us 22 man-shifts and R 232 in worker's pay. Add to this the idling of the longwall and the loss of extraction and you get the whole picture.

Emergency replacement of 176 chutes was required last year, and this year several dozen already. Some of them literally broke down a day after installation in the longwall. Each case is on the accounts. But it appears that nothing moves the machine builders. We have nothing but promises of improvement in the quality of the product.

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COAL

## MINE DRILLERS FULFILL THEIR OBLIGATIONS

Kiev PRAVDA UKRAINY in Russian 20 Jun 82 p1

[Article by N. Litvinenko: "Discoverers of New Beds"]

[Text] The collective of the mine administration "Gornyak" from the production association "Selidov-ugol'", competing for a worthy meeting of the 60th anniversary of the USSR has been obliged to extract in the second year of the 11th Five-Year Plan no less than 20,000 T of above-plan fuel.

As is known, in order to increase the rates of coal extraction, it is necessary to have a reliable reserve of the stoping line of the face. This is the concern of the drillers. Our story today is about the drilling brigade of I. B. Buchinskiy.

The inscription gleamed in the light of the lamp: "Second section. Gvardeyskiy." There is no official name like this, but it is a true definition. The collective here is strong. Last year they produced over 30,000 T of high-quality fuel above the plan. Now the miners are producing 1000 and more tons of coal daily with a plan of 860. The section has fulfilled the assignment for the first quarter ahead of schedule.

"This result is guaranteed a lot by the work of the drillers," says the director of the mine administration S. S. Buchik. "Take the brigade of Iosif Bornislavovich Buchinskiy. They drill 300 and more meters of mine shafts every month. They overfulfilled last year's assignment by almost 400 running meters. Now they are considerably ahead of schedule."

There is constantly a high rhythm of drilling in the face of the eighth southern gallery. The combine, resting on its metal jack-legs, bites into the rock mass with a rumble. It is impossible to go off the outlined route or to err in any way. The workers value highly the honor of their collective. The combine operator A. Sorokin (he is also the team leader) attentively follows the operating mechanisms of the machine, and points it in the right direction. The sandstone is strong and it is difficult for the combine.

The rock loading machine roars behind, as if echoing the unit. It supplies the rock to the conveyer. Behind the panel is the young miner A. Adamenko. His face is concentrated. Four other miners are ready to prepare the reinforcement. Each member of the team fulfills his duties accurately and confidently. This is what the brigade of I. Buchinskiy is famous for. Here all the operations have been condensed to the maximum, high discipline and harmony have been achieved. As a result they overfulfill the plan and the socialist commitments every month. There has not been a case when some team did not cope with the assignment.

But now the noise of the machine abates. The command of the team leader is heard: "Reinforce the face!" The drillers M. Kireyev, I. Gemes, A. Sorokin, P. Mishchenkov, V. Novitskiy, V. Kuznetsov and M. Roshchenkov begin to clean the worked space, begin to fill the compartments, install the arch reinforcement, and lay the tie-beams. Within 2 hours, 3 frames have been installed. They have to install just as many, and then more.

The shift has ended. The drillers have advanced the face 14 meters. This working day has brought the international collective (Russian, Moldavian, Ukrainian, Osetin, Lithuanian and Mariy workers labor here) closer to the goal, to pass no less than half a kilometer of mine face above the assignment by the 60th anniversary of formation of the USSR. Some miners have been in this brigade for several years already, others came recently, but under the custody of experienced foremen they became true miners, conquerors of the earth.

"With such teachers as we have, one can become more than a tunneler, even a cosmonaut," jokes J. Kireyev.

The attitude towards the pupils in the brigade is attentive, exacting and cautious. It is no accident that the collective of I. Buchinskiy is called the forge of tunneling cadres in the mine administration.

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## COAL

### BRIEFS

MINISTRY RESPONDS--USSR Ministry of the Coal Industry has examined the article "Once More About Losses on the Way" and the remarks under the column "It Is a Matter of Introduction" (No 15 and No 21) and considers them correct. The ministry has given an instruction to the production associations to guarantee a reliable operation of the available resources for protecting coal blow-out during transporting, to make broader use of control commission shipments of coal to the consumers with subsequent check of its weight at the stations of designation, to generalize the practice of operation of mines, open pits, enrichment plants, loading-transport administrations, juridical departments to prevent losses of coal and to provide suggestions to improve the effectiveness of controlling the nonconserved shipments of fuel. The sector commission for conservation and efficient use of material resources at a special meeting examined the course of planning and construction of units to apply a protective coating to the surface of the coal of small classes loaded into cars by the Ukrainian SSR Ministry of the Coal Industry, production associations "Karagandaugol'" and "Rostovugol'." It has suggested completion in the second quarter of 1982 of start-up and adjustment operations and start-up of the constructed units at the enrichment plants "Chervonogradskaya," "Sverdlovskaya," "Vostochnaya" and "Sholokhovskaya." The 1983 plan stipulates construction of three of these units. [Article by M. Shchadov, first deputy minister] [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 31, Jul 82 p 12] 9035

LAGGERS MENTIONED--Production association "Pavlogradugol'". Until last year there were no hints that the enterprises of the coal basin could leave their leading positions. Stable rhythmic work, above-plan fuel, high places in the sector competition it appears, decrease the activity of the workers of the association (general director Ye. Ponomarev). Even a slight lagging behind the schedule in the beginning of the year of the tunneling collectives was perceived as a small cloud in a clear sky. But this "cloud" became a true thunder storm: lagging of the tunnelers increased from month to month and now they are in debt 3,650 m of stripping and preparatory shafts. Thus, at the mine "Samarskaya" they interrupted preparation of two stoping faces instead of the left faces. The new schedule is 1 October. Before this time the miners have been forced to be involved in repair and auxiliary operations. It is natural that the debts of "Samarskaya" will rise. They are rising at "Dneprovskaya" where three stoping faces have been flooded. Measures are being taken and the miners are underproducing several hundreds of tons of fuel every day. Now, by the way, in the association seven mines out of nine are not coping with the plan, and the total debt since the beginning of the year has exceeded 70,000 T of fuel. Among the laggards is the

collective of the young mine imeni Geroi Kosmosa. There are many reasons: complicated mining geological conditions, shortage of workers of the main professions. The people are not coming to work here because there is no housing. The miners of the only introductory mine No 21-22 which will be started up at the end of the year also expect difficulties with housing. The Pavlograd miners expect a lot of help from the UkSSR and USSR Ministries of the Coal Industry, especially in providing mining equipment. For now the majority of the combines in the faces here are of the outdated model. The machines are idle because of an acute shortage of spare parts, the Gorlov construction plant imeni Kirov alone has underproduced spare parts by more than half a million rubles since the beginning of the year. The new combines and complexes at best will arrive at the end of the year. [Text] [Moscow SOTSIALISITAGSKAYA INDUSTRIYA in Russian 16 Sep 82 p 2] 9035

MINING SUCCESS--Voroshilovgrad Oblast--The miners of the Krasnodon mine "Molodogvardeyskaya" have had a great labor victory in the course of competition in honor of the 60th anniversary of the formation of the USSR. They have brought to the surface a million tons of coal since the beginning of the year. The collective of the enterprise is almost 3 weeks ahead of the production schedule and has over 80,000 T of fuel on its above-plan account. [Excerpts] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 2 Sep 82 p 1] 9035

COMPETITION WINNERS--Voroshilovgrad Oblast--In the mine administration imeni the newspaper VOROSHILOVGRADSKAYA PRAVDA of the production association "Antratsit" the brigade of extractors V. Brusinskiy holds first place in the competition in honor of the 60th anniversary of formation of the USSR. The collective produces from the longwall 200 T more of anthracite than the standard every day. The comrades in work recently warmly congratulated V. Brusinskiy and the members of his brigade with early fulfillment of the annual plan. A total of 225,000 T of anthracite was brought to the surface, every one-fifth was above-plan. [Article by V. Mikhaylichenko] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Sep 82 p 1] 9035

EXTRA FUEL--Kemerovo--The association "Kemerovougol" has fulfilled its commitments in honor of the 60th anniversary of the USSR. Since the beginning of the year, a total of 300,000 T of fuel have been produced in addition to the assignment. The reconstruction of large open pits, the introduction into the faces of more powerful equipment help to accelerate the rates of coal extraction. The miners of the association have decided to produce an additional more than 100,000 T of fuel by the anniversary of the country. [Text] [Moscow GUDOK in Russian 11 Sep 82 p 1] 9035

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## NON-NUCLEAR POWER

### CONSTRUCTION PROCEEDS ON KAYSHYADORIS GAES

Moscow PRAVDA in Russian 29 Sep 82 p 1

[Article by D. Shnyukas and S. Borisova: "The Kayshyadoris Peak"]

[Text] In the spring PRAVDA told of the construction near Moscow of the first large-scale domestic pumped-storage hydroelectric power station--the Zagorsk GAES. It was mentioned that another station similar to the Moscow plant was under construction in Lithuania--the Kayshyadoris station. How are things going at this project, one of the largest in the republic for this five-year plan?

As is well known, the consumption of electric power varies over the course of the day. At night sometimes as much as 44 percent of the total output is stored up, while during peak hours, especially during freezing weather in the wintertime, there is not even enough. In both instances, the power units at thermal and nuclear power stations are operating in uneconomical modes. It is practically impossible to start up and stop large-scale power units in order to regulate their output--their reliability would suffer.

What can be done? Should special electric power stations be built based on peak loads? This is uneconomical. This is where the pumped-storage hydroelectric power station enters into the picture in its role as savings bank. Storing up the excess nighttime power, it returns it to the system when the demand is greatest.

In contrast to hydroelectric stations, mighty rivers and large reservoirs are not needed to build a GAES. It alters the environment less than other stations. Since the upper basin is located on high ground, the water flows down on its own accord to be used for the needs of agriculture--8,000 hectares of land receive life-giving moisture from the Kayshyadoris station.

The chief of the Litovenergostroy construction administration, V. Krukis, said:

"The output of the Zagorsk GAES will be 1.2 million kW, but the eight power units of our station will produce 1.6 million kW. It will become the most powerful station in Europe and will save the economy 500,000 tons of conventional fuel annually."

The station will be built above the Kaunas GES on the banks of the overflowing Neman river. The Neman will become the lower basin for the GAES, thanks to which a great deal of construction expense will be spared. Incidentally, the Kaunas Sea has made it possible to derive another benefit. On the bottom are deposits of excellent sand and gravel. A suction dredge is already being employed to deliver the sand and gravel to a sorting area at the site. Hauling it from nearby quarries would be twice as expensive.

"This year we will have to utilize 11 million rubles at industrial installations alone," continued V. Krukis. "This is as much as was utilized during the last three years combined. The builders are filled with resolve to overcome the lag in the plan. We were not able to accomplish this in the first half of the year, but we have been running ahead of the plan since August."

We approached the shore of the Kaunas Sea, where they were digging the foundation pit for the GAES building as well as the reversing canal. Incidentally, concrete and asphalt roads have been laid about the entire site--a guarantee of the work's stability in any weather. With careful planning, a construction base was also built on time. The foundation of the station itself was laid 36 m below the level of the reservoir, thereby necessitating the removal of about 5 million m<sup>3</sup> of earth and the sinking of hundreds of wells to drain off underground water.

The volume of work is great, but the pace of construction did not make us happy at first. The teams of excavators, bulldozers and dump-trucks worked separately, and the load factor for the vehicles was 0.8 on the average. It was decided to establish processing systems operating on the team-contract principle. Experienced team leader A. Sveglinskas was entrusted with checking the efficiency of the new job organization. This system integrated a team of 3 excavators, 3 bulldozers and 11 dump-trucks and immediately brought production up to 130 to 140 percent. The load factor for the vehicles was increased to 1.0. Five such systems are now in operation.

By the end of the year, the builders collective at the station will total 2,000 men. The work peak is planned for 1984--at the time the first unit is commissioned. By that time, 5,000 men should be working here, and for that we must build living quarters. About 20,000 m<sup>2</sup> of housing have been put into service, while 25,000 more are now being introduced. Still, however, the plans of industrial and social construction are not in harmony. The project's management was correct in bringing up the fact that the USSR Ministry of Power and Electrification should find the means and limitations in order to accelerate the construction of housing in the settlement of Elektrenay this year twice as fast as planned. This is a necessary condition for the start-up of the GAES on schedule.

The Kayshyadoris GAES has been declared a Komsomol shock project for the republic. Meanwhile, however, fewer than 200 young men and women have arrived here on their Komsomol work permits. Apparently, the time has come to expand the scope of patronage.

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## NON-NUCLEAR POWER

### USE OF ELECTRICAL EQUIPMENT IN AGRICULTURE EXPANDED

Ashkhabad KOMSOMOLETS TURKMENISTANA in Russian 23 Sep 82 p 3

[Article by D. Sasorov: "Electronics for Agro-Industrial Complex"]

[Text] "Among the most important conditions for the realization of our Food Program," said Anatoliy Mayoren, minister of the USSR electrical equipment industry, "is the acceleration of scientific and technical progress. We are increasing aid to villages and are creating a the latest base for the electrification of agriculture. The base includes equipment systems for reliable power supply to villages as well as systems for the mechanization and automation of many labor-intensive processes in the areas of animal husbandry and farming. It also includes progressive technology which actively influences the improvement in crop yields and the productivity of cattle raising.

The power-generating capacities of agriculture in our country are constantly increasing. By the end of 1980 they had reached 445 million kW, that is, 18 kW per worker. The consumption of electric power was 109 billion kWh, of which 30 billion kWh were used for the communal and general domestic needs of the rural population. The extent of rural overhead transmission lines exceeded 4 million km, which is many times greater than all other sectors of the economy combined. Overhead electric power transmission lines now cover practically all rural population centers.

The electric power requirements of agricultural production are systematically increasing. The consumption of electric power per 1,000 rubles of production increased almost two-fold in the years 1975-1980 and reached a level of 900 kWh. This provides for a saving of up to 35-40 kopecks per kWh in agricultural production due, in particular, to the saving of manual labor.

Optical radiation is being extensively applied in agriculture. This radiation is created by artificial light sources and is being used for the infrared and ultraviolet radiation of young livestock and poultry, for the illumination of plants in hothouses and for the irradiation, disinfection and drying of seeds before sowing. Today in agriculture there are more than 50 technological processes in which artificial optical radiation is being employed.

The sources of artificial optical irradiation are divided into two groups according to their operational principle: for general or for technological purposes. In the first instance, we employ the same light sources that are used in other sectors of industry--various types of incandescent lamps. There are, however, specific requirements imposed on them: they must operate reliably with considerable fluctuations in power system voltages and under very dusty conditions. They must also be resistant to high humidity and chemically corrosive environments.

The other group of light sources is designed for the artificial illumination of livestock and plants. Various types of radiation sources in the ultraviolet, visible and infrared spectra have been created for this purpose. The latest innovation is metallogenic lamps of 1,000 to 3,000 watts. In comparison with existing units, the "Svetotron" uses less metal in its construction, makes it possible to regulate the level of spectral radiation and possesses increased efficiency.

In the majority of developed countries, including the USSR, the relative proportion of electric power used for heat supply has increased three-fold to ten-fold over the last decade at a rapid pace. Electric power is being more and more extensively utilized for heating air in balanced ventilation systems in livestock facilities; for drying grain and other forms of produce; for heating water and generating steam to be used for feed preparation; for watering and washing livestock; and for local heating using infrared radiators and panels. Electrode steam-generating units, for example, are capable of providing steam at a temperature of 165°C.

Automated electric drives serve as the basis for the electrification of stationary processes in agricultural production. Their rate of introduction is rapid and can be characterized by the following data. In 1980, there were approximately 14 million electric motors in operation in agriculture. Their capacity exceeded 60 million kWA.

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## NON-NUCLEAR POWER

### AZERBAIJAN GRES CONSTRUCTION RUNNING BEHIND SCHEDULE

Baku BAKINSKIY RABOCHIY in Russian 10 Sep 82 p 2

[Article by G. Safarov: "The Remaining Days Are Numbered"]

[Text] As is well known, the first unit of the republic's power giant now under construction--the Azerbaijan GRES--was commissioned last year ahead of schedule and has already generated more than a billion kilowatt-hours of electric power. The experience gained has made it possible to assume a significant new obligation: to commission the second power unit ahead of schedule as well. Thus, less than a month now remains to complete the construction and installation operations on the second unit. The figures change each day on the board set up in front of the headquarters of the Mingechaur party gorkom for construction management at the power giant.

It cannot be denied that there are few days remaining until 30 September. So great is the sense of responsibility with which they work that the collectives from all sections participating in the construction of the second unit strive to conclude each day with shock work. Workers from the Construction and Installation Administration of the Azerbaijan GRES are leading in labor competition among the power-plant builders. On their own, they have since the beginning of the year carried out more than 800,000 rubles of construction and installation work in excess of the plan. The work-team collectives headed by F. Mamedov, G. Masimov and P. Asadov are fulfilling their shift quotas by 170 to 180 percent.

On the eve of the start-up, the primary burden rests on the shoulders of specialists from the Mingechaur Installation Administration and a section of the Apsheronsk Installation Administration from the Kavkazenergomontazh trust. They are carrying out the installation of the boiler assembly in the second power unit, the equipment in the exhaust-fan compartment and the 20,000-m<sup>3</sup> fuel-oil tank with pipelines.

The work-team collectives headed by I. Gasanov, A. Mekhtiyev, K. Rustamov, A. Gasanov and others carried out the installation of the boiler unit in five months--almost twice as fast as last year. The work-team collective of A. Aliyev also worked intensively. Having finished work on all of the boiler assemblies, it is installing the low and high-pressure pipelines and metal structural elements underneath the units.

The work team of O. Kushnichenko is making a reputation for itself with its work in the exhaust-fan compartment of the second boiler unit. A few days ago, the

amicable collective congratulated the work team on its 55th anniversary. A total of 30 men from the team have been put to work at their favorite job. Other work teams here led by N. Shevchenko, A. Neumyshev and I. Gumbatov are laboring intensively. The selfless labor of the collective from the welding shop also contributes to the success of the overall job. Welders Kh. Aliyev, A. Yusifov, N. Kasumov, F. Azizov and others are carrying out the orders from the installation workers on time and with a high degree of quality.

Workers from the Mingechaur section of the Apsheronsk Installation Administration are not lagging behind their friends in the competition. They have successfully completed the installation of the auxiliary equipment. The team of V. Bykovchenko has distinguished itself particularly in this work. Members of the team--experienced turbine specialists V. Deynenko, V. Varlamov, N. Yurchenko, V. Dolgikh and others--are working conscientiously and are preparing to close off the low-pressure cylinders.

Installation workers A. Kurbanov, O. Mustafayev, E. Nazarov and others are performing their jobs with jewelerlike precision. They intend to place the second turbine unit into no-load operation exactly according to the schedule. The shock work that they are doing today proves that they keep their word. Suffice to say that the installation workers mounting the oil lines on the turbogenerator--V. Maslov and F. Farkhadov--and those setting up the high-pressure pipelines--I. Shcherbakov, N. Gromov, A. Babayev and others--are fulfilling their shift quotas by 160 to 170 per cent.

This is a high-priority project, slated for completion this year, and the work spirit here runs high. What is especially annoying is the fact that the normal working rhythm is being disrupted a few significant discrepancies. For example, construction is being delayed on the 330-m smokestack. Installation work has yet to begin on the silica-concrete shaft, even though it should have been done by July. Indeed, plans were made to install the generator in July, but it still has not arrived.

The collective of the Baku Boiler and Machine Plant is also holding up construction. It is late in delivering to Mingechaur the ducts for the boiler's exhaust-fan compartment, the high-pressure shut-off valves for the oil line and many other pieces of nonstandard and auxiliary equipment.

The time left for this high-priority project can be counted in days. The collectives participating in the construction of the republic's power giant are bound by contract to start up the second power unit. These collectives must apply the maximum degree of effort toward the commissioning of the second power unit at this station--a most important installation of this five-year plan.

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NON-NUCLEAR POWER

CONSTRUCTION WORK BEGINS ON BAYPAZA GES

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 14 Aug 82 p 2

[Article by N. Morozova: "Work in All Areas"]

[Text] 1. Repeating What Has Been Done Before

The same construction sections that had erected the most powerful hydroelectric station in Central Asia--the Nurek GES--are today building the Baypaza GES. It is the Nurek in miniature: Its output and, hence, all its other proportions, will be two-ninths that of the Nurek. Just as at one time on the Nurek, the formless rows of reinforcement cages here are also referred to as the control building, and holes in the cliff are referred to as tunnels. The construction teams' associates are working right alongside--hydraulic-equipment riggers and workers from SpetsGEM.

In this formation they are building a new water intake for the Vakhsh-Yavan tunnel--the same tunnel that has served efficiently for 14 years as a life-giving artery for the Yavan valley. In connection with the forthcoming erection of a dam for the Baypaza hydraulic system and the waters in front of it, the tunnel's present inlet portal will be flooded. The new one will be situated approximately 2 m higher.

The vertical reinforced-concrete wall of the portal has already been raised to the design height of 25 m. The reinforcements and panels are being installed by a team from Gidromontazh led by Vladimir Titov--a communist and bearer of the Order of the Friendship of Peoples.

Vladimir himself is far away at present--together with 15 of his comrades has been temporarily moved from the hottest region to the coldest and is now displaying his first-rate Nurek expertise at the Kolyma GES, now being readied for start-up. The team leader in whose presence everything goes well, however, is not the truly talented leader. The truly talented leader is the one who has succeeded in arranging affairs so that things are none the worse in his absence. This is the situation with the work team which for the second month is being headed by Mikhail Vayner, the best field-team leader.

True, there are difficulties. There are not enough welders. The Nurek affiliate of the DSK [not further identified] is holding up the delivery of reinforcing bars. Because of this, the hydraulic-equipment riggers cannot prepare the "vessels" for the power units, causing the justified dissatisfaction of allied workers on the team

of Hero of Socialist Labor Mukhabbat Sharifov, who are laying cement in the water intake. This, however, does not depend upon the leader of the hydraulic-equipment riggers, even if he were a Solomon. There is a problem today with skilled workers who went every which way after the last of the Nurek hydraulic units was commissioned. Those who remained true to the Nurek and to their own team are especially valued here, such as the Tszyu brothers, Vladimir and Aleksandr; such as one of the most experienced master metal workers, Nikolay Fedotov, and his young namesake, Trifonov; and such as field-team leader Aleksandr Zubov.

The hydraulic damper is growing up alongside the water intake. The semicircular panels of the damper's metal concrete forms are being installed by the work team of State Prize laureat Anatoliy Shil'nikov from SpetsGEM. On the whole, the flower of the Nurek is here today, under the merciless sun of Baypaza.

## 2. Friends Do Not Part

The famous work teams of Anatoliy Titov and Gennadiy Tregubov spent almost all the long years of construction at the Nurek GES side by side. The former of these two men specialized in carpentry--the preparation and installation of concrete forms--while the latter was attracted by the job of installation worker, specializing in the assembly of reinforced-concrete structural elements. At Baypaza, both teams assumed multipurpose roles and will erect each facility from the ground floor up.

For Tregubov's team, this means the construction of the hydroelectric station building, the covered assembly area located nearby and the wall separating the two. The work has only just begun, but they have already had to wage a serious battle with the water seeping from the Vakhsh into the foundation pit. Even in the hot weather at present it is not very pleasant to work knee-deep in water, while laying concrete is totally impossible.

It was decided that a drain made from concrete rings be installed to collect and draw off the water. Despite all these difficulties, the team coped with its assignment. The flow of water broke through a section of the new structure and rushed into the first wall assembly, which the builders had begun to concretize in the last days of July. The people proved to be stronger than the water, and now they are working peacefully. The builders were assisted by drivers from the motorized operations administration who installed pumps in the foundation pit to draw off the water.

Titov's team, meanwhile, is completing the below-grade work on the hydroelectric station's control building. Over the groundwork has risen a forest of reinforced forms for the foundation. Dressed out in concrete, the foundation will go underground in order to perform its duty--to support the weight of the four-story building.

The team has not only new tasks, but a new composition as well. Many skilled workers who have attended the trade school here are now building the Rogun GES and other hydroelectric stations in our country. Their former instructor has undertaken the training of yet another shift: his work team today is almost all novices.

### 3. "Holes" in the Cliff

There are four of the holes, located in a single row, to the left of the inlet portal of the Vakhsh-Yavan tunnel. These are the outlet portals of the future turbine water conduits. The tunneling was begun simultaneously by teams headed by Yevgeniy Stepanenko and Vasiliy Simonov from Gidrospetsstroy.

The water conduits will possess a slope of  $15^\circ$ . This slope is not great, and the SBU-4, the fastest and most reliable piece of mining equipment, will handle it. A team of surveyors headed by M. D. Bondapenko will indicate the direction in which it will be necessary to penetrate into the depths of the mountain while maintaining the desired slope.

The tunneling will be directed by master surveyor Yevgeniy Mikheyev. The experienced leader of the tunneling crew, V. Simonov, gave the following reply regarding the very young Yevgeniy Mikheyev:

"We respect Zhenya because he arrived here with his diploma from the mining institute and on his own volition began working as an ordinary laborer. Not only can he review our work, he can also do first-rate work underground."

Sergey Tatarin's team began laying cement for the construction tunnel. When the first units are started up, the tunnel will pass the excess water. In contrast to the Nurek GES, which has three tunnels for this purpose, this will be the only tunnel. To make up for it, the tunnel is unique--its cross-section is considerably greater than that of the Nurek underground corridors.

Later on, after it has been connected to the water conduits, the construction tunnel will become a water inlet. It will then be necessary for it to operate as such as long as the Baypaza GES continues working.

### 4. Nurek-Baypaza

Such a road existed previously, but it did not suit the builders of the Baypaza GES. It was too narrow to allow the transport of the power transformers, the hydraulic unit assemblies and other cargo of large dimensions.

Of the almost 30 km of road separating the Nurek from Baypaza, 15 had to be increased, on the average, to twice the previous width, one section had to be relaid and another section had to be straightened.

A crew of machine operators led by Hero of Socialist Labor A. A. Lysenko is conducting the operations. The crew has a team of three rock excavators, one  $0.5\text{-m}^3$  excavator, several bulldozers of varying capacities and road graders.

One cannot count all the obstacles that the mountains present to their subjugators. Opening the way for the road again will mean drilling and blasting the cliff. This, for the most part, is associated with the widening of the road. Thus, everything depends upon the drilling and blasting specialists from Gidrospetsstroy. This is the way it will work: they will drill today and blast in a week. All this time, the giant  $4.6\text{-m}^3$  excavator will wait on the Vakhsh.

The builders must hurry. In accordance with the obligation of Lysenko's team, the roadway must reach Gofilabad, the last large village before Baypaza, by the 65th anniversary of the Great October. After a year, the road will have to pass tractor-trailer rigs bringing the assemblies for the first unit of the Baypaza GES. Time is at a premium, and it dictates severe requirements.

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## PIPELINE CONSTRUCTION

### TRANSSHIPMENT WORK OF LENINGRAD TRANSPORT CENTER DESCRIBED

Moscow GUDOK in Russian 10 Sep 82 p 1

[Article by correspondent post: O. Nosov from VECHERNIY LENINGRAD, L. Lavrova from MORYAK BALTIKI, G. Chizhenkov from OKTYABR'SKAYA MAGISTRAL', and V. Yurasov from GUDOK: "Green Light for the Pipes"]

[Text] The Urengoy-Uzhgorod gas pipeline is one of the most important construction sites of our country. Thousands of people have focused attention on it, both in our country and abroad. The Soviet people are doing everything possible so that it is completed on schedule. A larger role in this important work belongs to the transport workers, railroad workers, sailors and truck drivers.

The Leningrad transport center is one of the main trans-shipment points where all possible materials for the gas pipeline of the century arriving by water are reloaded on a railroad. This is why the editorial staff of the newspapers GUDOK, VECHERNIY LENINGRAD, as well as the large-circulation newspapers MORYAK BALTIKI and OKTYABR'SKAYA MAGISTRAL' have decided to create on this important junction port-railroad their correspondent post. Today we publish the first report from it.

In the third region of the Leningrad sea trading port the rhythm of work never abates. The ocean vessels coming here from many countries of the world are unloaded both day and night. The cargo is the most diverse. A considerable percentage is designed for construction of the gas pipeline Siberia-West Europe: large diameter pipes, equipment, mechanisms, They are awaited, and they are very needed there at the construction site.

The transport workers of the Leningrad center are full of decisiveness to fulfill the task set before them, to guarantee shipping of the pipes and equipment to construction of the gas pipeline on time and in the necessary volumes. "Green light for the pipes!" is the slogan of the joint socialist commitments adopted by the collectives of the third region of the seaport and the station Avtovo.

Strong business-like relationships have been formed between the subcontractors, the port workers and the railroad workers. Precisely here in the Leningrad transport center comprehensive socialist commitment has been born between the

sailors, railroad workers and truck drivers whose work experience was approved by the CPSU Central Committee.

In recent years a lot has been done in the port in order to accelerate to the maximum the shipping of freight. In its third region, for example, cranes have been installed with so-called self-grips. The introduction of these mechanisms made it possible to exclude labor-intensive strapping operations. This crane is capable in a few seconds of reliably grabbing an enormous multiple-ton pipe without straps and moving it to the railroad platform or to a gondola car. In turn, the workers of the station Avtovo have organized work so that they can remove the loaded rolling stock in time, without delays from the sea moorings and in the maximum short periods compile routes and send off the trains. Here construction has been completed of an additional extension track. Its putting into operation makes it possible to accelerate the maneuver operations, reduce the time for finding the cars both within the station itself, and at the near-port approach rails.

Because of the close business-like cooperation, the collectives of the third region of the port and the station Avtovo have decreased the idling of the cars on the average by 0.4 h. If we multiply this time by the number of rolling stock used, very impressive figures are obtained, tens of thousands of conserved car-hours.

The tone in socialist competition at the moorings where the cargo is being transhipped for the Siberian-West Europe gas pipeline is assigned by the shift-watches headed by the senior dispatchers of the seaport V. Grabin and Ye. Prokhorov, duty officers of the station Avtovo A. Stepanova and V. Ignat'yeva.

The brigades of dockworker-machine operators V. Ovcharov, Yu. Nikulin, Ye. Pudov, and Ye. Brizgalov achieve constantly high indicators in work. Working in close contact with the acceptance workers of the station of Avtovo, using the direct variant ship-car, they guarantee high speed transshipment.

The cooperation of the subcontractors, as indicated by the aforementioned facts, brings perceptible fruit. At the same time they have many unused reserves.

"Both the port workers and the workers of the station Avtovo can double, and perhaps even triple the volumes of transshipment of the freight," says the head of the third region of the seaport A. Deryabin. "For this it is only necessary to have a sufficient number of cars."

But there are not enough. It was especially difficult in August. On individual days a quarter less cars than required by standard arrived for loading pipes.

How was the work today? Here is a summary of the cargo service of the Oktyabr'skiy road: "Starting from 1 December, the road increased the supply of empty cars to the station Avtovo for shipping pipes of large diameter. One hundred and more gondola cars and platforms are sent here everyday." One hundred and more. But according to the interrelated plan-schedule, 180 of them should have been supplied here for pipes! This means that the railroad workers are still in debt to the port workers, and the builders of the gas pipeline.



But how can this debt be covered with a chronic shortage of empty cars? An unresolvable problem? No, quite resolvable. At the Oktyabr'skiy railroad, there is a surplus of cars from month to month. Thus, according to the data for 5 September, it was 1,500 gondola cars! Here they are, the reserves which should be put into operation. Unfortunately, attention to this scarcest rolling stock has diminished. At the Volkhovstroyevskiy department, for example, the surplus is 450-500 gondola cars on some days, at the Rzhevskiy, Petrozavodsk and Murmansk, 200-300 each.

Why should we talk about "distant" departments! There are more than enough reserves at the Leningrad center itself. At the same Leningrad-Vitebsk department to which the Avtovo station belongs, the fleet constantly has 1.5-fold more gondola cars than it should. There is a surplus also at the Leningrad-Finlyandskiy department.

It is necessary to increase the exactingness to the receivers and senders who constantly exceed the norm for idling of the rolling stock at their approach tracks. Because of this, the Tikhvinskiy branch of the association "Kirovskiy Zavod" lost about 50,000 car-hours this year. The association "Izhorskiy Zavod" is in debt for a truly astronomical number of car-hours, 282,000. The Slantsevskiy cement association is in debt for about 200,000 hours. Examples of the impermissible squandering of loading resources alas are not exceptions. This attitude to the cars can no longer be tolerated.

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## PIPELINE CONSTRUCTION

### AACCTU COORDINATING COMMITTEE ORGANIZES INTERINDUSTRY COOPERATION ON PIPELINE

Moscow TRUD in Russian 9 Sep '82 p 1

[Article by E. Gonzal'yez: "At the Same Speed"]

[Text] As B. Shcherbina, minister of construction of enterprises in the oil and gas industry, reported at one of the press conferences, the August schedule for construction of the pipeline system from Urengoy was "covered" ahead of time. The minister was then asked if there had been any problems during the construction. "Yes, there were," he replied, "as there are in any great undertaking. The primary problem was making the link-ups. I am speaking, of course, not only about the pipe sections, but about the dozens and even hundreds of organizations and enterprises from various ministries and departments, and about the coordination of their actions with respect to manpower, job quality and deadlines."

It is a complex problem of administration, and therefore concerns each participant in this principal construction project of the five-year plan. The Coordinating Committee of the AACCTU [All-Union Central Council of Trade Unions] is making its own substantial contribution to the solution of this problem. Up until now it has basically been occupied with the organization of socialist competition according to the "Work Relay" principle among collectives directly involved in the construction of the main pipeline. At the last session, however, the members of the council devoted a great deal of attention to the project's rear lines--to enterprises delivering metal products and pumping units.

It must be noted that this is the very same area of front-line construction with which the Reagan administration tried to interfere. It was not by chance, therefore, that representatives of the Khartsyzsk and Volga Pipe Plants, the Leningrad Metals Plant, the Turbomotor Plant and other enterprises of the USSR Ministry of Ferrous Metallurgy and the Ministry of Power Machine Building began with a discussion about the workers' reaction to the American embargo. It is not difficult to imagine the storm of emotions that were aroused in the people's minds.

A worthy reply was given, too. The collective of the Khartsyzsk Pipe Plant, which makes pipes of the largest diameter, said: "For the Urengoy-Uzhgorod pipeline, we will produce 5,000 tons of pipe annually over and above the plan by means of additional deliveries of metal and another 1,000 tons through economy measures."

Workers and specialists from the Vyksunskiy Metals Plant decided to utilize the full rated capacity of their multiwall-pipe shop three months ahead of the standard

schedule and to produce 1,000 tons of large-diameter pipe annually in excess of the plan.

A group of enterprises from the Ministry of Power Machine Building were engaged to make the transition to full-scale production of 16 an 25-kW gas-pumping units [GPA's] in minimum time. As the deputy minister, Yu. Kotov, said: "We have moved the unit delivery deadlines to the left."

In order to realize such intentions, of course, metal, instruments, tools and equipment are needed. Therefore, before they made their commitments known, the pipe-makers and power-machine builders made the corresponding calculations and showed them to their associate enterprises. Thus arose multilateral agreements on creative cooperation, such as the one between the collective of the Khartsyzsk Pipe Plant and workers from the Novolipetsk and Cherepovets Plants and from Avrostal'. The competition in which the Volga Pipe Plant is taking part encompasses an even greater number of allied enterprises: the Lebedin Mining Combine, the KMarud Combine, the Voronezh Mining Equipment Plant, the Novolipetsk Metals Plant, the KAMaz Stamping Plant and the Southeastern Railroad.

When the collectives from the associate enterprises united their forces, the result was not additive, but multiplicative. Do you recall the commitments made by the Khartyzsk pipe-makers? They pledged 6,000 tons annually in excess of the plan. In seven months, however, almost 8,000 tons of pipe have already been produced.

Generally speaking, there is hardly a person who doubts that we have the production potential to build the pipeline system.

There is, however, a longer-term and, possibly, more important effect from this work: in the process of carrying out the pipeline project, we have uncovered a powerful domestic industrial potential. Relying on this present experience, scientists and specialists are already engaged in organizing the manufacture of pipes for super-capacity pipelines with working pressures of 100 to 120 atmospheres (present pressures, as a rule, do not exceed 75 atmospheres). Take a look at the kinds of problems that have to be solved in order that these pipes can be used in the project: the creation of new types of steel and the technology to produce them; the re-equipping of steel-founding shops; the perfection of techniques for founding and pipe-welding; and the development and assimilation of multiwall-pipe construction. It will then be necessary to create the technology to make the pipeline out of them. We bear the brunt of this responsibility, however, and in the near future the laying of such pipe will be common practice.

Yes, if we do all of this (and the work is in full swing), tomorrow's pipe production will differ from yesterday's in about the same way that a supersonic aircraft differs from a radial-engine plane. If you speak about high-capacity gas-pumping units, then you would probably have to compare a jet aircraft with the Wright brothers' biplane.

We will now discuss those problems which, in accordance with the "weakest link" principle, arise at the junctions. Thus, pipe-makers can supply the project with pipes. The builders are prepared to make the pipeline out of them, and they do build it, even faster than planned. They could pick up the pace a little bit more, however, if the railroad workers were doing their jobs at the same speed. Many of them

are competing using the "work relay" method, while some of them are not. For example, the trade-union committee of the Khartsyzsk Pipe Plant tried to extend the line of competitors by means of the Ilovaysk branch of the Donets railroad--cars were needed, you see, to haul pipe in excess of the plan. In this case, however, the railroad workers chose to avoid the additional trouble.

That is one example. Here is another from a somewhat different area, although also associated with transport. The power-machine builders, having constructed the very equipment of tomorrow, forgot to concern themselves with the packing of today. Rather, they did pack the equipment, but more for a trip across the street and not to the regions of the Far North. Indeed, on the way to the construction sites, the assemblies undergo three or four shipping transfers and have to be lifted and lowered by crane about 20 times, and not very carefully, at that. At first glance this appears to be a trifling matter, but the assemblies have to be repaired after the trip. In the end, this does not affect the quality or reliability of the pipeline, but why waste additional time and manpower?

Having discussed the problems of interindustry competition, the Coordinating Committee adopted the corresponding resolutions. The secretary of the AUCCTU, I. Gladkiy, took part in the work of the Coordinating Committee.

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## PIPELINE CONSTRUCTION

### KUYBYSHEV WORKERS COORDINATE PIPE-LAYING OPERATIONS

Moscow TRUD in Russian 5 Sep 82 p 1

[Excerpts from article by R. Yeseyeva and Ye. Ukhov: "The Pipeline Reaches the Volga"]

[Excerpts] The day started off somewhat gray and murky. Over the course of the summer, the builders on the section had gotten used to the rains. It did not spoil their mood. The bright mobile shelters gladdened the eyes of the workers on the right-of-way. These shelters, standing in straight rows along the city streets paved with flagstones, provide cozy, comfortable living quarters and are a favorite with all the workers. It was noisy in the cafeteria, and the morning silence had already been broken by the motors of the first vehicles. The work day had begun as usual. These early morning hours are certainly the most crowded hours in the builders' settlement, located not far from the small city of Tsivilsk. Here already are the welders, the machine operators for the heavy pipe-layers and the earth movers. Without an unnecessary fuss, they depart in a businesslike manner for their work places. Their task has been known for a long time, for they have determined it themselves--a kilometer of ready pipeline a day, 6 kilometers a week.

From the high bank of the Volga, right where they begin marking off the 127-km KTP-1 segment, one can see the motor launches towing rafts against the current. These strange-looking rafts remind one of huge pontoons. This original method is being used to float from the Tatar ASSR the 200-m lengths of pipe for the underwater gas-line crossings. On the left bank (the bank in Mari ASSR), near the city of Zvenigogo, specialists from the construction and installation base of the fourth Kazan administration for underwater technical operations of the Soyuzpodvodtruboprovodstroy All-Union Association are preparing a base for running an underwater bridge across the Volga rapids. The collective on this segment was awarded the silver medal of the Exhibition of Achievements of the National Economy of the USSR for the centralized preparation of the pipeline and their efficient method of transporting the ready-made connectors.

Builders on the underground pipeline do not have easy rights-of-way, and to their way of thinking, the segment that they got was typical--ravines, gullies and streams. There were also forests, and the builders encountered swamps. The ordinary automobile highways, 30 of which the Kuybyshev workers must deal with, and railroad lines are obstacles for the pipeline. The pace of construction must be maintained, using both experience and the power of the equipment. A kilometer per day, 6 kilometers per week.

"From marker 114 to 144," said N. Dragunov, chief engineer on the run, "it is some 3 kilometers. They, however, proved to be a tough nut. there were five ravines and a stream, to boot. Our most experienced crews worked here--the installation crew of V. Tonkikh and the earth-moving crew of N. Tregubov. N. Polikarpov's people laid sections in the trench. They were hard at work, when suddenly a 50-meter section on the slope of the ravine right in front of our eyes began sliding down on us together with bushes, rocks and grass. It was as if all the scenery had broken free. In an instant, the landslide filled up the trench that had been prepared, burying our hopes of meeting the daily deadline for the passage. The people were falling down from exhaustion, but no one left the run after the shift. They worked until nightfall clearing a channel for the pipe. They managed to avoid a delay.

Having picked up a 33-meter section of pipe at the pipe-welding base, the powerful Ural truck stubbornly pulled its freight along the road which stretched out kilometer after kilometer. Alongside was only a strip of earth smoothed by bulldozers. The pipe which had been laid there, below, had already occupied its working place. Far up ahead a bulldozer smoothed a black, earthen ribbon. After a few kilometers, the pipe itself appeared in an unfilled trench, supported by a column of pipe-layers. Passing through the column, the pipe became oily black and was wrapped in insulating tape. A little farther on, and there was no more trench. The excavators should not run too far ahead of the column. Only the rusty ribbon of pipe still continued off into the distance.

We traversed a portion of the run with Mikhel'son, and it little resembled the arrow usually used to depict it on charts and maps. Out of the 50 kilometers we covered, a good 10 kilometers ran through bends and turns. The pipe went around population centers and, where possible, spared good farmland. For the chief on the run, this line is like a book he has read over and over--he knows it by heart. "This is the spot where one of the pipe-layers went into a quagmire while we were unloading pipe sections. Picture this: a plowed field, an ordinary tractor running along it, nothing out of the ordinary, and this lumbering hulk of ours sunk up to the cab. We had a hard time dragging it out."

We caught up with the "head" of the mechanized caravan near a forest-protective belt of birch trees. Here N. Krovitskiy and A. Kuzin did the ceiling welding on the pipeline. The operation is critical and is called "ceiling welding" because the welders stand beneath the bottom of the pipe sections and work overhead, the way that you would paint a ceiling. Their seam came out perfectly. The X-ray inspection detected no flaws.

By the beginning of September, 65 km of pipe sections had been hauled to the Kuybyshev section, 52.5 km had been welded into the line, 51.5 km of trench had been dug and 51 km of pipeline had been insulated and buried. In other words, they had achieved the minimum feasible gap between the working sections and the total coordination of their actions. No one lagged behind, and no one let his comrades down. Behind the builders remained only kilometers of finished pipeline. This is the most important achievement of the Kuybyshev workers.

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## PIPELINE CONSTRUCTION

### TYUMEN WORKERS PREPARE FOR WINTER PIPELINE CONSTRUCTION

Moscow TRUD in Russian 21 Aug 82 p 1

[Excerpts from article by V. Ivanov: "Across the Swamps of Tyumen"]

[Excerpts] "Yes, we are working," affirms A. Rekoshetov, chief of the No. 5 construction and installation administration of the Severotruboprovodstroy trust. "We brought 13 km of pipe to the pipeline right-of-way using the winter road. We picked out a section of land that was somewhat drier and transferred the equipment there before the roads turned bad. Diduk's crew is working there now. Those 13 km are good preparation for future work. It is a tenth part of the work that we have to get done during the winter season. The first few kilometers of the pipeline have been welded not far from Nadym, by the river Pravaya Khata."

To gain time--that is what the builders of the northern leg of the Urengoy-Pomary-Uzhgorod pipeline are striving to do. The construction schedule developed by the Ministry of Construction of Petroleum and Gas Industry Enterprises provides for laying the Tyumen section of the pipeline 3 months earlier than the other segments. It is necessary to do this, because the entire pipeline has to be tested using gas from Urengoy, and the gas has to be delivered.

The Tyumen section of the Urengoy-Pomary-Uzhgorod pipeline is 997 km long and is the longest and unquestionably most complicated and difficult segment of the entire pipeline. It begins at Urengoy and stretches out to the Urals. In several locations along the right-of-way--near Urengoy, Nadym and Belyy Yar--segments of the pipeline are being welded. The first kilometers of pipe have been connected to form the line of steel. Work is in full swing, and the settlements along the line are being built, as a rule, with a full complement of municipal services as equipment and pipe are delivered.

The Tyumen workers have taken on an intensive commitment--the completion of pipe-laying along their own segment of the Urengoy-Pomary-Uzhgorod pipeline by the 113th anniversary of the birth of V. I. Lenin, and Siberians mean what they say.

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## PIPELINE CONSTRUCTION

### PIPELINE CONSTRUCTION PROCEEDS APACE IN IVANO-FRANKOVSK OBLAST

Moscow TRUD in Russian 21 Aug 82 p 1

[Excerpts from article by G. Klyucherov: "Mountains Are Not an Obstacle"]

[Excerpts] One more turn of the road, and we caught sight of the pipeline. From far off, on the raised, grassy slope, it appeared to be a slender silver rivulet flowing down from a distant mountain. Up close, however, the flashes from the sun disappeared, the surface of the metal dimmed, and the pipeline stood before us in actual size and scale.

"There, beyond the crest, our people are working," noted S. Gevorkyan, chief of the No. 1 construction administration of the Transcucasus administration for pipeline construction.

"Running a pipeline through the mountains is a complicated affair," he said. The pipe goes right, then it goes left. There are only curves. We are welding up to 400 m per day, however. This is almost a record for mountainous conditions."

Work is in full swing in four oblasts of the Western Ukraine, where the last pipeline sections will cross the territory of our country. Work began here earlier than in any other section, and it is most active in Ivano-Frankovsk Oblast, the area from which I am reporting.

The builders' settlement was located on the outskirts of the village of Yasen, near a scenic mountain. The settlement consists of 80 mobile shelters set in a strict geometric pattern. In each such two-story house are new furniture, a refrigerator, a television set and a hot-water heater. There is a sauna, dining facility and cultural center. Everything around is well organized, even the sidewalks made from concrete slabs.

"It was, of course, more difficult at first," said S. Gevorkyan, chief of construction administration No. 1. "Despite everything else, however, we started work on the pipeline with a rush. The rain here was an annoyance. True, we keep to the schedule, anyway."

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## PIPELINE CONSTRUCTION

### COMBINED PRODUCTION LINES EMPLOYED IN PIPELINE CONSTRUCTION

Moscow EKONOMICHESKAYA GAZETA in Russian No 38, Sep 82 p 10

[Article by V. Varavka: "On the Combined Line"]

[Text] Workers and engineering and technical personnel from the Kuybyshevtruboprovodstroy trust have stepped forward with a patriotic initiative--to complete line work on that section of the Urengoy-Uzhgorod pipeline for which they are responsible by 1 December 1982--7 months ahead of the established deadline.

The collective of the joint production line is accelerating the introduction of progressive technology along the pipeline run and is improving methods for organizing labor and the remuneration for this labor per individual work order. New reserves are being brought into play, which makes it possible to increase labor productivity more than two-fold in comparison with levels previously attained.

This initiative in competition is being supported in a business-like manner by the workers, engineering and technical personnel and employees of other construction and installation organizations participating in the construction of the Urengoy-Pomary-Uzhgorod pipeline.

This correspondence tells about the experience of the joint production line of the Kuybyshevtruboprovodstroy trust.

Not so long ago, an original settlement of mobile homes appeared on the outskirts of the city of Tsivilsk near Cheboksar. The station that was built here was one of the sections of the Kuybyshevtruboprovodstroy trust which, together with other organizations of the Ministry of Construction of Petroleum and Gas Industry Enterprises, is laying the Urengoy-Uzhgorod pipeline.

I stopped in at the "field office." The entire staff was made up of five persons sitting together at one oblong table. On the wall was a working map of the section which stretched 127 km from the Volga to the Sura--its right tributary.

"On this segment," explained V. Plotnikov, chief of the production-technical section, "the collective from our group is also working. In the recent past many

highly specialized administrations built pipelines using the joint-operations method. One administration alone welded the pipes, another insulated the the pipes exclusively, and a third prepared the trench. Each administration was given its own "task" for whose execution it was paid. These tasks, however, did not always match up with one another, and, as a result, the rhythm of the work was disrupted. Conditions forced us to find such a form for labor and production organization as would make the maximum contribution to reducing the time needed to lay the pipe with high-quality execution. We found it in the form of a self-sustaining combined production line (KTP) whose official "birthday" is considered to be 15 July 1982, when the experiment began.

What is the essence of this innovation?

To begin with, it is a matter of a little know-how. Along the entire length of the pipeline run in the Chuvash ASSR, two sites have been prepared with racks where pipes 11 to 11.5 m long are welded together in pipeline sections, usually using three pieces of pipe. Then the seams are carefully checked using a flaw detector--at a design pressure of 75 atmospheres! Powerful Ural and KAMaz trucks then carefully haul stacked sections of the 1,420-mm artery to the trench. At this point, the functions of the remaining subcontractors--the vehicle fleets and the Specialized Administration for Mechanized Operations No. 3 working at the preparation sites--came to an end. The line crew--that is, the combined production line employing about 200 men--immediately entered the operation.

Workers on the combined production line are combined in specialized crews whose numerical strength is basically stable and can be altered somewhat within in general range, depending upon the complexity of the terrain. The first to get down to their direct obligations were the collectives engaged in the so-called overhead welding, that is, with connecting pipe sections, arranged in order, into a pipeline.

Two larger crews perform welding operations on comparatively straight and level sections, while the remaining crews with their specialized experience are active on the curves and along ravines, where the "meters" are fewer, but harder to come by.

Behind the welders, as if they were accepting the relay baton, come the insulators who wrap the pipe completely at the joints and at those spots not insulated in the factory. Finally, behind them, maintaining the necessary interval, comes the earth-moving crew equipped with back hoes and wheel-type trenching machines. As they are made ready, each of the "steps," up to one and a half kilometers in length, is accurately laid in the trench and covered over with earth before the next section is begun.

All of the work teams--and this is the principal innovation--are working on a single work order. All of the crews are paid not for the operations, but for each kilometer of fully installed, prepared and tested pipeline. Thus arose the general interest in the turn-over of finished construction products.

"At any rate," said senior economist L. Chechina, "we have gone three months without an overexpenditure of pay. Payments have been so exact, that no one complains about low or incorrectly computed pay. In addition to the specialties previously mentioned, lately we have started including the flaw detector operators on the line in the overall work order."

Serving as a material stimulus for productive labor are the awards given for exceeding production quotas, although they need to be given in future competition, since the quotas are considerably below the assigned task. Obviously, it would be more correct to provide the incentive for exceeding this indicator.

These days there is growing competition among the line crews to condense the schedule so that the first section of the pipeline is turned over not by the 60th anniversary of the CPSU, as was previously planned, but by 1 December. Examples of diligent and highly productive labor are shown by the subordinate collectives headed by P. Ivanov, V. Tonkikh, N. Polikarpov and N. Tregubov. On certain days, one and a half kilometers of steel pipeline are added, and we must fix this rate of growth and make it into a system. On the one hand, in order to do this we must have a greater degree of organization and coordination in all sections. On the other hand, we must reinforce the line with welding and pipe-bending equipment. Our industry is producing enough of it, and here is where we need the operational assistance of Glavtruboprovodstroy and the primary client--the Ministry of the Gas Industry.

Laying this particularly important pipeline on the section assigned to it, the collective of the Kuybyshevtruboprovodstroy trust is concerned not only with absolute adherence to the established deadlines, but also with the protection of the environment: forests, ponds and farmland. The right-of-way has been planned so that wherever possible it would avoid fertile fields, not cause trees to be felled and not disturb existing roads. In those places where it is unavoidable, the lumber is hauled off to the consumers, and the fertile topsoil stripped by the bulldozers is returned to its place after the pipeline is laid. The trenches, however, are not everywhere carefully leveled off, and here and there remain mounds with pits alongside them. Leveling these off would not be worth the trouble.

Just three months ago, the combined production line about which we have been speaking was the first and only such line involved with construction of the pipeline. Similar new sections are appearing, including one formed on the territory of Gorkiy Oblast in the system of the All-Union Welding and Installation Trust. This line is being managed by Valentina Yakovlevna Belyayeva, who has worked for many years on gaslines in the North. Like the first line, this collective has far better indicators than before the reorganization.

Experts from the Orgtekhtuboprovodstroy trust in Tyumen arrived in Tsivilsk a few days ago to study this advanced experiment. There was indeed something to be learned: the more progressive organization of labor and construction operations justified itself. In all respects, however, this organization has not yet been brought up to "standards." Tasking estimates and the procedure for drawing up common work orders require further refinement. Moreover, the status of the new section on the staff of the trust needs to be further defined. The advice and methodical studies of the corresponding institutes and most qualified workers from the Ministry of Construction of Petroleum and Gas Industry Enterprises would be particularly helpful in this matter.

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## PIPELINE CONSTRUCTION

### WELDING OPERATIONS AT SURA RIVER PIPELINE SECTION DESCRIBED

Moscow TRUD in Russian 31 Aug 82 p 1

[Article by I. Kuznetsov, correspondent of the press-center of the Ministry of Construction of Oil and Gas Industry Enterprises: "The Route Travels to the Southwest"]

[Text] The collective of the Order of Lenin trust "Mosgazprovodstroy" is working intensively to lay the line section of the export gas pipeline Urengoy-Pomary-Uzhgorod.

We are in the floodplain of the Sura River. Powerful equipment has been concentrated here today, pipe layers, bulldozers, insulation and other machines. This is the new base of the insulation-laying column which is headed by Hero of Socialist Labor V. P. Tsvetkov. Quite recently they completed the preparation for completion of an 85-kilometer segment of the Urengoy-Novoposkov gas pipeline.

All of this equipment was actuated yesterday and having grouped in the necessary order, is traveling to the southwest of the Gorkov Oblast, along the trenches and pipeline which the other subdivisions of the enlarged production line SMU-2 left behind themselves. They have already passed far ahead. Here, on this segment of the export trunkline, the main duty of the column of Tsvetkov is to insulate the gas pipeline and to cover it with ground.

About 15 kilometers from the subdivision, Tsvetkov is met by excavators scattered along the pipeline. Here the ground is being removed from the trench by the enlarged brigade of S. Babkin.

In the project, this relief of the section is characterized as even, without forest, but with ravines. The excavators have to pass through eight dirt and gravel roads, many ravines and three rivers the Pelyavka, Solya and P'yana. A plain extends widely ahead. The trenches here are laid by the machine operator of a rotary excavator G. Melidov. But he cannot travel further, and where the route is intersected by a deep ravine, the ground is removed by the crew of the bucket excavator A. Latypov. The people work calmly and comfortably. The equipment is reliable.

Closer to the settlement of Sechenovo, we enter the zone of work of the welding-installation brigade of V. Saratov. The day is coming to a close, but the length-

carriers are still arriving. The work of the welders is always hot, and in summer even more.

A new term "surge of Satarov" has already entered the history of construction of the gas pipelines. What is this surge? The brigade welding the lengths into a line has developed such rates that no one is possible to catch up to it. And not only from the trusts working nearby. Now it is increasing the main length by 1000-1200 meters per day. How do they do this?

Of course, the Satarov workers do not lack either many years of experience or high skill. The brigade foreman himself, for example, is working on the highest, sixth class. Other welders are moving closer to this level. But the main reason for the high rates is the introduction into daily practice of work of the progressive method of welding, for which the brigade foreman Satarov was awarded the USSR State Prize for 1981.

This is how the brigade foreman explains the essence of the new work:

"Our welders constantly perform only one operation: either butt-joining of the length and installing of the centering device, or welding of the route seam, or application of the second and subsequent layers. A unique conveyer line is obtained, and it makes it possible to increase the line velocity of welding almost double."

It is not easy for the subcontractors to catch up to the leading brigade. In Sechenov we saw how the brigades of revolving welding of S. Teplov and V. Tumanov working in two shifts were hurrying. Their work was also organized comprehensively and in a line. It is impossible to lag, one can only move ahead, creating ample room for the brigade following.

The collective SMU-2 has been working on the route since March. It is led by the deputy head of the administration A. Buyankin. They rebased for construction of the export gas pipeline after completion of work on the segment of the gas pipeline Urengoy-Novopskov. Of the 100 kilometers of planned line section, the workers have succeeded in already welding into lengths over 60 kilometers. Of them over 50 kilometers of sections were butt-joined into a line. About 20 kilometers of trenches have been dug. Insulation and laying of the pipeline has begun.

All the subdivisions of the administration are working in the same rhythm as the Novopskov trunkline. The Moscow workers finished their section 9 months ahead of the planned schedule.

The unified committee of the trade union is displaying true concern for the workers. The Moscow workers have their own housing city with flower beds, lawns, sidewalks, comfortable little houses, cocktail bar, club and baths.

The collective of the line has adopted the commitment to finish the line section of the export gas pipeline no later than 30 December of this year. In several types of work, for example welding-installation, even now it is clearly ahead of the schedule outlined in the original commitments.

"The U. S. president Reagan," said the brigade foreman Satarov, "wants to interfere with our building of the gas pipeline. In fact we are building it faster than planned."

## PIPELINE CONSTRUCTION

### SELECTOR MEETING REPORTS ON PIPELINE PROGRESS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Sep 82 p 1

[Article by A. Alekseyev, our correspondent: "Day in the Life of the Route"]

[Text] Report from the selector meeting in the Ministry of Construction of Oil and Gas Industry Enterprises.

At the unified dispatcher point, everything is business-like and concentrated to the maximum. Red, green, orange and black telephones do not seem to be silent for a minute.

"Kiev, Kiev, who from your area is at the selector meeting today?"

"Gennadiy Sergeyeovich, I will make sure, in Alyabyevo the line will be formed by the middle of September."

"I have already said that the pipes were shipped to Biryuli on the 23rd, put pressure on the railroad workers."

The clock hand sneaks towards the upper mark. As if feeling this, the telephone trills are silent for a moment. One after another the dispatchers go to the hall of the selector meetings. Here representatives of the main administrations of the ministry are already seated: Production engineers, transport workers and suppliers.

It is exactly 16:00 on the face. The first deputy minister Yuriy Petrovich Batalin clicks the microphone, and appealing to all present here in the hall, and to those listening to the loudspeakers now thousands of kilometers away, says quietly: "Hello, Comrades, we are beginning our meeting."

Dozens of telephone lines, radio-relay lines connect all the participants of construction of the route Urengoy-Uzhgorod into a single living organism during these minutes. What is the pulse of the gas artery? Where are the troubles and the interruptions? Who needs help?

In order to make a true judgment about their achievements and faults, each subdivision has to know how its neighbors' work is. This is precisely why Yu. Batalin makes an "introduction."

"This week was normal at the majority of lines. Practically all of them coped with increased assignments. Fourteen lines have now gone to the route. Ten of them are already working on a full complex. Of the planned 55 subdivisions, a total of 40 will be formed in September-October, the other 15 will begin to work in December on the northern Tyumen arm."

Now it is time to explain what is this line. The route was previously built by several organizations. Some dug the trench, others welded the pipes, others insulated them. Each was involved only in its own narrow work. At times some held up the others, and in the case of any trouble, it was simply impossible to find the careless workers. The subcontractors worked in too uncoordinated a manner. The line takes on itself the entire set of work and produces a section of the route ready for operation.

"According to the socialist competition, the results are thus," Yu. Batalin continues. "The line of Leonid Viktorovich Mikhel'son from the Kuybyshev trust worked very well in the last week. For many indicators of the standard, 30 kilometers, have been covered. We are awarding the line the first place."

"Unfortunately, the line of Valentina Yakovlevna Belyayeva which has occupied first place for several weeks in a row did not work the best. We cannot award it the prize place for the last week. We expect that in the next weeks they will again be among the prize winners."

The central board and the trust "Shchekingazstroy" presented the line of Zhigiley Mikhail Grigor'yevich for promotion. Unfortunately, we have been forced to reject this suggestion. The inspection for quality revealed on his section a large number of technological interruptions and poor management of work for recultivation of the soil. We focus attention on the leadership of the trust and all the workers of the line to strengthening the technological discipline. One of the most important conditions for competition is to do the work so that behind you there are no interruptions and you leave no unfinished work."

What the deputy minister informed us so well, even in details, was not surprising at all: the selector meeting was preceded by enormous preparatory work of the main dispatcher G. Chesnokov and his assistants. Therefore now the numbers are not discussed, only checked and pinpointed.

After a brief analysis of the work for August and outlining the plan for September, Yu. Batalin suggests:

"Now we will pass to the reports of the leaders of the production lines. First word is given by Karasov Boris Vasil'yevich, leader of the line from the trust 'Komsomol'sktruboprovodstroy'."

"Today we have 120 workers," the voice muffled by distance sounds in the loud-speaker. "The formation of the line is completed. By 15 September we will begin work with a full complex."

The short reports are heard one after another. Yu. Batalin asks each: "Are there any questions?"

There are questions. One does not have enough qualified welders, another has a need for thickened pipes, a third asks for accelerated formation of a contract for a bus to move the workers.

The majority of problems are solved right here without moving. Rapidly and in a business-like manner, without unnecessary excuses and delays. This is the main strength of the general selector meeting. Now it approaches the end.

"We have received from you the sample plans for fulfillment of the assignment for September," Yu. Batalin appeals to the distant subscribers. "The request to all is to weigh the real possibilities, work out plans and make a final report to the board. In conclusion I would like to note that you should focus more attention on the preparation for winter. This concerns both the work front and the settlements of route workers. It is impossible to interrupt work for even a day."

What does one day of work of the line mean for the builders? This is a kilometer of route. This is yet another step on the thousand-kilometer runs from the Tyumen North to the foothills of the Carpathians.

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## PIPELINE CONSTRUCTION

### BRIEFS

**NATIONAL PIPELINE HELP**--The transcontinental Urengoy-Uzhgorod gas pipeline is not called a national construction site accidentally, the equipment for it is being created by dozens of enterprises and scientific research institutes of the country. One of these organizations is the All-Union Scientific Research Institute for Construction of Main Pipelines. Its colleagues recently developed and introduced the welding complex "Styk-1." It permits welding on a new technology, thanks to which the labor productivity increased immediately 4-fold! The workers of the Khartsyzsk pipe plant are giving significant help to the builders of the export gas pipeline. They are supplying to the route frost-resistant pipes of large diameter ahead of schedule. Modern equipment for cutting metal with the help of plasma has been introduced into the shop of electric welding of this enterprise which does not have an equal in the sector. It was developed with cooperation of the scientists of the Institute of Electric Arc Welding imeni Ye. O. Paton of the Ukrainian SSR Academy of Sciences. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 25 Sep 82 p 2] 9035

**PIPE WELDING**--Izhevsk--The first pipes have been welded at the Udmurt section of the Urengoy-Pomary-Uzhgorod gas pipeline. An important stage of work has begun on the more than 150-kilometer segment of the trunkline which intersects the autonomous republic from the east to the west. The direct arrival of the builders at the route was preceded by the start-up of a large welding base in the city of Mozhga. A total of 50 kilometers of pipes have already been welded at the base, and half of them have been brought to the route. [Text] [Moscow TRUD in Russian 24 Aug 82 p 1] 9035

**ANTICORROSION PROTECTION**--The dim glory of bitumen as a means of anticorrosion protection of metal was resurrected by the scientists of the Institute of Chemical Sciences of the Kazakh SSR Academy of Sciences. They developed a polymer coating "plastovit" whose protective properties are maintained for the entire service life of the metal. The Kazakhstan chemical workers have suggested covering the surface of the metal after preliminary priming with hot bitumen with plasticizers and wrapping it in a polymer film. Even within 10 years one can dirty one's hands on this bitumen, it preserves its plasticity for such a long time. With a disruption in the integrity of the film, the bitumen comes to the surface, as if "healing" the damaged place. The anti-corrosion coating "plastovit" has passed verification at the pipelines of West Kazakhstan. Its introduction on the almost thousand-kilometer trunkline yielded an economic effect of R 6 million. "Plastovit" is already being used at other pipelines of Main Administration of Oil Transport. The innovation of the scientists can be used

for protection from corrosion of production equipment and in other sectors of the national economy. [Article by S. Baytanayev] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 14 Sep 82 p 2] 9035

COMPRESSOR STATION--Kalinin--The state commission has adopted the Torzhok compressor station into operation. This object was constructed by the forces of the construction subdivisions of the all-union production association "Soyuzgazpromstroy" of the Ministry of Construction of Oil and Gas Industry Enterprises. The start-up of the compressor station will considerably increase the throughput of gas on the pipeline Urengoy-Gryazovets-Torzhok-Ivatsevichi. [Article by G. Smirnov] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Sep 82 p 1] 9035

WELDING UNIT--Kiev--"Each kilometer of the route ahead of schedule," this is the motto under which the builders of the Ukrainian section of the Urengoy-Uzghorod gas pipeline are working. Among those who are moving ahead in the socialist competition, is the brigade of the machine operator of the drilling unit Nikolay Voshkulata. Mastery of related specialties, efficient arrangement of machines makes it possible to fulfill the daily assignment by 130 percent. The use of the electric arc unit "Styk" created in the Institute of Electric Arc Welding imeni Ye. O. Paton of the Ukrainian SSR Academy of Sciences makes it possible to considerably outdistance the schedule. Whereas before the butt joints were welded mainly manually, now only the first seam is done this way. The unit replaces the work of 80 electric arc welders. The x-ray apparatus confirms that the quality of the seams is excellent. [Article by N. Nazar] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 14 Sep 82 p 1] 9035

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## COMPRESSOR STATIONS

### YELETS COMPRESSOR STATION UNDERGOES INITIAL TESTING

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 11 Aug 82 p 1

[Article by I. Chichinov: "Tested for Strength"]

[Text] Construction has been completed on yet another compressor station which will become a part of the overall Urengoy-Uzhgorod pipeline system. The station is called "Yeletskaya" in honor of the small, ancient city located nearby in Lipetsk Oblast. Little time remains until the day when builders from the Glavlipetskstroy trust--the general contracting organization--will turn the station over to the operational personnel.

The report came after 2 am:

"The system has been filled."

N. P. Pashinov, chief of the construction complex, gave the command:

"Begin raising the pressure!"

The pump began to hum, and the water in the system began to press against the pipeline walls, the pump and the dust-trap. In a few hours the pressure would have to be increased to maximum--70 atmospheres--and be kept there for 24 hours. With this the strength test will conclude, and the pressure will be reduced to the working pressure--55 atmospheres. The testing personnel will continue to monitor the integrity of the assemblies for an additional 12 hours.

Direct control over the tests has been entrusted to V. V. Mazarenko, foreman of the Metallurgprokatmontazh-2 trust, and his duty teams.

We walked with Vladimir Vasil'yevich about the station site.

"After testing for strength and tightness using water," he said, "one more thing remains to be done--test it using gas. When it passes successfully, the Yeletskaya will enter service."

According to standards, the construction of such a complex should be completed 18 months after the start of work. The testing at Yelets, however, began after a little more than 6 months had passed.

"The feed lines are ready and are being tested simultaneously with the station's compressor system," said V. A. Semenenko, director of a group of specialists from the first installation administration of the Yuzhkomplektmontazh trust in Rostov-on-Don. One of their functions is to construct the branch lines that supply the station and then to make the connection or, as they say here, the cut-in to the common line. It has been proposed that the branch feed line be tested individually, but the Rostov workers finished ahead of schedule and laid the line by the time testing began at the station. Now the feed lines are being tested together with the Yeletskaya itself, and the specialists are getting ready for the cut-in.

"Then comes one of the most demanding operations," said V. A. Semenenko, "and you can see for yourself why it is so. We have the welding equipment and the gas."

The workers on the Rostov right-of-way already have experience in making such connections. After turning over the station, the Yeletskaya builders will move on to the next facility, while Semenenko's team will continue to work on the pipeline. It is their section.

Testing continued. "10 atmospheres, 25, 50," came the reports. The pressure continued to mount, and I can tell you that the maximum mark was reached and the pressure maintained for the set period.

The Yeletskaya stands amid the surrounding golden fields of wheat and proudly thrusts its pipes up toward the serene August sky. The builders look with pride and satisfaction upon the crowning achievement of their labors. It is even difficult for them to believe--a little more than 6 months ago this was a wasteland. Today, however, here it stands--a colossus of a compressor which will deliver gas to the western border. Quite soon, in a day or two, the builders, too, will make their report to the operators: "The Yeletskaya is ready, take over!"

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