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USSR REPORT  
CONSTRUCTION AND EQUIPMENT

No. 69

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## CONSTRUCTION

### CONSTRUCTION ADMINISTRATION'S SUCCESSFUL PERFORMANCE REVIEWED

Moscow EKONOMIKA STROITEL'STVA in Russian No 5, May 82 (signed to press 14 Apr 82) pp 3-8

[Article by K. A. Glukhovskoy, chief of Glavzapstroy [Main Administration for Construction in the Western Regions] of USSR Ministry of Construction and Hero of Socialist Labor: "New Frontiers Ahead"]

[Text] At the November (1981) Plenum of the CPSU Central Committee Comrade L. I. Brezhnev named Glavzapstroy of Leningrad among the collectives of construction organizations from which it is possible and necessary to learn; from one 5-year plan to the other it has delivered the planned construction projects on time or ahead of schedule. We publish below a selection of articles devoted to the know-how of the Leningrad construction workers [only this article is included in this translation].

Glavzapstroy is a major regional construction organization in the system of USSR Ministry [Ministry of Construction], the organization which carries on industrial construction in Leningrad and all types of construction in Leningradskaya Oblast.

Over the period of its existence (since 1963) Glavzapstroy has as a rule fulfilled every year the targets set by the plan for activating production capacities and projects and for the volume of construction and installation work, and, because it has been augmenting its own production capabilities, it now handles nearly 500 million rubles worth of work.

As the initiator of the All-Union Socialist Competition for Speeding Up Construction and for Delivery of Production Capacities for Operation Ahead of Schedule, which has been approved by the CPSU Central Committee, during the 10th Five-Year Plan Glavzapstroy delivered for operation 371 major projects, including 97 production facilities and projects activated ahead of the dates planned. Over the 5-year period it delivered for operation 2,587 production facilities and projects on which the total estimated cost of construction and installation work was about 2 billion rubles, which is 13.8 percent more than activated in the Ninth Five-Year Plan.

During the past 5-year period it delivered for operation 831 residential buildings with a total floor space of about 3 million square meters, 545 production facilities and projects for agricultural purposes and 1,351 for industrial purposes, with a total productive floor area of 2.8 million square meters.

Projects important to the national economy which have been delivered for operation include new installations for fertilizer production in the Fosforit Association and at the Volkhov Aluminum Plant, for refining petroleum and petrochemical products in the Kirishinefteorgsintez Association, for the production of fodder fertilizers and furfural at the Kirishi Biochemical Combine. Enterprises underwent reconstruction and expansion in the "Izhorsk Plant," "Leningrad Metals Plant" and "Elektrosila" Associations. Reconstruction of the tractor production operation was completed in the "Kirov Plant" Association. Capacities of enterprises of ferrous and nonferrous metallurgy were enlarged at the "Lentrublit" Plant and in the "Krasny Vyborzhets" Association.

Many enterprises in the light and food branches of industry were retooled. The production capability of agriculture in Leningradskaya Oblast was substantially reinforced.

In the 10th Five-Year Plan 87.6 percent of all the projects delivered were graded "good" or "excellent" for the quality of construction work when they were activated. In the Ninth Five-Year Plan those grades were given to 85.5 percent of all projects delivered. The plan for the total volume of construction and installation work was fulfilled at a level 18.3 percent higher than the volume of work in the Ninth Five-Year Plan.

Last year, 1981, was a very difficult one for the construction workers of Glavzapstroy both because of the character of the construction program and also because of supply conditions. During the year 44 production facilities were delivered, including 7 facilities put into operation ahead of schedule. The plan was fulfilled for the volume of contract work, for all construction projects in the Nonchernozem Zone of RSFSR, for activation of total area of residential buildings, for the administration's own capital construction, and for profit.

The plan for total marketed product of construction was not fulfilled, and as a result certain production facilities and projects could not be put into operation.

The main reasons for this were these: incomplete delivery and delay by clients in delivering manufacturing equipment for projects near completion, interruptions in the supply of a number of materials, especially rock products, of which there has been a regular shortage at construction sites and also at enterprises of the building products industry. Nor were the main administration's needs met for railroad cars and trucking services of common carriers.

For the 10th Five-Year Plan as a whole labor productivity in the main administration rose 19.1 percent over the level that prevailed in the 9th Five-Year Plan, while the average wage per worker rose 12.6 percent. The rate of profitability for construction work as a whole rose 13 percent in the main

administration during the 10th Five-Year Plan, and profit amounted to 148.7 million rubles.

Achievement of such performance indicators is the result of an effort made in Glavzapstroy to raise the technical level of construction, to improve the forms and methods of organization and management of construction work, to go further with internal cost accounting (khozraschet), to develop forms of socialist competition, to participate in the progressive economic experiments being conducted in the country, and to take advantage of other strategies for increasing the efficiency of construction work.

The overall level of fully prefabricated construction rose in the main administration from 62.5 percent in 1975 to 79 percent in 1980. Moreover, in industrial construction the index of fully prefabricated construction rose to 88.5 percent, in rural construction of production facilities to 90 percent, and for construction of nonproduction facilities to 64.3 percent. The share of large-panel residential buildings in the total volume of housing construction was 89.7 percent in 1980.

During the 10th Five-Year Plan the application of progressive forms of piles, the manufacture of load-bearing and partition fabrications of lightweight concretes, the use of bathrooms entirely fabricated offsite, and the introduction of three-dimensional fabrications almost doubled at the main administration's construction sites. There was nearly a fourfold increase in conveyor-belt assembly of fabrications, quality inspection of reinforced concrete by nondestructive methods, and the introduction of off-site fabricated partitions and composite sheets used for roofing.

In the 11th Five-Year Plan the tasks in raising the technical level of construction include increasing the overall level of fully prefabricated construction to 90 percent by 1985, including a rise to 89 percent for construction of nonproduction facilities, construction of all partitions in production buildings exclusively with methods using fabrications manufactured offsite, inspecting the quality of reinforced concrete with nondestructive methods in a volume rising to 780,000 cubic meters per year, and also a further increase in a number of other progressive operational and structural solutions. The introduction of packaged sets of norms and standards, which began at the construction sites of the main administration in 1975 with 12, increased to 1,310 pertaining to 16 types of operations in 1981, and their number will continue to increase.

The economic benefit from introduction of new technology in construction was 134 million rubles in the 10th Five-Year Plan, and labor productivity rose 14.2 percent. Measures covering the period 1981-1985 call for raising the economic benefit to 160.8 million rubles. Use of project plans for construction work that envisage everything that is new, advanced and progressive in construction has a large role to play in guaranteeing the introduction of new technology at construction sites. In recent years all construction projects in Glavzapstroy have as a rule been done exclusively according to project plans for conduct of operations which were drafted by the trust Orgtekhstroy, usually with the involvement of staff members of the main administration and of construction organizations.

Specific mention needs to be made of the fact that personnel of the trust Orgtekhstroy regularly check to see that operations at construction sites are done in full conformity with the plan for conduct of operations, which contributes greatly to raising the technical level of construction work in Glavzapstroy.

During the past 5 years definite work was done in the main administration to reduce the amount of work done by hand, to increase the level of mechanization of operations and use of machinery, and to reduce work time losses, which has had a substantial effect toward improving the technical-and-economic indicators of construction organizations and in the main administration as a whole.

One of the principal and leading directions in the activity of all organizations of Glavzapstroy in the 11th Five-Year Plan is further improvement of the organization of construction work, improvement of the technology for performance of construction and assembly operations, and the prompt preparation and performance of the engineering of every construction project. Plans call for paying still more attention in the 11th Five-Year Plan to drawing up plans for the conduct of operations and to conducting operations according to them, in the view that this represents a sizable portion of success in guaranteeing fulfillment of the plan for activation of production facilities and projects.

In his speech at the 17th Congress of USSR Trade Unions Comrade L. I. Brezhnev paid particular attention to introduction of the work team contract and to participation of the trade unions in the development and improvement of this progressive form for the organization of work, to the reinforcement of cost accounting (khozraschet), and to improvement of the knowledge and responsibility of workers as true masters of the enterprise.

In 1980 1,119 work teams in Glavzapstroy were working on the basis of a work-team contract, and they did 52 percent of the entire volume of construction and installation work in the main administration (in 1975 they did 20.7 percent of the amount of work). In the main administration's contract work teams labor productivity is 38.8 percent higher than in work teams not working on the basis of a contract. In the 10th Five-Year Plan the work teams saved 7.8 million rubles against the estimated cost of work items assigned to contract work teams, and in 1981 the figure was 2.4 million rubles. In Glavzapstroy the task has been set of not only doing everything to further increase the coverage of the work-team contract and to create normal working conditions for such work teams, but also to improve the forms of the work-team contract.

The specific nature of the organization of construction, especially at large construction sites, necessitates a transition to larger forms of the work-team contract, i.e., the transition from the cost accounting (khozraschet) of individual work teams to comprehensive (start-to-finish) cost accounting covering the project or a section. The main administration must have help in these matters in the form of preparation of appropriate new regulations on the work-team contract in construction.

The main administration is paying great importance at construction sites to introduction of progressive forms of remuneration, to teaching the workers

advanced work methods and to other measures that improve vocational skills on the job and also the material and moral motivation of the workers to improve work efficiency.

Coverage of the payment-for-the-job system of remuneration in Glavzapstroy increased from 64 percent in 1975 to 67.6 percent in 1980, and plans call for raising it to 72 percent in 1985. In 1980 66.2 percent of the entire work force was involved in improvement of qualifications through all types of training, whereas in 1975 only 29.2 percent were involved in training programs.

The number of workers not fulfilling output quotas dropped to one-third during the 10th Five-Year Plan and amounted to 54 persons in 1980.

All this has determined the growth in the output of workers in physical terms from 8 to 20 percent depending on the type of work and has guaranteed a rise of labor productivity in construction. In our opinion, improvement of the organization of work and of remuneration urgently calls for adoption of new wage rate schedules for construction workers.

The main administration and its trusts became part of the three-tier system of management of construction in 1971. The basic and first tier in the management system is the trust, to which the Regulation on the Socialist State Production Enterprise applies. The next and middle tier of management is Glavzapstroy, and finally there is the top level of management--USSR Ministry. Construction and installation administrations and equivalent organizations are the production units. This organizational structure in our opinion, is the most acceptable for the conditions of Glavzapstroy.

An experiment in strengthening the participation of construction contractors in improving the solutions incorporated in project plans has been conducted in Glavzapstroy since 1976. Examination in the main administration's office for expert evaluation of 71 approved project plans and replacement of outdated layouts and structural solutions in those plans by more progressive ones reduced the estimated construction cost under those plans by 82 million rubles, or approximately 12 percent. To do that amount of work in the course of a year the main administration would have to have another three construction and installation trusts in the first group.

We should note that in connection with the clearance of recommendations prepared by the main administration's office for expert evaluation to improve the solutions in project plans Glavzapstroy is experiencing very great difficulties because of the reluctance of clients and project planning organizations to make changes in project plans which have been approved. In our opinion, a specific decision should be made by the appropriate authorities which would make it compulsory for clients and project planning organizations to examine and accept the proposals of contractors calling for optimum and more efficient solutions in project plans.

An experiment applying the indicator of the marketed output of construction in planning, settlement and financing has been conducted in Glavzapstroy, which was the first of the country's main construction administrations to do so.

As shown by the experience of Glavzapstroy, use of the marketed output of construction as an indicator in the construction industry is playing a constructive role in reducing construction time at almost all projects and in reducing the volume of unfinished construction. Over the past 3 years this volume has dropped 80 million rubles.

In the 1981-1982 period use of the marketed output of construction as an indicator has ceased to be an experiment, since under the decree of the CPSU Central Committee and USSR Council of Ministers dated 12 July 1979 this indicator has become one of the basic ones in planning and evaluating the results of the production and economic performance of construction and installation organizations.

This is a good place to note that there is a need to improve the finance-and-credit relations which have been established in construction; specifically, to stabilize the credit financing of contractors on the basis of the volume of unfinished construction. For example, is it possible to agree with the present procedure for credit financing under which credit financing has not been furnished, from September 1981 until the present time, for a particularly important construction project of the "Izhorsk Plant" Production Association of Minenergomash [Ministry of Power Machinebuilding], which is being done by Trust No 35 of Glavzapstroy, because the plant which is the client did not furnish all the required capital of its own to finance the capital investments? A number of other restrictions should also be removed in the credit financing of unfinished construction.

No small role in attainment of constructive results in construction is being assigned to the progressive form of labor contracts and creative collaboration of teams of builders, assemblers, clients, project planning institutes, transportation organizations and organizations making up complete deliveries, which is being used by a number of construction and installation trusts.

In the effort to make operation profitable and economical, an important place is given to the complete check of cost estimates obtained from clients, which is practiced in the system of Glavzapstroy, and also the annual drafting of specific measures for conservation of physical resources. For instance, in the 10th Five-Year Plan in 1981 savings at construction projects and enterprises in the building products industry of Glavzapstroy were as follows, respectively: 15,900 and 4,400 tons of metal, 50,300 and 15,000 cubic meters of timber and lumber, 27,621,000 and 8,783,000 kilowatt-hours of electric power, 67,600 and 26,000 gigacalories of thermal energy, 31,000 and 7,500 tons of boiler and furnace fuel, and 34,200 tons of cement (in 1981 there was an overconsumption of cement because of the shortage of quality rock products).

The saving of physical resources which has been achieved was to a considerable extent the result of extensive introduction of work-team and section cost accounting (khozraschet) and of fulfillment of the socialist obligations which were assumed.

The initiative of the Sverdlovsk organizations to fulfill the 5-year assignment with fewer workers in the work team has become widespread in the main

administration. In recent years 707 job slots in work teams of Glavzapstroy have been eliminated, and those workers were transferred to make up 50 new teams and units.

During the 10th Five-Year Plan collectives of Glavzapstroy were awarded challenge Red Banners of the CPSU Central Committee, USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee on 15 occasions on the basis of the results of the All-Union Socialist Competition, and on 7 occasions were placed on the All-Union Honor Roll at the USSR Exhibition of Achievements of the National Economy. For performance during the 10th Five-Year Plan 697 construction and assembly workers of Glavzapstroy were awarded orders and medals. In 1981 the Kirishi Trust No 46 was awarded the Labor Red Banner. At the present time there are four organizations in the main administration which have been awarded orders.

Glavzapstroy has been awarded the Order of Lenin for great success achieved in fulfilling the assignments of the 10th Five-Year Plan and performance of socialist obligations to speed up construction and ahead-of-schedule delivery of production facilities and projects.

The organizational work, oversight, and everyday aid and support of the Leningrad party organization has had an important constructive influence on the performance of the main administration and of its trusts.

The important tasks which lie ahead in the 11th Five-Year Plan require of the entire work force of Glavzapstroy selfless labor that has well been thought out, continuous and daily improvement of the technical and organizational level of construction, and an implacable attitude toward everything that stands in the way of fulfilling the 5-year plan.

The high praise of the performance of the work force of Glavzapstroy expressed by Comrade L. I. Brezhnev in his speech at the November (1981) Plenum of the CPSU Central Committee, and the high awards made in recognition of the performance of the main administration and of its organizations are inspiring the personnel of all the construction, industrial and service subdivisions of Glavzapstroy to conquer important new frontiers and to do everything to improve the efficiency of construction work and the quality of performance.

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## CONSTRUCTION

### STROYBANK CREDIT LEVERS EVALUATED BY BOARD CHAIRMAN ZOTOV

Moscow FINANSY SSSR in Russian No 4, Apr 82 (signed to press 15 Mar 82) pp 3-12

[Article by USSR Stroybank Board Chairman M. S. Zotov: "Important Tasks of Financing and Credit for Capital Construction"]

[Text] In the materials of the November (1981) CPSU Central Committee Plenum, the speech at the plenum by Comrade L. I. Brezhnev, CPSU Central Committee General Secretary and USSR Supreme Soviet Presidium Chairman, emphasized that the five-year plan has determined further directions in creating the material-technical base of communism and use of all the opportunities and advantages of the society of mature socialism in order to ensure continued social progress and carry out a broad program for increasing the well-being of the people. Governed by the instructions of the 26th Party Congress, the CPSU Central Committee Plenum focused the attention of all party, soviet, trade-union, Komsomol and economic agencies on fulfillment and overfulfillment of the 1982 plan and the 11th Five-Year Plan as a whole. The growth in economic potential anticipated by the five-year plan demands considerable capital investment. In this connection, the party is paying particular attention to significant improvement in capital construction affairs.

The capital investment plan gives full consideration to all the objective patterns of further development of the country's unified national economic complex, which encompasses all links of production and consumption. Under conditions of the development of this complex, interbranch and intrabranh economic ties are being expanded.

The capital construction plan in the 11th Five-Year Plan takes into account the substantial advances which have occurred in the distribution of productive forces with consideration of the demands of involving new natural and raw-material resources in the eastern and northern areas of our country in national economic circulation. Among the most important directions of economic and social development are the implementation of a broad food program encompassing the resolution of many problems in the area of developing not only agricultural production, but also industry, procurement, transport and trade.

As L. I. Brezhnev said, implementation of a broad food program is of both economic and political significance. Average annual grain harvests must be increased by nearly 35 million tons and meat production by more than two million

Fulfillment of the fuel-energy program must provide the country with the necessary amounts of petroleum, coal, gas and electricity. It has been and remains the motive force of the economy.

The program is broad in scope. It takes into account prospects for development not only in the very near future, but also over the long range. Nuclear power plant construction is anticipated in national economic development plans. By the end of the 11th Five-Year Plan, electric power generation just at nuclear and hydroelectric power plants will be 450 kW-hr, and electric power generation at nuclear power plants will have increased three-fold as compared with 1980.

At the November (1981) CPSU Central Committee Plenum, L. I. Brezhnev criticized the Ministry of Power Engineering and Electrification for significant delays permitted in recent years in starting up capacities. Several nuclear power plants are being built slower than planned. Financial agencies must draw their own conclusions from this.

The allocation of significant capital investments to develop gas pipelines will facilitate significant growth in natural gas extraction and an increase in its proportion of the country's fuel-energy balance from 26 percent in 1980 to 32 percent in 1985. We anticipate building 43,000 km of gas pipelines and branch lines from them during the five-year period, as against 30,000 in the 10th Five-Year Plan.

Some 31 billion rubles is being allocated just to build the Urengoy - Gryazovets, Urengoy - Petrovsk, Urengoy - Novopskov, Urengoy - Pomary and Urengoy - Uzhgorod pipelines. Organizations of the Ministry of Construction of Petroleum and Gas Industry Enterprises and other construction ministries and departments will be enlisted in their construction. Large tasks involving the financing of these construction projects and monitoring the efficiency with which they are used are being entrusted to Stroybank institutions, and foremost to the Tyumenskaya Oblast office. We need to finish preparing for this work as quickly as possible so that Stroybank institutions will facilitate building and putting the gas pipelines into operation as quickly as possible and so that they can promptly cut short any instances of mismanagement or efforts by certain builders to carry out the plan at any cost, without considering expenditures of material and labor resources.

It should also be borne in mind that Ministry of Construction of Petroleum and Gas Industry Enterprises organizations have been allocated major credits for pipe acquisition. If their economic-financial activity is not monitored, difficulties might arise in clearing these credits and ensuring the issuance of new loans. Since it attaches particular importance to these questions, the Stroybank Board has worked out a number of organizational measures which will permit not only the monitoring of the entire investment process, but also the prompt organization of credit assistance in helping carrying out the tasks set the branch. To this end, a number of normative documents have been developed. Pipe crediting will be done based on a special instruction which has several peculiarities. In particular, credit will be issued under target procedures to acquire pipe stockpiles for construction projects included in annual and five-year capital construction plans up to the planned start-up of the linear portion of the pipeline under the titles list for the entire construction period. With the

tons during the five-year plan. The state is allocating 233 billion rubles, that is, more than a third of all capital investments, for implementing the entire food-program complex. Agriculture's proportion of capital investment will be more than 27 percent of the total amount of capital investment in the country (nearly 190 billion rubles).

Never before has the Soviet state directed such enormous material and monetary resources into developing branches connected with the production and marketing of foodstuffs. Particular responsibility is placed on all participants in the investment process to use them with maximum effectiveness. Financing agencies must carefully analyze the balance of all links in this common chain in order that the measures outlined will be carried out strictly on schedule. Meeting investment schedules is a decisive condition of proportionality both in resolving the food program and in resolving all other portions of the economic and social development plan. We need to set up a barrier to the previously widespread practice of scattering capital investments and stretching out construction schedules.

The capital investment plan takes into account the necessity of perfecting the structure of the national economy, of improving proportions among the various components of the national economic complex. The financial balance approved as part of the national economic plan outlines the resources which will ensure a rise in the proportion of the national income consumption fund from 75.3 percent in 1980 to 78.0 percent in 1985, outstripping growth in industry Group "B" as compared with Group "A", and a nearly two-fold reduction in the capital investment growth rate as compared with the 10th Five-Year Plan. But the rates of fixed assets start-up are being increased, which is very important.

Considerable resources are being directed into developing heavy industry, into expanding the fuel-energy complex, machinebuilding and a number of other branches. Resolution of the food program can be effected on a base of technical progress and the use of advanced agricultural techniques.

This is why large capital investments are anticipated in those branches of machinebuilding which are called upon to retool agriculture. Suffice it to say that the capital investments being allocated the Ministry of Tractor and Agricultural Machinebuilding and Ministry of Machinebuilding for Animal Husbandry and Fodder Production are being increased 1.6-fold as compared with the 10th Five-Year Plan; mineral fertilizer production will be increased to 150-155 million conventional units by 1985; more than 11 billion rubles is being allocated to expand fixed assets just for the Ministry of Mineral Fertilizer Production. All this will demand of finance and banking agencies the establishment of strict monitoring of the promptness of the start-up of fixed assets and capacities. The tasks of economists and engineers in both central and local finance agencies (where the construction is actually being done) is, jointly with the client and contractor for each construction project, to outline steps to ensure the prompt start-up of planned projects. All capital investment, be it for a union, republic or local construction project, must be very effective and it is precisely these workers who bear the responsibility for ruble control and proper financing for all projects. Construction sites which are especially important to the national economy deserve close attention, which L. I. Brezhnev has repeatedly called attention to.

expiration of the loan term set by the plan and titles list, credit can be continued, but at a higher interest rate.

The five-year plan includes basic assignments for 170 scientific and technical programs, including 41 target comprehensive programs worked out and approved by the USSR Gosplan, GKNT [State Committee for Science and Technology] and USSR Academy of Sciences. Their ultimate goal is to introduce the most effective scientific and technical achievements into the national economy. The finance-credit mechanism must assist in the successful implementation of these programs, on whose basis we will ensure a reduction in manual labor, greater labor productivity, a savings in material resources, expansion of consumer goods production and the resolution of a whole series of other pressing tasks. Questions of improving the effectiveness with which the financial resources allocated to carry out such programs are used must be the center of attention for financial and banking workers.

The growth in the country's economic potential is directly linked to capital investments. In the 11th Five-Year Plan, the amount will be 700 billion rubles. In 1982, the amount of state capital investments is 121.6 billion rubles. The plan is feasible and is better balanced than ever before. Some 21 billion rubles is being directed into renovation and retooling. Expenditures on equipment, the active portion of fixed assets, will reach 48.4 billion rubles. The assignments of the second year of the five-year plan are wide-ranging, and their implementation will not come about of itself, but through the well thought-out, precise actions of each participant in the investment process and through good construction production organization at each project. In order to do this, we need first of all to work in a shock-work manner, to achieve high labor productivity and a maximum reduction in losses of working time, to introduce production capacities at all start-up projects anticipated by the plan, without exception. This will yield a good economic gain and will create conditions for lowering above-normative unfinished construction, which is very important in achieving efficiency in capital construction. One pressing task of financial-banking workers is to prevent the scattering of capital investments among various new construction projects (capital investment smearing), reducing the number of construction sites and projects so that their estimated cost exceeds the annual capital investment amount in amounts corresponding to the average normative construction periods. This is very important for balance, as well as for substantially reducing construction time, which are so necessary to ensuring intensification and the accelerated use of scientific-technical achievements.

One feature of capital construction development in the 11th Five-Year Plan is the fact that the start-up of fixed assets must exceed capital investment growth; national income growth is to be 18 percent and will be achieved given a 10.4 percent increase in capital investments.

The country cannot adopt a policy just of unrestricted capital investment increase, but must ensure the effectiveness of the investment process and economical capital construction. Comrade L. I. Brezhnev has correctly pointed out that, "in and of itself, capital investment is a necessary, but not the sole, condition of economic growth. It is also important that the funds being invested provide a return more quickly, that they be returned with the maximum increment. This means that the rates of capital construction and the periods

of time involved in installing production facilities are among the most important general economic indicators determining both the rates of growth in production and national income."<sup>1</sup>

Of course, the country will continue to need major capital investments in the 11th Five-Year Plan in order to draw all branches of the national economy out to the leading frontiers of science and engineering, further develop heavy industry, improve the structure of the fuel-energy balance, eliminate manual labor processes, improve the operation of transport and develop it, and also to develop the entire infrastructure of the Soviet economy. Further development of the agroindustrial complex, accelerated housing construction, expanded consumer goods production in the interests of actualizing the major program for raising the material and cultural standards of living of the people -- these also assume enormous capital investment. Nonetheless, the resolution of these problems must occur on an intensive basis, through steady growth in social production efficiency and the more efficient use of each ruble and of material, labor and financial resources, by increasing the return on capital.

Under these conditions, the development of a scientifically substantiated policy in the area of capital investments, including structural policy, which plays a leading role, takes on enormous importance. On the whole, there are grounds for maintaining that combining the achievements of the scientific-technical revolution with the advantages of socialism depends largely on a scientifically substantiated capital investment policy, on effectiveness of action.

The changeover to comprehensive intensification of the investment cycle and each of its phases has been prepared as well by substantial changes in the area of estimate planning and capital construction. The number of large estimate planning organizations capable of resolving the leading scientific-technical tasks has been increased, the organizational structure of capital construction management has been improved, and powerful cost-accounting specialized construction associations have been created.

One condition for resolving the tasks set with consideration of the indicated features is the preference being given to renovating and retooling existing enterprises over new construction. This change in planning, scientific-technical and structural policy in the area of capital investment yields good results and will help us complete the transition of the economy to an intensive path of development faster. In the 11th Five-Year Plan, we intend to direct about 32.5 percent of the total capital investment limit in production construction into renovating and retooling existing enterprises, as against 29.2 percent in the 10th Five-Year Plan. Of course, this is not the limit, and one should always bear in mind in the course of shaping plans and titles lists the need to seek out opportunities for directing more capital investment limits into retooling and renovation, which will also facilitate the fastest possible introduction of scientific and technical progress.

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<sup>1</sup>L. I. Brezhnev, "Ob osnovnykh voprosakh ekonomicheskoy politiki KPSS na sovremennom etape. Rechi i doklady" [Basic Questions of CPSU Economic Policy at the Present Stage. Speeches and Reports], Vol 2, Moscow, 1975, pp 246-247.

At the same time, the effectiveness of capital investments being made by a whole series of ministries and departments is still inadequate. We are updating fixed assets by nearly 50 percent every 8-10 years. However, the level of return on capital does not meet the demands being made by the party and government, which is a consequence of the inadequate use of the reserves of scientific and technical progress.

Bank institutions must more actively influence improvements in the reproduction structure of capital investments. In order to do this, they need to be well aware of the status of fixed assets in branches of the national economy, of the extent to which they meet the demands and conditions of scientific and technical progress.

The new USSR Stroybank Regulations approved by the government in October 1981 anticipate that the Stroybank will participate actively in shaping the capital investment plan. In this regard, bank institutions should not limit themselves just to accepting titles lists and opening financing in accordance with financing plans and capital investment limits, but should delve deeply into the qualitative aspects of these investments and evaluate their effectiveness. It is important to reveal if capital investments are actually being directed into the construction (renovation) of those projects which will produce output which, as was emphasized at the 26th CPSU Congress, corresponds to the best domestic and world models. This orientation to bank activity is especially important in the stages of capital investment planning and accepting construction projects for financing, for many projects currently being put into operation are producing output which is often inferior in terms of quality to available domestic models. We need to strengthen our monitoring of investment concentration at the most important start-up projects, of the reduction in construction projects and sites being built simultaneously. Those expenditures being directed into the construction of projects with estimated costs below three million rubles must be monitored especially carefully. Unfortunately, certain financing agencies are displaying liberalism and localistic tendencies and have not set up reliable barriers to the scattering of funds.

We should also intensify monitoring of the shaping of intraproject titles lists. Capital investments must first of all be directed into projects being put into operation in 1982 and 1983; we should not permit expenditures on projects being begun now when there are underallocations of capital investments on start-up projects.

For 1982 as a whole, according to the plan, the amount of contractor work for all construction ministries has been increased six percent as compared with the preceding year. This is a realistic, balanced plan which gives adequate consideration to the capacities of construction organizations. However, attention is called to the fact that the amount of capital investment and construction-installation work do not accord fully with the opportunities of contractor construction organizations in a number of rayons. Bank institutions, jointly with the contractor and client, need to examine this problem and the appropriateness of such growth. Certain projects and complexes should possibly be postponed temporarily. But if the growth is caused by national economic necessity, then steps must be worked out to ensure plan fulfillment; for example, these might include the creation of mobile organizations, the use of reserves for increasing

labor productivity through the broad introduction of the brigade contract, increasing prefabrication, the better use of machinery, and others. Otherwise, start-up complexes might not be put into operation due to a scattering of forces and material resources.

This trend is of particular importance in intensifying the investment process, since balancing the capacities of contractor construction organizations with the planned amounts of capital investment and the resources being allocated for their utilization enables us to set participants in the investment process tasks on accelerating the start-up of projects and increasing capital investment effectiveness. The problem of construction intensification, as a decisive condition of accelerating the investment cycle, must be the center of attention for USSR Stroybank institution workers. Resolution of the problem is largely associated with mechanizing and automating production processes in construction, where the level of manual labor was 57.5 percent in 1979 according to data from a Central Statistical Administration survey; with reducing losses and nonproductive expenditures of working time, which reach 16 percent or more of the workers' shift time; with the intelligent use of material resources; with freeing large stocks of long-inoperative uninstalled equipment and putting it into operation. We need to prevent the enormous losses connected with long shut-downs of enterprises under construction. The process of ensuring economy in all stages of the investment cycle must be under close supervision.

Stroybank institutions have recently intensified their monitoring of progress in carrying out the start-up program and, on this basis, have achieved certain results in accelerating capital investment turnover. However, it must be recognized that plans for putting facilities and capacities into operation are still being carried out unsatisfactorily at a whole series of construction sites. This is especially applicable to ferrous and nonferrous metallurgy and to construction sites of the Ministry of Mineral Fertilizer Production.

In a number of instances, formalism, a superficial approach to and inadequate analysis of the causes of failures to meet schedules for starting up capacities and fixed assets, and manifestations of localism have been permitted in monitoring the start-up program. We are not revealing promptly that plans for putting projects of secondary importance into operation are being carried out better than plans for putting the most important projects into operation. Such instances were revealed in Bashkiria, Turkmenia and the Ukraine (Vinnitsa). In a number of places, bank institutions have not blocked localistic tendencies in the construction of administrative, entertainment and sports facilities. In spite of a direct prohibition, such expenditures have been permitted, in gross violation of state discipline.

We have now drawn up a list of particularly important construction projects whose start-up will resolve the national economic tasks of economic and social development. They should be monitored especially well and their prompt start-up should be assisted in every way possible. Of course, this does not signify that attention need not be paid to other construction projects. They must also be put into operation according to plan, or else proportionality of development will not be ensured. In case construction organizations divert capacities from the most important construction projects to those of secondary importance, banks must resolutely use their credit influence, up to and including the cessation of all crediting.

We need to increase the responsibility of bank institution leaders, economists and engineers for carrying out this important state task. There is no place for promises and lack of discipline. Bank workers must participate actively in analysis and verification, help reveal construction bottlenecks and participate in working out measures on starting up capacities within the established time periods.

Of course, the banks, construction organizations and clients must do this work independently, without waiting for the arrival of "special representatives."

In order to increase capital investment effectiveness and the return on capital, we need to intensify our monitoring of how capacities are used at existing and new enterprises. Stroybank institutions checked and analyzed the use of new capacities at a number of enterprises, and serious shortcomings were revealed. Thus, 27 production capacities were put into operation at Ukrainian SSR ferrous metallurgy enterprises in 1980 and 20 of them, or 74 percent, did not achieve planned indicators in terms of output produced within the normative schedules for mastering new capacities. As a result, 53 million rubles worth of output was not received. This testifies to the fact that we must become thoroughly aware of how previously created production potential is being used when resolving questions of new construction and new capital investment. Without a thorough analysis of the state of affairs concerning production capacities use, financial agencies and banks will not be able to fully influence the intelligent use of capital investments. Bank institutions need to constantly analyze reporting data on the utilization of capacities as they are put into operation, comparing them with plan indicators. This provides an opportunity to reveal more fully the causes of deviations and to establish who is to blame for allowing lag in indicators, as well as to promptly develop proposals aimed at increasing capital investment effectiveness.

One important direction in which the activity of banking agencies in the area of capital investment is being improved is in engineering work. Stroybank system engineers participate in checking estimates and making monitoring measurements. Suffice it to say that adjustments were made at the suggestion of the banks in the 10th Five-Year Plan which lowered costs by nearly nine billion rubles. On the whole, the necessary monitoring of project acceptance for operation and of housing quality is being ensured.

Under present conditions, the engineering service is facing big, important tasks. We anticipate a five-percent reduction in the estimated cost of construction in the 11th Five-Year Plan. However, unsubstantiated estimate reviews, excesses in finishing, and overexpenditures of metal, lumber, cement and materials are being permitted in many places. We need for bank workers to more actively influence the lowering of construction costs, improvement in construction quality and economy practices at each construction site.

The most important direction in the activity of all financial agencies is the taking of steps to strengthen the role of the credit-calculation mechanism in increasing the effectiveness of the investment process. Theory and practice confirm the necessity of making active use of bank credit in this process. By substantially increasing the role of credit in the financing of capital investment, we can substantially strengthen planned economic ties among participants

in the investment process and increase their effectiveness. This orientation to credit results from its special place among the economic instruments of management and its role in the distribution and redistribution of monetary means among the various links of the national economy, branches, associations and enterprises. By demanding the rapid reimbursability and profitability of credit measures and the payback of loans it makes, the bank uses credit to actively facilitate strengthening cost-accounting relations in construction. Credit provides an opportunity to actively orient investment process participants towards choosing the most efficient resolutions, towards the economical expenditure of funds, towards mobilizing intrasystem resources to repay loans. Since it possesses great maneuverability and flexibility, bank credit facilitates the search for the best ways of managing. As a planned, effective economic stimulus and an integral part of the national economic plan, credit acts as an instrument for effecting the unified state investment policy, following plan proportions, and distributing and using resources in accordance with social needs.

Through credit, the state provides capital investment with the needed resources in accordance with national economic development plans. In the course of credit planning, the bank has an opportunity to learn if the labor and material resources needed for construction which are being allocated are balanced with financial resources. Using the credit mechanism, the bank monitors progress in carrying out the capital construction plan. Finally, credit becomes a form of planning and economic incentives at construction sites and in production collectives, and it influences the implementation of plan assignments by activating the cost-accounting principle.

In the 10th Five-Year Plan, 82 percent of the enterprises built using long-term credit were put into operation on or ahead of schedule, while this indicator did not exceed 25 percent for all construction projects, regardless of sources of financing. Capacities were mastered ahead of schedule at 58 percent of the enterprises put into operation using credit, which is considerably better than for financing from all sources. Of course, it is not a matter of some miraculous power of credit. When evaluating the above facts, we must not fail to take into account, first, that it is the most profitable, most quickly reimbursed projects which are chosen for crediting and, second, that, given comprehensive use of the credit mechanism, the bank's economic influence on investment process participants actually increases.

In recent years, credit's proportion of all capital investment sources in the production sphere has been 12-14 percent. Major chemical, mineral fertilizer production, ferrous and nonferrous metallurgy and other facilities are being built. Suffice it to cite the nitrile acrylic acid production facility at "Polimir" production association in Novopolotsk (Ministry of Chemical Industry) and the ammonia production facility at the Port of Odessa plant (Ministry of Mineral Fertilizer Production). For these construction projects as a whole, credit reached more than 75 percent of all capital investment. Consequently, credit can occupy a worthy place in sources of financing. Based on this, bank workers are faced with the task of tirelessly perfecting the credit mechanism and increasing its role in strengthening cost accounting.

Credit-calculation relations with planning and construction organizations have been significantly broadened. Bank credit ties with planning-surveying

organizations are now developed intensively in the planning stage, calculations have been introduced for complete estimate-planning documentation, and interest rates are being differentiated as a function of the extent to which planning schedules are met and how well, providing an opportunity for the fuller use of credit to strengthen bank influence on such organizations.

The credit-calculation mechanism is set up for converting estimates and titles lists into a stable normative for planning and financing construction, for stimulating the development of plans on the basis of progressive scientific-technical resolutions permitting the effective use of material, financial and labor resources. As a result, conditions are created for strengthening bank monitoring of the stability of the estimated costs of construction.

We have now completed work on changing construction organizations over to calculations for fully completed construction and for enterprises, start-up complexes, lines and projects ready to release output and render services. The replacement of advances with direct bank credit has created all the conditions necessary for the uninterrupted implementation of planned construction organization expenditures at all stages of funds circulation.

The Stroybank has become a very large credit institution -- credit investments at the start of 1982 had reached 80 billion rubles. The increased effectiveness of the credit-calculation mechanism has already begun having a positive effect. Thus, the mobilization of funds designated for capital investment in 1981 was done considerably more fully than in preceding years.

At the same time, it should be noted that the total shortfall in contributions is still high in a number of republics. This deprives Stroybank institutions of an opportunity to fully shape credit resources to be used for unfinished production. Ensuring that contributions are made fully and promptly is an important way of improving the economic-financial activity of the client and contractor. In the future, we will need to make financing dependent on contributions of own funds if funds designated for financing capital investment are not contributed in full; we will have to pose the question of lowering the financing limit without changing the start-up of capacities and fixed assets. This measure will increase the cost-accounting responsibility of the ministries and departments.

The results of an analysis of the development of credit relations in 1981 showed that the experience accumulated earlier in Belorussia, Lithuania and the Ukraine in crediting unfinished production in construction has played a positive role. On the whole, the transfer of all construction organizations to calculations for finished commodity construction output basically went well. Normative documents were developed which regulate crediting procedures. Close bank credit ties with the economy help reveal promptly any bottlenecks in the work of construction organizations and all other participants in the construction conveyor and to take steps quickly to eliminate shortcomings.

However, we are still faced with sustained, persistent work on making fuller use of the credit-calculation mechanism and its continued improvement in the area of capital construction. The facts available demonstrate that the credit-calculation mechanism is not yet being fully used everywhere to improve the efficiency

of construction production. Credit is not yet having the necessary stimulating influence everywhere on the interests of loan recipients in making their actions correspond fully to statewide aims. At the same time, the effectiveness of credit as an economic stimulus consists in its arousing, through economic means, the collectives of enterprises, associations and organizations to take steps to accelerate the investment cycle, to increase capital investment effectiveness, to meet the goals of social production.

We must take immediate steps to increase state discipline and the responsibility of every economist for ensuring that credit is issued properly, that it is repaid promptly, and that all the other most important principles of direct bank crediting are followed. We should increase responsibility for ensuring the prompt return of credit. Overdue bank loans in fact testify to shortcomings in debtor activity.

Under present conditions, a significant portion of profit is spent to pay interest on credit. Given the low profitability of construction production, work on ensuring the prompt return of credit is at the same time an important means of strengthening the finances of all participants in the investment process. Overdue debts or debt transfers to isolated accounts for projects not released on schedule and higher payments for credit must be viewed as alarm signals requiring immediate steps to ensure the accelerated start-up of fixed assets, better labor and production organization, and putting the borrower's affairs in order. However, the available materials prove that loan debts remain in special accounts for long periods in certain bank institutions, as in the Latvian SSR Ministry of Construction and Estonian SSR Ministry of Construction, for example. Such cases are impermissible and deserve harsh condemnation.

A differentiated bank approach to the organization of credit relations must play an important role in strengthening payment discipline. Construction organizations which are operating poorly must fall under the influence of bank sanctions. Skillful use of the sanctions permitted by law will generally assist in improving the state of affairs as quickly as possible. The overwhelming majority of the sanctions imposed by the bank have a prompt impact, generating conditions permitting rescinding of the sanctions. Thus, the Gor'kovskaya Oblast office stopped issuing calculation credits to DSK-2 of the USSR Ministry of Construction's Glavvolgvyatskstroy in February 1981 because of failure to meet plan indicators. As a result of steps taken, DSK-2 significantly improved its work indicators, and the sanctions had been lifted by 1 October. At the same time, one still encounters cases in which sanctions are imposed formally and are thus in effect sometimes for more than a year.

Further improvement in the organization of economic work, which means analyzing information describing the state of affairs in construction and revealing the actual reasons for deviations from the plan, is an immediate task of all financial agencies. Correctly organized economic work permits the timely prevention of gaps in construction site and contractor organization activity. In the course of their economic work, bank institutions reveal instances in which certain construction organizations have been operating unsatisfactorily for long periods. Sometimes the indicators of individual contractor organizations are at the level of the start of the 10th Five-Year Plan, although capital- and machinery-availability have been increased significantly in the interim and other important

steps have been taken to increase labor productivity. These facts were established in individual construction organizations of the Ukraine and Latvia. If construction organizations have long been operating unsatisfactorily and all forms of influence have been exhausted, the banks must break off credit relations with them and pose the question of eliminating them or combining them with other organizations.

Materials from checks testify that overexpenditures of material resources and direct waste of state funds are still being permitted in many instances. For example, about 60 percent of the cost overruns due to exceeding planned materials net costs in organizations of the Tajik SSR Ministry of Construction was caused by above-norm production expenditures to eliminate damage, unfinished work and defects in construction components at construction sites. Instances of unsatisfactory storage and recording of material goods were revealed at a number of ministry construction sites, creating conditions for theft.

Bank institutions must increase their monitoring of the correctness with which all allocated resources are used. Unfortunately, certain construction organizations release materials to outside organizations. In a number of ministries, such transfers have diverted considerable material resources, which cannot but affect capital construction plan fulfillment. Financing agencies must be intolerant of such facts and strictly monitor implementation of the CPSU Central Committee and USSR Council of Ministers Decree of 30 June 1981 "On Intensifying Work on Saving Raw-Material, Fuel-Energy and Other Material Resources and Using Them Efficiently."

We cannot ignore the major shortcomings still being permitted in a number of construction organizations in the area of labor organization: Increased monitoring of wage fund use, labor-payment planning and labor productivity growth will permit the creation of conditions favorable to meeting taut plan assignments in the 11th Five-Year Plan in the area of increasing labor productivity in construction.

We need to do everything we can to facilitate the development of brigade cost-accounting. Life has confirmed that success is assured when this method of labor operates correctly, on a good foundation, when all the organizational aspects of labor and material supply are well thought-out. For example, the Tallinn DSK [house-building combine], which was transferred to the integral-process brigade contract, performed 117 million rubles worth of work during the 10th Five-Year Plan, or 106.2 percent of the plan; plan fulfillment in 1981 was 111 percent. The brigade contract has permitted a 39 percent reduction in construction duration as against the established norms. In 1981 alone, 751,000 rubles, or 3.2 percent of the calculated cost of the work performed, was saved as a result of this.

In their practical activity, Stroybank institutions must be governed by the provision of the new USSR Stroybank Regulations that states: "...with regard to enterprises, associations and organizations not meeting their obligations to the USSR Stroybank, permitting construction mismanagement and violations of plan, planning, financial, cash-handling, calculation or credit discipline, the USSR Stroybank has the right a) to stop crediting in full or in part, with the exception of instances anticipated by USSR legislation...."

In performing their economic work, it is the task of Stroybank institutions to attach particular urgency to the question of combatting shortcomings in the activity of construction organizations. In reports to local party and soviet agencies on the status of capital construction, we should illuminate in detail progress in plan fulfillment and remember to call attention to those investment process participants who are delaying construction and negatively influencing it. Recent legislation in the area of capital construction requires better monitoring not only of the activity of contractor organizations, but also of client work. We need to focus attention on accuracy in implementing the USSR Council of Ministers Decree of 23 January 1981 "On Accepting Finished Construction Projects for Operation."

It is required that unswerving fulfillment of this decree be ensured, to wit: intensify monitoring to ensure that production projects be accepted for operation only if they are provided with operating personnel, energy resources and raw material, unfinished work has been eliminated, and installed equipment has begun producing output in amounts corresponding to the norms for utilizing planned capacities in the initial period.

Successful actualization of the assignments of the 11th Five-Year Plan in the area of capital construction will facilitate resolution of those enormous tasks outlined by the party and government in the area of the country's economic and social development.

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## BUILDING MATERIALS

### BUILDING MATERIALS MINISTRY COLLEGIUM MEETING

Moscow STROITEL'NYYE MATERIALY in Russian No 4, Apr 82 (signed to press 23 Mar 82) pp 7-8

[Article: "In the USSR Ministry of Building Materials"]

[Text] At an enlarged meeting, the collegium of the USSR Ministry of Building Materials Industry reviewed branch work results for 1981, the basic tasks set it by the five-year plan and the 1982 plan, and discussed steps aimed at successfully carrying them out.

A report was given by minister A. I. Yashin.

Taking part in the work of the collegium were officials of the CPSU Central Committee, the USSR Council of Ministers Administration of Affairs, the central committee of the trade union of construction and building materials industry workers, the USSR Gosplan and Gossnab, the USSR People's Control Committee, the union republic building materials industry ministers, leaders of the leading associations, enterprises, scientific research and planning organizations, and leading production workers.

As the speaker noted, as a result of the great labor upsurge elicited by preparations for and the holding of the 26th CPSU Congress and by the historical resolutions adopted by it, industry carried out the plan for the first year of the five-year plan in terms of overall production volume and production of a number of basic types of output, including cement, plate glass, ceramic finishing tile, asbestos, linoleum and other materials, as well as in terms of consumer goods production. Plan assignments on labor productivity growth and profit were met.

The widely developed socialist competition enabled us to reveal and bring into play major new production growth and improved efficiency reserves. The release of a number of new, progressive and improved types of materials and items increased significantly.

Capacities anticipated in the plan for producing asbestos-cement sheet, floor and finishing ceramic tile, were put into operation. New capacities were released for operation to produce output to meet agricultural needs. The housing-starts plan was overfulfilled.

Collectives of the leading enterprises, initiators of branch socialist competition, have made and are making a weighty contribution to developing industry.

Workers and engineering-technical personnel at the Sebryakovskiy Order of Lenin Cement Plant imeni P. A. Yudin provided more than 20,000 tons of cement above the plan and saved significant amounts of fuel and electricity. Obligations assumed for marketing output and labor productivity growth were more than met. The continuing successes of the Sebryakovskiy cement workers are based on leading production standards and on the constant attention of their leaders to the social and personal-services living conditions of workers and specialists.

The collegium noted the achievements of "Spassktsement" production association, which has worked hard to utilize the newly operational capacities of technological lines to produce cement by the dry method.

Major new successes were achieved in 1981 by fighting for a maximum increase in the release of output at existing capacities, improving product quality, and saving fuel, energy and other resources, by collectives at the Belgorod Asbestos-Cement Products Combine, the Borskiy and Saratov glass plants, Volkovysktsementnoshifer association, the Osipovichskiy Roofing Felt Plant, the Volgograd Ceramics Combine, the Yaroslavl'-stroyaterialy and Dnepronerudprom production associations, and others.

At the same time, there were substantial shortcomings in industry operation this past year.

The 1981 plan was not carried out in terms of output marketing volume by the Uzbek SSR Ministry of Building Materials Industry or the Glavasbesttsement. There are still many lagging enterprises which systematically do not cope with plan assignments, particularly in the ministries in Tajikistan and Latvia and in the Glavzhelezobeton.

The ministry as a whole did not meet the production plan for such basic types of materials and items as asbestos-cement sheet and pipe, window glass, soft roofing, radiators for heating, wall materials, and others.

The level of capacities use remains low at a number of cement plants and at many new enterprises producing silicate brick and blocks and ceramic drainpipes. Losses due to above-plan equipment down time and accidents caused by failure to observe technical operation and repair rules and due to the unsatisfactory state of production and labor discipline are still high in the branch as a whole.

The annual plan was not carried out in terms of capital investment volume and amount of construction-installation work. The ministries of building materials industry of the RSFSR, Azerbaijan and Estonia permitted significant underfulfillment of plan assignments for putting production capacities and fixed assets into operation. In so doing, they permitted an increase in the amount of unfinished construction.

The ministry collegium obligated the leaders of the union republic building materials industry ministries, main administrations, administrations and associations, governed by the resolutions of the November (1981) CPSU Central Committee Plenum and the provisions and tasks contained in the speech by Comrade L. I. Brezhnev, CPSU Central Committee General Secretary and USSR Supreme Soviet Presidium Chairman, at that Plenum, to carefully analyze the results of the economic activity of subordinate associations, enterprises, construction sites and organizations this past year and to quickly eliminate existing shortcomings in their work and to ensure:

fulfillment and overfulfillment of the assignments set by the five-year plan and 1982 plan, as well as the socialist obligations assumed by worker collectives, on the basis of better use of production capacities and improved labor organization;

fundamental improvement of capital construction affairs, concentrating material, labor and financial resources, construction equipment and means of transport, at start-up and the most important projects, improving capital investment effectiveness and reducing the amount of unfinished construction;

seeking out additional opportunities for the maximum development of consumer goods production, improvement in their quality and expanding assortments;

improvement in the operation of all types of transport, and rail transport first of all, reducing idle time in means of transport, and especially cars, during loading and unloading operations;

outstripping growth in production end results as compared with growth in expenditures on the basis of accelerating scientific and technical progress and improving labor productivity;

maximum economy of all types of material-technical resources, and primarily fuel, metal and lumber; eliminating all kinds of losses and unproductive expenditures, and also fulfillment of assignments set on average reduction in expenditure norms and on additional savings of output;

efficient expenditure of wage funds, strict observance of the proportions established in the plan between labor productivity growth and growth in average wages;

raising the level of economic work and plan discipline, accelerating the change-over of the economy to a path of intensive development, strengthening cost accounting;

intensifying work on labor safety, reducing accidents and injuries.

The collegium resolution anticipates specific assignments on ensuring fulfillment of plans for producing a number of the most important types of output.

Thus, jointly with the Glavniiprojekt, the republic ministries, scientific research and planning institutes and the Orgproyekttsent, the Glavzapadtsement and Glavvostoktsement are instructed to work out measures which will ensure the steady operation of cement industry enterprises, and foremost the Checheno-Ingushskiy, Chernorechenskiy, Nikolayevskiy, Navoiyskiy, Akhangaranskiy and Bekabadskiy plants.

The attention of the building materials industry ministries of the RSFSR, Belorussian, Lithuanian, Latvian and Estonian SSR's, the Glavzapadtsement, Glavvostoktsement, Administration of Wall and Insulation Materials Industry and Administration of Lime and Binders, was focused on the necessity of taking the steps necessary to ensure unconditional fulfillment of the assignments anticipated for the current year and the remainder of the five-year plan on producing and delivering ceramic drainpipes, powdered lime, fiberglass mat, materials and items for rural and reclamation construction in RSFSR Nonchernozem Zone regions, and also assignments on the construction and start-up of corresponding capacities and projects.

With a view towards promptly carrying out assignments on raising the technical level of construction brick production, the ministries of building materials industry of the union republics, and the Administration of Wall and Insulation Materials Industry should ensure the immediate issuance of initial data for planning the construction of new brick plants and the renovation and retooling of existing ones.

The ministry collegium obligated all economic leaders to assume constant monitoring of the implementation by subordinate enterprises of measures to reduce expenditures of raw material, fuel-energy and other material resources, the norms and assignments set

for 1982 on economizing on them, to systematically track observance of maximum expenditures per ruble of commodity output, analyzing the reasons for deviations from planned net cost and resolutely combat mismanagement and nonproductive expenditures.

The collegium obligated the republic ministries, branch main administrations, administrations and associations to concentrate their efforts and resources on meeting state plan assignments on introducing new equipment and progressive technology and on producing effective building materials and items as anticipated by the 1982 state plan for developing science and technology. In particular, it was proposed that the Kazakh SSR Ministry of Building Materials Industry complete its work on setting up the production of decorative cement using low-temperature (salt) technology in the first half of 1982 and that the RSFSR, Ukrainian and Azerbaijan SSR ministries of building materials industry carry out steps to develop the production of better-quality gypsum-cardboard sheetrock in the amounts established by the plan in 1982.

The Glavasbesttsement is instructed to take steps to ensure the steady operation of technological lines producing asbestos-cement extrusion panels at the Voskresenskiy combine beginning with the first quarter of 1982.

The report and the collegium resolution pointed out the necessity of eliminating as quickly as possible a number of shortcomings in the development of branch science. Many institute workers are not yet having an appreciable influence on the state of affairs in industry. There is little work associated with designing modern equipment, mechanisms and means of automation.

The collegium paid serious attention to questions of improving capital construction. As was noted in the resolution, the republic ministries and the main administrations, administrations and associations, jointly with contractor construction organizations, must ensure that material and labor resources, construction equipment and transport are concentrated at start-up construction sites, focusing particular attention on finishing the construction of projects not put into operation in 1981.

Direct-labor construction will increase significantly in 1982, in which connection, work on supplying equipment, mechanisms and materials for this purpose must be intensified in order to ensure the start-up of production capacities, housing, cultural and personal-services projects on schedule.

The attention of the RSFSR and Latvian SSR ministers of building materials industry and the Glavsantekhprom chief was focused on the absence of proper monitoring by them of the start-up of production projects. The collegium obligated them to examine the reasons for failures to meet plan assignments and the question of the responsibility of workers assigned to construction sites and to take steps to finish as quickly as possible the construction and start-up of projects not put into operation in 1981.

It noted the unsatisfactory work results in capital construction in the ministries in Moldavia, Kazakhstan, Azerbaijan and Estonia, and also in the Glavnemetallorud, Glavremmekh and Glavzapadtsement. It was suggested that their leaders achieve a fundamental improvement in affairs at their construction sites as quickly as possible.

Subsidiary farms providing significant amounts of meat and dairy products, potatoes and vegetables for plant dining halls and for sale through the trade network have been created and are operating successfully at many building materials industry enterprises,

and in particular at those of the Russian Federation and in the Glavasbest. In view of the importance of this work, the collegium instructed the republic ministries and the branch main administrations to work out and implement in the very near future measures to develop subsidiary farms. They must be created at all enterprises.

Speaking at the collegium meeting were the following ministers of building materials industry: RSFSR -- S. F. Voyenushkin, Ukrainian SSR -- A. T. Shevchenko, Georgian SSR -- O. I. Lolashvili, Kazakh SSR -- B. P. Parimbetov, Latvian SSR -- N. I. Dorofeyev, Azerbaijan SSR -- R. D. Sadykov, Tajik SSR -- I. V. Shevchenko and First Deputy Minister N. P. Kabanov; Glavasbesttsement chief V. Ya. Zhuk, Glavsnab chief K. K. Lesin, transport administration chief V. Ye. Nevzgodina, and 1981 State Prize winner and apparatchik at Osipovichskiy Roofing Felt Plant V. A. Kachan.

In a joint resolution with the branch trade union central committee, the ministry collegium approved an initiative by collectives of production associations, enterprises and organizations, brigades and the workers in leading building materials industry occupations on developing socialist competition for successful fulfillment and overfulfillment of the 1982 state plan and a worthy greeting to the 60th anniversary of the formation of the USSR, as well as 1982 socialist obligations for building materials industry as a whole.

The collegium and the trade union central committee obligated the union republic ministries, branch main administrations, administrations, scientific-production associations, and the republic, kray and oblast trade union committees to create the conditions necessary for those competing to unconditionally meet the socialist obligations assumed.

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## BUILDING MATERIALS

### QUALITY IMPROVEMENTS IN BUILDING MATERIALS PLANNED

Moscow STROITEL'NYYE MATERIALY in Russian No 4, Apr 82 (signed to press 23 Mar 82)  
pp 2-4

[Article by N. P. Kabanov, USSR first deputy minister of Building Materials Industry:  
"Basic Directions of Technical Progress in Building Materials Industry"]

[Text] The 26th Party Congress singled out intensification of the economy and improving the effectiveness of social production in every way possible as being among the most important national economic tasks of the 1980's and the current five-year plan. Implementation of this most important socioeconomic task will demand the extensive use of the latest achievements of science and engineering.

The resolutions of the November (1981) CPSU Central Committee Plenum and the Sixth Session of the USSR Supreme Soviet were especially forceful in orienting the laborers of our country towards accelerating scientific and technical progress and using its achievements in practical economic and cultural development.

Based on this, the following top-priority tasks have been posed in the area of developing branch science in the current five-year plan:

- ensuring the development and implementation of a comprehensive program of scientific and technical progress and target programs to solve the most important branch problems;

- strengthening and expanding reciprocal ties between science and production, increasing the responsibility of the union republic ministries, main administrations, administrations and associations for the level of research at scientific institutions, and using as quickly as possible the results of completed scientific development and inventions in production;

- substantially reducing the time involved in developing and mastering new equipment, technology and highly effective building materials and components;

- promptly determining and changing the direction of research and development, and perfecting the organizational structure of scientific institutions in accordance with the demands of the scientific and technical revolution.

In light of these tasks, we are faced with much purposeful work on improving the activity of scientific organizations and the science management system.

During the 10th Five-Year Plan, certain positive results were achieved in raising the technical level of production and resolving the tasks of meeting the growing demands of capital construction for the basic building materials, which is being done on an

enormous scale in our country. Suffice it to say that 700 billion rubles worth of capital construction is being planned for the 11th Five-Year Plan, while 747 billion rubles (in comparable prices) was utilized during the first 50 years of Soviet power. Such a scope of construction makes new and greater demands on building materials industry.

Our country leads the world in amounts of cement, shingle, asbestos-cement pipe, asbestos, window glass, construction brick, lime and reinforced concrete items and components produced. At present, as a result of the high rates of development, the production volumes of many building materials have reached scales which basically meet the requirements of the national economy.

Under these conditions, the tasks of changing quality indicators and increasing the release of the most effective materials and items, those which ensure a rise in the level of industrialization, as well as lowering labor expenditures in construction, have moved to the fore. In recent years, more attention has been paid to these questions.

USSR Ministry of Building Materials production of a majority of types of effective materials increased more than 1.5- to two-fold during the five-year plan as compared with the 1975 level, and four- to five-fold for individual materials.

During these years, the branch mastered the production of upwards of 30 types of output not previously produced in the USSR, including extrusion asbestos-cement items, decorative architectural and finishing glass, multicolored ceramic tile, a new waterproofing material called hydrobutyl, new sealants, and others. At the same time, it should be noted that the scale of production of many of these types of output is entirely inadequate. All building materials industry workers and its scientific organizations are therefore faced with the task of accelerating the development of effective materials to more fully meet the needs of capital construction.

The use of progressive techniques and technologies was expanded in the 10th Five-Year Plan and highly productive domestically-produced equipment was put into operation, including large technological lines to produce cement using dry methods (3,000 tons per day), comprehensively mechanized and automated lines to produce large asbestos-cement sheet (33-45 million conventional sheets per year), and highly productive conveyor-type flow lines to produce ceramic finishing tile.

Branch science has created a certain stockpile whose use in the near future will enable us to arm industry with highly effective new technologies and equipment. Such developments will include:

- in cement industry -- creation of low-temperature (salt) cement technology and obtaining high-strength and prestressed cement with crystallization "krent" additives;

- in asbestos-cement industry -- creation and mastering of asbestos-cement extrusion technology;

- in glass industry -- mastering methods of radically retooling glass production on a base of new technology and highly productive equipment; a fundamentally new method of obtaining tempered and reinforced glass items; a method of founding glass in a cyclonic power-technological unit.

However, there are on the whole many unsolved problems in branch science and engineering.

The technical level of individual production facilities lags behind modern requirements. The unit power of many technological lines and basic units is low. Fuel and energy expenditures are high in the production of hard-burnt brick and cement, glass and wall materials. A majority of the materials and items are distinguished by high labor-intensiveness.

In accordance with the policy set by the 26th CPSU Congress, the activity of branch scientific research, planning-design and technological organizations must be subordinated to the most important socioeconomic tasks facing industry.

With a view towards ensuring significant labor productivity growth and an actual reduction in labor expenditures on manufacturing, it is being demanded that branch science and its experimental base develop highly productive technological lines and units and effective means for mechanizing and automating labor-intensive processes, especially for operations with difficult working conditions. Unless this task is resolved, we will not be able to ensure the planned production increment or meet all technical-economic indicators.

The branch faces the very critical problem of saving fuel, energy and scarce material and raw-material resources in every way possible. The way to solve it is to develop and introduce resources-conserving technologies, economical heating units and technical means of burning fuel efficiently and using on a large scale industrial waste and by-products and plentiful natural raw material.

Enterprises of the ministry system consume more than 46 million tons of conventional fuel annually, and lowering expenditures of fuel by just one percent would provide a savings of more than 460,000 tons.

In this area, especially large tasks face workers in the cement industry and its scientific research institutes.

Cement industry is the most energy-intensive, consuming about 45 percent (22 million tons) of conventional fuel and nearly half the electric power expended by enterprises of the ministry system.

There are many ways of lowering fuel expenditures on roasting clinker, including: using the low-temperature technology developed by science; introducing into the raw-material mixture ash and slag, that is, products which have already been heat-treated; further expanding the production of multicomponent cements while retaining the technical properties and quality of the end product. Another big reserve lies in reducing slurry moisture content (through various liquefying additives, mechanical dehydration using a filter press, and so on).

The extensive introduction of dry cement production is, of course, a radical resolution, and more and more capacities will be created in the future to use this technology.

By the end of the five-year plan, we anticipate a savings of about one million tons of reference fuel per year due to implementation of the indicated measures.

There are considerable reserves in glass industry, also a fuel-intensive subbranch.

As is known, the efficiency of fuel use in glass making is very low, basically as a consequence of high heat losses through the furnace walls, crown and hearth and in

waste gases, as well as due to the low coefficient of heat transfer from the torch through the glass mass. Domestic and foreign glass industry have therefore worked out a number of practical directions in which to sharply reduce these losses. In particular, the electric smelting of glass in pure or combined form enables us to improve furnace efficiency by 10-15 percent.

Research has been done on and the development has begun of glass-smelting furnace insulation using kaolin and basalt fiber, various refractory materials and light-weight, heat-resistant concretes in recent years. Introduction of these measures at six glass-plant furnaces in "Vladimirsteklo" production association has ensured a savings of on the order of 10 percent of the fuel they use.

A significant impact can be obtained by utilizing waste-gas heat. The boiler recovery unit installed on one furnace at Kalinin Glass Plant heats all the shops completely; similar experience is available at Salavatskiy Glass Plant as well.

Increasing the service life of glass-smelting furnaces between repairs is a big reserve in glass industry. A certain amount of work has been done along this line, but the experience of the leading plants is being disseminated slowly.

More attention should be focused on questions of more correctly approaching the use of liquid fuel, and this applies to all subbranches of industry. Unfortunately, many enterprises and institutes do not have adequate heat-engineering services which could pay more attention to questions of burning this type of fuel more efficiently (beginning with pre-heating it to the necessary temperatures, depending on viscosity, to selecting precombustion chambers and automatically regulating fuel expenditure and the fuel-air ratio to achieve a proper flame shape so as to provide the highest heat-transfer effect).

Specific fuel expenditures are high in the glass materials industry, especially when manufacturing argillaceous brick, which is connected foremost with inadequacies in a number of heating units at existing enterprises and with frequent failures to follow technological routines.

Good economies are being achieved in hollow-brick production. As is known, production of such brick provides a significant reduction in materials-intensiveness, permits a 15-20 percent reduction in fuel expenditures and, in construction, in addition to reducing the weight of the buildings, improves their thermotechnical indicators.

Nationwide, on the order of 20 percent of the brick produced is hollow-body clay, but in the Lithuanian SSR, for example, it averages considerably more -- 43 percent, in the Latvian SSR -- 34 percent, and in the Kirghiz SSR -- 44 percent.

Analysis of the figures and production experience indicate that much can be done in this area given the existing conditions in other union republics as well.

But whereas increasing hollow-body clay brick production is hampered by certain difficulties -- poor-quality clay or a lack of needed equipment -- in a number of instances, the slow growth in the production of silicate brick with holes can be explained only by insufficient work organization. Silicate cavity brick production is currently less than 20 percent.

Changing over all plants to producing silicate brick with technological holes will ensure a savings of eight million tons of raw material, 100,000 tons of conventional fuel on roasting less lime, as well as reducing transport shipments.

The task of saving fuel and energy resources is equally important in other subbranches of industry and should be paid the proper attention.

Large amounts of scarce materials, including phenolic alcohol, methyl cellulose, food starch, asphalt, polymer materials, soda, asbestos, kaolin, and so forth, are used in the production of many types of output.

Under present conditions, the development of technical resolutions and fundamentally new technologies which will permit the saving of scarce material resources and their replacement by abundant ones, including scrap and by-products from other branches of industry, is also one of the basic tasks of branch science.

As was already noted, building materials industry plays a large role in improving capital construction efficiency. The creation of effective new materials and the development of technical and technological resolutions ensuring improvement in product quality and increased construction industrialization and improved architectural-artistic expressiveness, reliability, durability and heat-engineering properties of buildings and structures, is one of the primary tasks of branch science.

The considerable work done over the past two years on shaping branch target programs for developing and introducing new equipment has enabled us to determine concrete ways of developing branch science and engineering in the 11th Five-Year Plan and up to 1990.

Thus, the basic assignments of the target program anticipate implementation of 35 large measures on developing, mastering the production of and introducing new equipment.

In cement industry, we anticipate the industrial mastering of the production of cement using low-temperature (salt) technology. In particular, we plan to finish the development of this cement technology under industrial conditions in 1982 and to introduce it at technological lines in existing plants in subsequent years of the 11th Five-Year Plan. The unit power of the lines will thus be increased by 20-30 percent, specific fuel expenditure will drop by 20-25 percent and the net cost of a ton of cement will be reduced by 1.7 rubles.

The utilization of improved technology and dry-method cement production equipment using a decarbonizing reactor will enable us to increase the productiveness of furnace units by 40 percent, to lower specific fuel expenditure and to increase the service life of rotary kilns between repairs by improving lining stability and other technical-economic indicators.

In glass industry, the target program anticipates solving the problem of developing and utilizing new technological processes and equipment which will permit improving the efficiency of the production of various types of glass and glass products. It anticipates the development and utilization of technology and equipment for producing new types of heat-reflecting and heat-absorbing glass, as well as hardened large-dimension and colored architectural-construction glass.

We are planning the development and pilot-industrial utilization of technology and equipment for manufacturing alkali-resistant fiberglass to be used in dispersion or stranded reinforcing for concrete and asbestos-cement building components. Fiberglass reinforcing significantly improves the strength characteristics of concrete and permits a 20-30 percent savings in cement and up to a 50 percent savings in metal.

Other glass-industry program assignments anticipate the development of wet-method high-quality fiberglass mat production using highly productive technological lines (up to 30 million square meters and larger) for reclamation work, pipeline waterproofing and fiberglass roofing material manufacture. Meeting these assignments will permit a corresponding improvement in the quality and reliability of waterproofing and soft roofing, a two- to five-fold increase in labor productivity in their production, and an expanded assortment of effective roofing and finishing materials.

The basic direction of work in the area of wall, binding and heat-insulation materials in 1981-1985 will be improving the structure of these materials and lowering the materials-intensiveness and fuel-energy expenditures of their production.

The decree adopted by the USSR Council of Ministers on raising the technical level of construction brick production faces us with a great deal of work on renovating and retooling existing enterprises based on modern technology and highly productive equipment, mechanizing and automating production processes, and setting up the large-scale production of efficient ceramic wall products.

The extensive use of coal-concentrating wastes in brick manufacturing enables us to obtain a higher-quality product with over 30-percent hollowness and to lower net costs by 20-25 percent by reducing expenditures on mining raw material and by saving technological fuel. With the large-scale use of fuel-containing additives in brick industry, the annual volume of their use should reach 7.5 to eight million tons and the release of clay brick using industrial wastes should reach 40 percent of total production volume. This will permit an additional savings of 1.5 million tons of fuel annually.

In insulating materials industry, we plan to master the automated-line production of high-efficiency mineral-wool items to reduce the weight of wooden components used in rural construction and of mineral-wool, very rigid 200 kg/m<sup>3</sup> sheets for keeping lightweight building and structure roofs warm.

Important measures are outlined in the program on developing the production of various types of highly effective industrial gypsum items, and in particular, of ones for inside passageways in housing, civil and industrial buildings. The task has been set of developing domestic highly productive conveyor lines to produce gypsum-cardboard and gypsum-fiber sheetrock.

In the area of roofing and waterproofing materials, the program anticipates the development of nonroll bitumen-mastic roofing material production and development of the production of fiberglass roofing material, which is of high quality and reliable in operation. Use of these materials in construction will enable us to solve the problem of mechanizing soft roofing installation work and improving roofing durability.

We have outlined the development and industrial utilization of new technology and highly productive equipment to produce greased linoleum, including frothed types, as

well as industrial installations for producing highly efficient sealants and sticky mastics. New types of nonhardening sealants for use in a broad range of temperatures will be developed and utilized, as well explosion-resistant mastics which are very sticky and the equal of the best types in terms of their properties.

The major problem of asbestos-cement and asbestos industry is to broaden the products list of its output, using to do so the possibilities offered by extrusion and seeking out new areas in which to use asbestos, and foremost the lower grades -- 5 and 6.

In ceramics industry, we anticipate the extensive introduction of the lead models of automated technological lines which have been mastered for manufacturing highly productive -- 700,000 to 1,000,000 square meters per year -- ceramic sheet. The lines are equipped with glazing conveyors with various decorating installations.

The enumerated most-important target scientific and technical programs unify the primary tasks of industry. However, these programs, approved in the five-year plan, comprise only 25 percent of all scientific research. A number of highly effective developments are to be carried out under branch program assignments.

One important and mandatory condition for successful implementation of the program assignments is providing for them comprehensively. We need to closely interlink capital construction plans with plans for introducing new equipment. We anticipate directing about 32 percent of all the capital investments being allocated the ministry in the 11th Five-Year Plan into developing science and engineering, into retooling and renovation. Moreover, another 500 million rubles or more will be allocated from the unified science and technology fund for technical development.

In order to successfully carry out the target programs and increase the effectiveness of branch science activity, we will continue working hard on putting into proper order the network of branch scientific research, planning-design and technological organizations, eliminating multidirectionality and duplication in their activity, improving the organizational structure of the institutes, eliminating small, relatively unprofitable subdivisions, regrouping scientific forces and means along the most important lines of scientific and technical progress, and increasing the yield from and resultancy of each scientist.

It must be noted that, in the course of carrying out the CPSU Central Committee and USSR Council of Ministers decree on perfecting the economic mechanism, the ministry has done a certain amount of work on improving the structure of branch scientific and engineering development management. This year, we completed the transfer of scientific research institutes, enterprises and associations to the cost-accounting system of organizing work on developing, utilizing and introducing new equipment on the basis of a target-program method and job-authorization orders (contracts).

The main thing now is for the new scientific-technical progress management mechanism to work smoothly in the branch. The work of scientific-technical and planning-design institutes should be concentrated on solving the most important, top-priority branch problems, as well as on creating a scientific-technical stockpile in the 11th Five-Year Plan.

In view of the growing role of cost-accounting principles in the activity of the institutes and the deeper and better-substantiated evaluation of end results, we should

strengthen the economic services of the institutes, orienting their work towards the more comprehensive technical-economic substantiation of the proposed subject matter.

Restructuring the work of the branch scientific organizations will enable us to mobilize collectives for the successful carrying out of assignments on developing and introducing new equipment which determine the general directions of scientific and technical progress in the branch.

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BUILDING MATERIALS

SUMMARIES OF ARTICLES ON BUILDING MATERIALS

Moscow STROITEL'NYYE MATERIALY in Russian No 4, Apr 82 (signed to press 23 Mar 82) p 38

[Abstracts of articles on building materials from No 4 of STROITEL'NYYE MATERIALY]

UDC 666.965.2

Mashin, A. P., Mashina, Z. A. "Silicate Brick Production Using Fluidics," STROITEL'NYYE MATERIALY, No 4, 1982, pp 9-11.

Examines a new method of obtaining a silicate mixture and simultaneously slaking lime in a jet mixer, in suspension in vortex counterflows of steam or compressed air moving at speeds close to that of sound. Describes the design features of the jet mixer and its parameters for mixing the silicate mixture in steam using single-stream and double-stream technological flow patterns. Compares experimental production data on silicate brick in a single-stream compressed-air and steam mixer with ordinary technology. Two illustrations, one table.

UDC 678.06:666.968

Klusson, O. Ye. "Mechanized Method of Obtaining Polymer-Mastic Film Coatings," STROITEL'NYYE MATERIALY, No 4, 1982, pp 11-12.

Proposes a method of vacuum-spraying polymer mastics to obtain roofing and waterproofing coatings. Gives optimum operating conditions for the mechanized application of mastic materials and indicated the physicomechanical parameters of film coatings. Tells of installations developed by the Minsk Branch of the VNIISMI [not further identified] for mechanized polymer-mastic application and provides the basic specifications for them. Two illustrations, two tables.

UDC 679.856.001.2

Lukasheva, T. T., Yunitskaya, Ye. I., Shakhova, A. V., Bobrinev, V. T. "Using Experience in Operating Single-Pass Crushed-Stone Production Layouts to Improve the Planning of Nonore Building Materials Enterprises," STROITEL'NYYE MATERIALY, No 4, 1982, pp 13-14.

Research results are given for a crushing-grading plant operating using a single-pass layout. Provides formulas for calculating screening effectiveness and the loads on fine crushers operating in a closed cycle with screeners, as well as the particle size of the crushing products. Four illustrations.

UDC 622.362

Shpak, D. N., Kholmogorov, A. P., Shlykov, L. A. "Experience in Extracting Sand-Gravel Mixtures Through Wells," STROITEL'NYYE MATERIALY, No 4, 1982, pp 15-16.

Work on extracting sand-gravel mixtures through wells by monitor-washing the rock in deposit and air-lifting the water-rock mixture to the surface is analyzed for Western Siberia. Flow charts are given for the installations, as are well operating specifications, properties of the sand extracted, the technical-economic indicators of the method and practical recommendations on its industrial application. Two illustrations, one bibliographic entry.

UDC 666.973.6.001.42

Dombrovskiy, A. V., Sazhnev, N. P., Goryaynov, K. E. "Increasing the Homogeneity of Cellular Concrete Using Impact Molding," STROITEL'NYYE MATERIALY, No 4, 1982, pp 17-18.

The influence of several technological parameters and the composition of the mixture on a lime-cement binder (aluminum powder content, slake water temperature, cement expenditure, active CaO content and water-hardening ratio) on the physicomechanical indicators and homogeneity of concrete using impact molding is studied. Recommendations are given for an optimum mixture composition ensuring that cellular concrete with good homogeneity and maximum compression strength, as well as with a high structural-quality coefficient, will be obtained. Three illustrations, one table.

UDC 666.961

Volkova, V. P., Labozin, P. G., Kozlov, V. V. "Polymer-Phosphate Glues for Gluing Asbestos-Cement Components," STROITEL'NYYE MATERIALY, No 4, 1982, pp 19-20.

Proposes a new polymer-phosphate glue on a vinylchloride and brand A-15 vinylacetate copolymer base, with alumochromphosphate binder and mineral filler, for gluing asbestos-cement components. Examines the physicomechanical properties of glued connections and their operating properties -- water resistance, frost resistance, chemical stability. Shows that asbestos-cement panels with glued joints are several times more rigid than those with joints which are screwed or fastened. Two illustrations, two tables, two bibliographic entries.

UDC 666.92:614.72

Severin, G. G., Konoval'chik, K. F., Semkin, V. I., et al. "Dust Removal From Aspiration Air of Mills for Grinding Lime and Sand," STROITEL'NYYE MATERIALY, No 4, 1982, pp 25-26.

Analyzes apparatus used to remove dust from aspiration air of mills for grinding lime and sand. Substantiates the use of granulated [charcoal?] filters to purify dusty air for breathing in grinding mills. Gives production testing results for the ZF-6M filter installed at the Voronezh Silicate Brick Plant to remove lime-sand aerosols. Two illustrations.

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## METALWORKING EQUIPMENT

### PRODUCTION, QUALITY CONTROL AT KIROV MACHINEBUILDING PLANT IN VITEBSK

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 5, May 82 (signed to press 19 Apr 82) pp 29-31

[Article by V. Shevchenko, deputy chief designer of the Vitebsk Machinebuilding Plant imeni S. M. Kirov: "Turned to Gain."]

[Text] The comprehensive management system of efficiency of production and quality of work [KS UEP] in our plant does not exclude a comprehensive quality control system, but even absorbs it. Let us say that KS UEP standards facilitate a reduction in an unjustified diversity of the norm and organizational-technical documents, make it possible to tie together the final and intermediate stages of the collective's activity on the basis of clear coordination, delimit rights and obligations of the executors, improve the utilization of working time, equipment and material resources, and evaluate the input of each worker objectively in implementing the production plans.

Experience convinces one that product quality is established at the early stage of preparation for production and depends on the efficiency of the "Control of the design and technological preparation for production" and the "Production-operational planning and accounting" systems. The preparation of control of the design for production by means of standards specifies, for example, the development of new and improved machine tools and consumer goods in accordance with achievements of modern science and technology, the maintenance of high standards of engineering solutions, the reduction to a minimum of the number of errors in developing technical documentation that affect the increase in work efficiency of individual executors, as well as of the collective as a whole.

The program for improving the design preparation for production also specifies work directed toward accelerating the finishing-off of the design documentation and refining new equipment to a standard that meets the requirements of the highest category of quality. This is facilitated, to a high degree, by standardizing the machine tools in this or that series. For example, this will make it possible to reduce the times for introducing and refining the equipment and ease its operation. Thus, for a series of machine tools with numerical programmed control [ChPU], standardization amounts to 69 percent; for a new series of centerless circular grinding machine tools -- 60 percent between basic and up to 85 percent for versions. Moreover, in designing new machine tools there is a possibility for maximum continuity of design solutions finished off previously, but of new quality.

The KS UEP also specifies wide utilization of data on machine tool operation at user plants. For this purpose, we send the users questionnaires, make special trips to customers, hold conferences, and strengthen ties with scientific research institutes and planning organizations.

We give our most serious attention to the study and use of advanced technical experience in the machinebuilding industry. Thus, in cooperation with the Vitebsk SKB [Special Design Bureau] ZSh and ZS [expansions unknown] alone, over 52 typical standardized units were introduced in production for the automation and mechanization of special machine tools which made it possible to increase the degree of their standardization with basic models to 86 percent. The reliability and life of the manufactured equipment were increased considerably. Its service until the first capital repairs was increased to 11 years.

It is impossible not to say something also about the following. Today our machine tools, with respect to accuracy of machining, meet all the requirements of the national economy and of export. True, those that are intended for the ball-bearing and fuel industries require additional modification, i.e., in finishing operations their precision must be increased to tenths of a micron. But under present conditions this is remediable. After some time passes they will become as precise and as good as the best.

However, it is one thing to create a perfect design which meets modern technical standards and an entirely different thing to embody it in metal, preserving all the planned indicators. To solve this problem it is necessary to insure clear-cut work in all subdivisions of the plant. Especially great is the role here of a system of operational production planning of the KS UEP whose purpose is to provide regular operation and uniform output of products in the established volume and variety for the greatest efficient utilization of available resources. The specified complex of organizational technical measures provides an increase in the technical and organizational level of production, including specialization, cooperation and utilization of production capacities; improvement in the procurement of material equipment for production and monitoring; improvement in the organization of labor, production, management and technical-economic planning (future, current and operational); improvement in political, training and learning work, and higher responsibility on the part of cadres for the implementation of functional obligations.

Operational production control is implemented according to the following technological stages: regular output of goods; marketing of products (sale and delivery plans), material-equipment procurement, design and technological preparation for production control, NIR [Scientific Research Work] and OKR [Experimental Design Work], as well as product quality.

Operational production planning and control are based on such principles as continuity, regularity, direct flow, proportionality etc. What do they represent? According to the principle of the continuous production process for manufacturing the planned products, for example, all subdivisions are given annual (in quarterly and monthly sections) schedule-plans for the production and output of finished products for the plant as a whole, as well as typical schedules for manufacturing units and important parts. These schedule-plans are based on developed calendar-

plan norms. The schedule-plans determine reference points for current and future work and make it possible for shop and department managers to approach production control creatively, foresee its requirements not only in the current, but also in the following month and quarter, provide for the continuity of planning of production and product output, the design, technological and material-equipment preparation for production etc.

Regularity is achieved by the strict and clear-cut implementation of schedule-plans, typical schedules and operational instructions on the basis of mutual highly exacting requirements, responsibility and monitoring, as well as provision by all, without exception, of functional services (departments) high daily level of operational production control at all technological stages.

Direct flow provides a reduction in the path of the product from start to finish, a reduction in the volume of freight traffic etc. Production specialization is based on creating specific product sections equipped with modern equipment and advanced technology, in a word, with everything necessary for successful work. Proportionality in production organization provides for the development of basic as well as auxiliary services and departments which eliminates the possibility of "bottlenecks" and disproportions in production.

The following principle is social-psychological. It insures clear-cut demarcation between service functions; rights and obligations; strict observance of labor laws and regulations for the internal division of work; mutual responsibility; a tolerant attitude toward criticism; monitoring the shaping of the structure of brigade and shift collectives; increasing the role of socialist competition, and the moral and material incentives etc.

At the first management level there is not only the joining of the interests of production managers, but their abilities (shop and department managers) to implement plans in set schedules, work efficiently, regularly and with good quality.

At the second level, there is the implementation of plans in set volumes and varieties. The shop (or department) manager has the responsibility for regulating the progress of the production process, regular implementation of given tasks, and timely presentation of reports.

It is obvious that normal functioning of the system is impossible without good operational record-keeping. At our plant, it is a continuation of operational planning and, in combination with it, provides the unity of the operational production control system.

What are the results of the comprehensive management system of efficiency of production and quality of work at our plant?

The systematic comprehensive approach to production control made it possible, during the 10th Five-Year Plan period, to increase production volume by 42 percent, and the productivity of labor -- by 32 percent. The ratio of the highest category of quality increased from 13.7 percent to 60.1 percent and made up 90.5 percent of the volume of production subject to certification. During that time, the plant's collective manufactured 32 models of experimental prototypes and ten

outdated models were removed from production. The economic effect of introducing new machine tools according to the experimental prototypes was 1.2 million rubles and for the industrial series -- 2.4 million rubles. At present, 85.3 percent of the machine tool output is precision machine tools, including 37.7 percent of the machine tools with ChPU whose output was increased six times. Implementing measures on reducing metal consumption saved (only in the design of the machine tools) 1397 tons of rolled ferrous metals, 389.6 tons of cast iron, 27.7 tons of rolled pipe, 43.4 tons of cast bronze and 62.5 tons of cast aluminum.

In the 11th Five-Year Plan period, our collective must raise the technical standards and competitiveness of equipment. A long-range plan was developed for this purpose for changing over to series production of new machine tools and of a comprehensive series of machine tools, as well as removing outdated series from production. It is planned in particular to assimilate a new standardized series of centerless grinder semiautomatic and automatic machine tools for accelerated grinding, including those with ChPU. It is also planned to increase the productivity of labor by 1.6 to 3.2 times with simultaneous halving of unit metal consumption. A changeover will be implemented to the manufacture of multipurpose drilling-milling-boring machine tools with ChPU, and with a device for changing tools and intermediate products using the AKM [Kalashnikov Modernized Automatic Submachine Gun] principle. The productivity of these machine tools will increase 2 to 2.5 times. By the end of the five-year plan period, the output of machine tools with ChPU will almost double as compared to 1980. The planned economic effect of introducing new centerless grinder machine tools with ChPU will amount to about 80 million rubles.

Further improvement of the comprehensive management system of efficiency of production and quality of work is the basis for affirming that the problems posed before the collective of our plant will be fulfilled successfully.

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## METALWORKING EQUIPMENT

### EXTENDING SERVICE LIFE OF MACHINES DISCUSSED

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 5, May 82 (signed to press, 19 Apr 82)  
pp 31-33

[Interview with Igor' Sergeyeovich Tsitovich, corresponding member of the BSSR Academy of Sciences and deputy scientific research director of the Institute on Problems of Reliability and Long Life of Machines [INDMASH] by N. Ostapenko, part-time correspondent of PROMYSHLENNOST' BELORUSSII, "Extending Service Life of Machines," date and place not specified]

[Text] Extending the service life and raising the quality of output are unthinkable without science. The participation in these important matters by one of the leading collectives of the BSSR Academy of Sciences -- The INDMASH is discussed with I. Tsitovich by our correspondent.

[Question] Igor'Sergeyeovich, what basic scientific research themes have been concluded in the past and in the first year of the 11th Five-Year Plan period, and what economic effect was achieved by their introduction into production?

[Answer] Scientific and scientific organizational activity of the institute during that period involved, first of all, raising the reliability and service life of machinebuilding products. In particular, methods were developed for calculating the reliability of the mechanical units of mobile machines and the bases for design calculations of the parts for them. Their use at the design stage makes it possible to obtain equal service life and equally strong units of mobile machines of the required reliability with minimum weight.

Theoretical bases were also developed for designing compound gears with flexible connections between the rims and the hubs. Fifteen designs of such gears were developed. Author's certificates were obtained for all of them. Tests indicated that, as compared to one-piece designs, they have a service life of 1.2 to 1.5 times greater and have reduced vibration activity. Moreover, theoretical conclusions were developed on the transformation processes of power installations of motor vehicles, including continuous discrete action heat engines, mechanical hydraulic conversion systems, methods for selecting efficient systems and the calculation and design of a series of power installation units taking into account reliability requirements. Original design arrangements of engines, transmissions and their control systems were developed. They are also protected by author's certificates.

In the last five-year plan period, wide research was done to increase the wear resistance of bearings of machines using automatic compensation methods for their wear; diagnostic methods of rolling-contact bearings efficiency were tested by kinematic relationships, and necessary apparatus were developed on the basis of contactless measurements of small motions.

The following innovation also merits attention. For the first time staff workers of the institute developed basic methods for investigating a stress-deformation state, forecasting the reliability and diagnosing fatigue in load-carrying units and parts of transportation machines; they also developed new methods for designing crankshafts, connecting rods and gas sealing of motor vehicle engines, as well as having proposed recommendations for increasing the efficiency of crankshafts, cylinder blocks, and other heavily loaded parts.

The collective of the institute can also be credited with a new method for insuring the reliability of hydraulic systems of machines at the design stage. As a result of this, principles were developed for creating high reliability, high power hydraulic machines, electrohydraulic control systems for tractors, as well as efficient hydraulic valves. This work found practical application in the Gomel' "Gidroavtomatika" PO [Production Association] and was awarded the BSSR State Premium in the area of science and technology.

Among other developments are the probability methods for designing machine parts in accordance with dynamic loads by using computers whose introduction in the "BelavtoMAZ" Production Association made it possible to improve the design of parts of motor vehicle power transmissions, and increase their mileage until capital repairs considerably. The economic effect from this was over 1.25 million rubles. The utilization of methods and technical facilities we developed to study the reliability of electronic control systems on physical and mathematical models made it possible to save 850,000 rubles annually. Institute recommendations in accordance with the results of the studies of crankshafts in Minsk and Altay motor vehicle plant engines were adopted in production. As a result, it became possible to standardize block cylinders for all engine versions from 50 to 100 horsepower manufactured by the Minsk Motor Vehicle Plant. In this case, weight indicators of the new cylinder block did not change, while the number of breakages decreased considerably.

The methodology and equipment of accelerated testing of drive-axle assemblies and suspension springs were introduced at the Minsk Motor Vehicle Plant. The economic effect was about 550,000 rubles.

The institute developed and introduced an induction process for inductive sintering of self-fluxing of solid alloys to flat surfaces rotating within inductor blanks with simultaneous application of activating pressure to the deposited layer at the "Khimvolokno" MPO [expansion unknown] imeni V. I. Lenin with a saving of 125,000 rubles.

Briefly, this is the summary of the institute's collective work in recent years. Expressed in concrete numbers, it amounts to over 14 million rubles.

The activity of the institute in the first year of the 11th Five-Year Plan period was directed toward further research in the theory of forecasting reliability with electronic simulation and tests of the actual vital parts of the power units and moving parts of motor vehicles, tractors, combines and shaping systems of machine tools. Thus, a dynamic arrangement was proposed for the analysis of mobile machine designs that combines the machine unit, the running part and the control system which makes it possible to investigate vibrations and the reliability of units and machines as a whole when they are being created. A new method was also developed for the design evaluation of the quality of gear drive dynamic systems and methods for diagnosing mechanical fatigue of machine parts in the process of operation or tests; a possibility was substantiated to determine the technical state of a machine and forecast its remaining service life by a current evaluation of fatigue resistance characteristics or other physio-mechanical properties of the material; new methods were proposed for applying wear-resistant coatings by using forced vibration activation and cyclical loading of powder layers. A method for design description of compacting kinetics of porous bodies in the process of sintering was developed on the basis of the phenomenological creep theory. An evaluation of the efficiency of the automatic regulation of the radial gap in hydrodynamic bearings was made by means of statistical simulation; a method was proposed for reducing dynamic loads in the drive of harvesting units of the KSK-100 combine; and a model was developed and relationships established of the parameter effect of the grinding process on the dynamic state of the SPKD [expansion unknown].

[Question] What, in your opinion, are the basic organizational forms that facilitate the efficient introduction of the results of scientific research into production?

[Answer] I will begin with the cadres. Of 293 staff workers at the institute, 44 have scientific degrees. Cadres are recruited after their training in post-graduate courses, as well as by being selected from graduates of vuz, primarily the BCU [Belorussian State University imeni V. I. Lenin], the BPI [Belorussian Polytechnical Institute] and the MRTI [expansion unknown]. Auxiliary scientific personnel is recruited from tekhnikum graduates and students in night vuz departments.

Inventor activity is developing widely. In 1981 alone, the economic effect from introducing scientific-research developments into production amounted to over 3.5 million rubles. Some 65 author's certificates for inventions were obtained. Work of the institute was exhibited at the USSR and BSSR, VDNKh and the Leipzig International Exhibition, and was awarded many medals and certificates.

The successful development of fundamental and applied research is facilitated greatly also by the constant strengthening of the material-equipment base of the institute. Now, for example, a new experimental production building is being built.

Ties between the institute and industry are being expanded and strengthened further. In particular, long-term program contracts were concluded to carry out joint investigations and introduce scientific developments with a number of large industrial enterprises and associations. Institute scientists participate

actively in work created on social initiatives with scientific-production associations, MZAL [Minsk Automatic Lines Plant] and SKBAL [Special Design Bureau for Automatic Lines], BelavtoMAZ [Belorussian Minsk Motor Vehicle Plant], (Avtofiztekhn), MTZ [Minsk Tractor Plant], (ANITRO), and with the largest enterprises in Gomel' (ANGOM). Ties are also being strengthened with the Republic Center of Hardening Technology and with many scientific establishments in the country and fraternal socialist countries.

[Question] And, finally, this question. What are the prospects for developing scientific investigations to raise the efficiency of production and quality of output in the 11th Five-Year Plan period?

[Answer] In the 11th Five-Year Plan period, an acute problem is to reduce the weight of machines. Our institute participates actively in this work. We consider it necessary to do design optimization for each part, assembly unit and the machine as a whole. We study hydraulic pulse transmissions which were used for the first time in mass production of KSK-100 combines.

It is also possible to reduce machine weight by increasing the strength of the parts and using higher quality metals. The INDMASH together with the Electric Welding Institute imeni Paton, do research on using multilayer metals for machine tool, motor vehicle, tractor and combine parts. To reduce machine weight, possibilities are being studied for the wider use of polymers, aluminum, magnesium and other light alloys. The testing of units with aluminum carriages is planned. We consider it necessary to change units with sliding friction over to units with rolling friction to increase reliability. In cases where this is difficult to implement, friction surfaces may be processed in a special manner -- by spraying with wear-resisting coating, using plasma and gas-plasma treatment etc.

The scientists of our institute will, without doubt, make a worthy contribution in implementing the plans of the 11th Five-Year Plan period.

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