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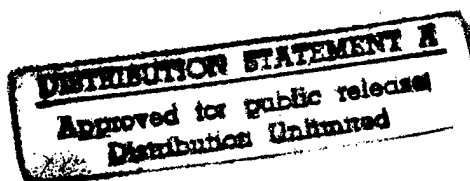
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# ***JPRS Report***



# **Soviet Union**

## ***Economic Affairs***

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## SOVIET UNION ECONOMIC AFFAIRS

### CONTENTS

#### NATIONAL ECONOMY

##### ECONOMIC POLICY, ORGANIZATION, MANAGEMENT

|                                                                                                                                           |    |
|-------------------------------------------------------------------------------------------------------------------------------------------|----|
| Selected Material on State Acceptance of Production<br>(LENINGRADSKAYA PRAVDA, 22 Apr 87; EKONOMICHESKAYA<br>GAZETA, No 20, May 87) ..... | 1  |
| First Lesson in State Acceptance                                                                                                          | 1  |
| Controllers at Work, by B. Belyakov                                                                                                       | 2  |
| Additional Selections on State Acceptance of Production<br>(Various sources, various dates) .....                                         | 4  |
| Forecasts Not Realized, by V. Ulyanov                                                                                                     | 4  |
| Initial Results of State Acceptance, by V. Savich                                                                                         | 6  |
| Work of Controllers, by S. Dubinskaya                                                                                                     | 8  |
| Kiyevtorgmash Production Association, by A. Vikentyeva                                                                                    | 11 |
| Lvov Motorbus Plant, by V. Baziv                                                                                                          | 15 |
| Chernigov Worsted Cloth Combine, by A. Sakhnovskiy                                                                                        | 20 |
| Karpatpressmash Production Association, by V. Nazarchuk                                                                                   | 24 |
| State Acceptance at Chekhov Plant, Ye. T. Tereshchenko<br>Interview                                                                       | 29 |
| State Acceptance at Watchmaking Plant, B. I. Kozlov,<br>L. N. Alperin Interview                                                           | 38 |
| Letters to Editorial Department                                                                                                           | 46 |

enterprises and a direct link was not achieved between the wage level and the qualitative results of labor. Improvements are needed in the OTK [Department of Technical Control] service. The number of complaints is declining only slowly.

It was emphasized that in addition to recording the deviations from the standards, the organs of gospriyemka, together with the plant specialists, must uncover the primary causes and correct them as rapidly as possible.

*Moreover, importance is attached to increasing interaction when solving key* problems concerned with production organization and technology and the effect they have on the quality of output.

The incidents involving the production and acceptance by gospriyemka of products which did not conform to the standards were examined. Those guilty of crude violations of the rules for state acceptance were punished. This must serve as a serious lesson for leaders and all workers attached to organs of non-departmental control.

During the conference, a speech was delivered by the secretary of the Leningrad Oblast CPSU Committee A.M. Fateyev.

#### Controllers At Work

Moscow EKONOMICHESKAYA GAZETA in Russian No 20, May 87 p 3

[Article by B. Belyakov, TASS correspondent, Kuybyshev: "Road To Quality"]

[Text] A department at the Novokuybyshev Knitted Goods Factory continued to produce unacceptable fabric despite the presence of an inspection team from Gosstandart [State Committee for Standards of the USSR Council of Ministers]. Certainly, the machines were finally halted. But the rejected material brought about a fine in the amount of 350,000 rubles to be levied against the enterprise. The Motor Construction Association imeni M.V. Frunze lost almost three times this amount in the form of sanctions imposed by Gosstandart. Some recently assembled Vikhr boat motors failed to start, while others had a high fuel consumption.

Many similar examples could be cited. Workers attached to the oblast Gosstandart service uncovered defects in technically complicated products as well as in traditional consumer goods at a large number of enterprises.

What is the reason for this? The participants in a conference of control services, which was organized by the oblast CPSU committee and which convened recently in Kuybyshev, attempted to answer this question.

A year has passed since that moment when, during a meeting of M.S. Gorbachev with Tolyatti workers, the thought was expressed for the first time concerning the introduction of state acceptance for industrial output. Today there are very few who would dispute the claim that the appearance of the new service has stimulated noticeably the campaign to raise the quality of products. And how is work proceeding in those areas where there is no gospriyemka [state acceptance]? Here the only arbitrator for quality continues to remain the OTK

[Department of Technical Control] and no significant improvements have taken place in the work of this service.

Just as in the past, owing to low wages, young women who have just completed their school work and who lack both production experience and technical knowledge are being employed as controllers. Almost no improvement has taken place in the availability to the control service of modern measurement equipment. The metrological service is in a neglected state at a number of plants. This then is the overall picture. Can it be improved?

It can. This is borne out by the experience of the Ekran Plant. At one time, the output of this enterprise was criticized sharply by society. The unsuccessful television set Kaskad-225 resulted in the enterprise receiving 17,000 complaints and hundreds of angry letters from purchasers. The collective drew the correct conclusions from the criticism. The enterprise halted its production for 2 months, completed renovated its technology and installed test stands and cabinets for carrying out preliminary checks on units under current and under high temperature conditions. The input control for component parts was reinforced.

But here it was not simply a matter of a raised technical level for production -- the attitude of the collective towards the OTK service had changed. The Ekran plant employs a system of bonus incentives for its controllers, which is based upon the quality of the output and the percentage of television sets accepted by gospriyemka. The OTK and the state control service have begun operating in close contact with one another.

The controllers and gospriyemka workers at the Transformator Association do not compete against one another in terms of the number of rejected products, but rather they concentrate on furnishing assistance to production. Here gospriyemka, jointly with the enterprises, conducts a search for methods for raising the quality of the output. Fruitful and business-like recommendations have been developed on a joint basis.

Clear knowledge of the bottlenecks in the work concerned with raising the quality of output is making it possible for the controllers and state acceptance specialists to launch an active and planned attack against rejected materials. But this can only be done jointly, together with the production workers.

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## ADDITIONAL SELECTIONS ON STATE ACCEPTANCE OF PRODUCTION

## Forecasts Not Realized

Moscow EKONOMICHESKAYA GAZETA in Russian No 14, Apr 87 p 16

[Article by V. Ulyanov, Kazan: "The Forecasts Were Not Realized"]

[Text] In October 1986, the republic newspaper SOVETSKAYA TATARIYA published an economic review in which it was reported that the republic's enterprises would supply the all-union counters with additional quantities of fabrics, footwear, domestic clocks, furniture, perfume-cosmetic articles and other consumer goods prior to the end of the year.

Alas, not all of the forecasts were realized. Thirty of the republic's enterprises were unable to cope with their tasks and they fell short in their deliveries by 30 million rubles worth of products. Nor was the situation any better with regard to the quality of the products. For example, in the Tatar Production Association for the Production of Outer Clothing, the representatives of gospriyemka [state acceptance] are still accepting only 13 percent of the products from the seamstresses. The situation is slightly better at the Arsk Production Sewing Association and the Kazan Shveytnik Production Association.

The actions being undertaken by state acceptance are aimed at achieving a specific goal: preventing a further increase in the accumulation of stale and obsolete products at wholesale bases and stores, for which there is very little consumer demand. In Kazan alone, there is an accumulation of 12 million rubles worth of locally produced unmarketable goods.

An analysis of the technical level and quality of products for which there is a heavy demand reveals that no radical change has taken place with regard to raising their consumption characteristics. There is not even an example here of industrial giants which have great technical potential at their disposal for organizing the production of goods for the nation. In essence, such large enterprises within the republic as Vakuummash, Teplokontrol, an aviation enterprise, a motor construction association, a helicopter plant and the Kama Motor Vehicle Plant have all declined the task of mastering technically complicated products. Taking into account the powerful production potential possessed by these enterprises, it is truly embarrassing to enumerate the types of goods being produced here: screw-drivers, weights, paper clips and

clothes hangers. Against this background, the bathroom fixtures being produced at KamAZ appear as the apex of design thought.

The plan here is a simple one. Relying upon simple types of products, these enterprises are able to avoid the concerns and problems associated with the development of the specialized capabilities needed for producing technically complicated consumer goods.

Why is it that the quality of the products is not satisfying even the moderate requirements of the customers? A majority of the republic's enterprises lack a service for forecasting the technical level and quality of products, with the requirements of the international standards being taken into account. The leaders of planning and design bureaus, when developing new types of products, are traditionally oriented towards a certain average level and fail to direct the efforts of their collectives towards the creation of basically new models. Thus a large proportion of the new "innovations" are not recommended for certification for a high category of quality.

The portfolio of innovations by the republic's planning and design organizations is extremely meagre. In order to recover lost ground, the schedules for creating new generations of products should be shortened by a factor of roughly 3.5. The low return from organization-developers is the direct result of unimportant themes, poor working plans, an inability to place emphasis on the more important trends in scientific-technical research work and weak information support.

These shortcomings are today inherent even in those enterprises whose plant trade-mark enjoyed a good reputation only recently. For example, stagnant design thought and the weak introduction of modern design solutions resulted in a decline in the demand for watches produced at the Chistopol plant. As a result, the plant was forced to remove 54 wrist watch models from production. Only 16 new models are being prepared for production. By no means does the balance favor the customer.

For a long period of time, proper attention was not given throughout the republic to developing and renovating the technical base for the production of goods which are in high demand. At the same watch plant mentioned above, almost 40 percent of the equipment has been in operation for more than 20 years. The renovation of capabilities is proceeding very slowly and the coefficient for the replacement of equipment does not exceed 3 percent annually. Nor is the situation any better at the Tasma Association, where use is being made of machines which have been in operation for 40 years. Worn out equipment does not satisfy the technical conditions for the production of goods. It is for this reason that only 20 percent of the color movie film conforms to the GOST [state standard].

In all fairness it must be stated that definite positive improvements have recently been noted. Modernization work is underway at the production associations Spartak, fur association imeni Yamashev and the sewing association for the production of outer clothing. But such associations and enterprises are few in number and the restructuring encompasses only a portion

of the departments. Just as in the past, the majority of the collectives have adopted a wait-and-see policy.

In 1985, taking into account the situation that had developed, the Kazan CPSU Municipal Committee adopted a decree which called for assistance to be provided to light industry enterprises in carrying out their technical re-equipping. This assistance was to have been supplied for the most part by large enterprises of heavy industry. However, after adopting the decree the municipal party committee failed to display the persistence needed for ensuring its fulfillment. The industrial giants of Kazan undertook only a negligible portion of the work volumes planned for manufacturing the equipment and rigging and for modernizing the light industry installations. This valuable initiative did not receive the full support of the Council of Ministers for the Tatar SSR and thus was not disseminated throughout the republic.

The representatives of state acceptance at a majority of light industry enterprises have noted that a considerable percentage of the rejected products was caused by low executive discipline. The branch's specific production conditions require that the human factor be activated immediately. The republic's collectives welcomed the decision by the brigade headed by B. Gizatullinaya at the Povolzhsk Plywood-Furniture Combine, which refused to use sub-standard raw materials. Good quality products cannot be obtained from such materials and only unjustified expenditures ensue. However, this example of a creative approach which forced an administration to undertake urgent measures in order to restore order is still viewed as being only an exception to the general rule.

Thus workers at the Zelenodolsk Furniture Factory of this same Tatmebel Association, for an extended period of time, equipped a Dubrovchanka kit which was very popular with the customers with a defective unit, until finally state acceptance put an end to this practice. Low executive discipline is explained first of all by insufficient exactingness in evaluating the quality of labor performed by workers. Last year, only one fourth of the damage sustained at the Tatmebel Association was recovered from those guilty of producing defective products.

The state acceptance of products will produce and is already producing perceptible results. But in the absence of a solution being found for the entire complex of problems standing in the path of improvements being realized in the quality of the consumer goods being produced in the republic, it is futile to expect rapid changes to be brought about.

#### Initial Results of State Acceptance

Moscow EKONOMICHESKAYA GAZETA in Russian No 14, Apr 87 p 16

[Article by V. Savich, chief of the Administration of State Standards for the Belorussian Republic, Minsk: "By No Means Has Everything Been Done"]

[Text] It became quite clear following the initial days of work by state acceptance: many enterprises were not prepared to respond to the legitimate

requirements with respect to the quality of their products by immediately correcting the shortcomings in the technology and in their work organization.

Unfortunately, work is proceeding in a very unsatisfactory manner at the Gomselmash Production Association. Much has been said and written about the low quality of the KSK-100 silage harvesting combines being produced here. Measures have been outlined for eliminating the defective products. However, they have not touched upon the chief reason -- a low culture of production, crude violations of technological discipline, shortcomings in design documentation and serious defects in the design of the combines. Thus, during the initial days of state acceptance, all of the products presented were returned for reworking as a result of numerous violations of the technology for welding, assembly and adjustment and, bluntly speaking, a low culture of production.

Work is proceeding poorly at the Lidselmash Plant. Owing to the fact that the technological documentation is not in keeping with the established documentation, only one third of the machines manufactured here were accepted upon initial presentation during the first two months of the year.

There is still one other pessimistic circumstance -- the non-rhythmic operations of some enterprises. More than 80 percent of the products are presented for state acceptance during the third ten-day period of the month and at the Pinsk plant for forging and pressing automatic lines -- even 96 percent. Thus, how is it even possible to discuss high quality?

State acceptance has already been in operation for 2 months. In those areas where thorough and complete preparations were made for this important development -- at the Molodechno plant for semiconductor valves, the Minsk Refrigerator Plant, the Orsha Krasnyy Borets Machine Tool Plant and at the Gomel Elektroapparatnaya Plant -- the majority of products are being accepted upon initial presentation.

In almost all areas it has been necessary to reexamine the technological processes and to introduce supplements and changes into the design documentation. Approximately 300 such changes were introduced at the Minsk Tractor Plant during a period of just 2 months.

Serious preparations were carried out at the Gomel Machine-Tool Plant imeni S.M. Kirov. In keeping with the conditions imposed by state acceptance, the tasks of the collective were discussed during party and worker meetings and in the production brigades. Stricter requirements were imposed with regard to the observance of technological discipline. A certification of working positions was carried out and the positions were equipped with the required cutting and measuring instruments.

It bears mentioning that some state acceptance services have still not organized normal operating regimes. The leaders of state acceptance at the Svetlogorsk Khimvolokno Production Association, the Mogilev Elektrodvigatel Plant and the Volkovysk Foundry Equipment Plant have not organized control over the second and third shifts. The state acceptance workers are not always persistent in their requirements for correcting the shortcomings noted.

Not all of the workers attached to the new organs for non-departmental control are making full use of the rights extended to them for applying punitive measures to those guilty of tolerating poor quality products. For example, state acceptance at the Grodno Avtomagnitol Plant failed to take action against plant workers who tolerated serious defects in products which they presented for sale. Similar incidents were recorded at the Pinsk Plant for Forging and Pressing Automatic Lines and at the Bobruyskshina Production Association. The initial results of state acceptance underscore the fact that not everything has been done to ensure the erection of a reliable barrier against defective products. The production collectives and workers attached to non-departmental control must combine their efforts in the interest of radically improving the quality of the products.

#### Work of Controllers

Moscow EKONOMICHESKAYA GAZETA in Russian No 21, May 87 p 9

[Article by S. Dubinskaya, journalist, Kishinev: "Authority of a Controller"; first two paragraphs are source introduction]

[Text] The Editorial Board is receiving many letters concerning state acceptance personnel, their operational style and the difficulties involved in establishing good relationships between the state controllers and plant workers.

In this article, the author discusses the experience accumulated at a machine building plant in Kishinev, where strict exactingness on the part of controllers did not inhibit the organization of effective and joint work aimed at improving the quality of output.

The first machines presented to state acceptance at the Kishinev Tractor Plant were returned for further work. The entire batch of 117 tractors. And this was quite proper -- truly defective work had been carried out during various stages of production.

However, some resentment remained. Not only among the controllers of the plant's OTK [Office of Technical Control], but also among the workers and the leaders of various services at the enterprise. And the chief of one of the departments stated quite frankly:

"If it was left to me, the individual I assigned to state acceptance would be one who at one time had to improve his own status."

He had in mind the fact that the state acceptance specialists (in the majority of instances, these are former workers from the same plants) in the past often tolerated and allowed such defective work to take place.

At several enterprises, I observed with regret how a certain alienation had developed between the production workers and the state acceptance specialists. This alienation increased as the state controllers became more strict in

carrying out their requirements. This has already been discussed on the pages of EKONOMICHESKAYA GAZETA.

Yet there was no such dividing line between the workers and the state acceptance representatives at the Plodselkhoz mash Production Association.

The association turns over to state acceptance 100 percent of the machines and units which it produces -- unique units of equipment used for harvesting crops in orchards and vineyards and also for tending fruit trees. Panic did not ensue following the introduction of state acceptance at the association: it is said that a business-like reappraisal of values took place here, with attention shifting to the more "painful areas" of production.

One such "area" -- input control. This is not a tribute to fashion. Only one hundred percent control over the component parts being received at the enterprise can guarantee (naturally, assuming defect-free work) a one hundred percent yield of high quality products. Certainly, reductions were not excluded in this instance. And from good wheat flour it is possible to bake not a pie but rather burned cookies. But still nobody has baked a splendid pie using stale and spoiled products. If despite the availability of accurate instruments and test stands a check is not carried out on the quality of units and parts produced by allied workers, then subsequent work by the Plodselkhoz mash collective is cheapened. It was for this reason that technical improvements were immediately carried out in input control. Two x-ray units are already in operation for uncovering welding defects and still another -- for controlling metal in terms of its chemical structure.

However, how can influence be brought to bear upon those who are supplying the plant with component parts in an irregular manner? For example, how can a check be carried out on the hydraulic motors for grape harvesting combines if they did not arrive from the Vinnitsy plant for tractor units until the 29th of the month? Whether you like it or not, a vicious law holds true: rush work results in defective products.

Such is the situation not only with hydraulic motors but also with other component parts.

"I believe that the only solution is to organize strict control over the availability of component parts from the standpoint of a region. It is no secret that some enterprises are overstocked with resources while others are experiencing shortages. And the territorial organs of Gosplan [State Committee for Logistical Supply of the USSR Council of Ministers," stated the former chief of the OTK [Office of Technical Control] and now the leader of state acceptance at the enterprise V. Tarasov.

I was interested in knowing if his reasoning at the present time is based more upon the status of a plant worker.

"I do not see the difference" he parried, "What has changed? I simply now have more responsibility. Earlier a director could apply pressure: he would maintain that the month had to be "closed out" at any price. And I must confess that it was "closed out." Indeed, I remained at the plant as a

subordinate individual. Now the director and I are responsible on equal terms for the quality of the association's output. And if state acceptance says there are no defective products, nobody can alter that opinion. Only the kpd [efficiency factor] for our work is determined by the real assistance being furnished to the enterprise.

Yes, at Plodselkhoz mash the state controllers participate actively in all affairs of the enterprise.

I observed them carrying out their work in a department for small series. Twenty sparkling new machines -- contour pruners for fruit trees -- were awaiting their turn. They had passed through the plant's OTK and now it was time for the state acceptance specialists. They were wearing blue coveralls similar to those being worn by the enterprise's specialists, with but one exception. Alongside the emblem "Plodselkhoz mash" on the breast pocket were the red letters "Gospriyemka" [state acceptance]. First there is an external inspection of a batch of products and thereafter a thorough check is carried out on the internal parts and welding seams. The third stage -- acceptance and delivery tests. The check is carried out in a scrupulous manner with no fuss or bother.

A defect is found in a welding seam, a pinching of a high pressure hose is detected and the state acceptance specialists are just as distressed over their discoveries as are those who produced the machines. Together with the department's workers and the hydraulic designers, a method is sought for correcting the defect as rapidly as possible. The interested individuals work together without conflict and without shifting blame from one to the other.

The leaders of the department and the workers know the inspectors very well -- V. Dementyeva, V. Girgoriu and certainly V. Tarasova. They are all highly respected at the enterprise. Valeriy Fedorovich Dementyev is truly a specialist. He grew up with the enterprise: he began as a trouble shooter, he completed a correspondence course program at a polytechnical institute and he served as a deputy department head.

Valeriy Aleksandrovich Grigoriu has also worked at the plant over a long period of time. Initially he was a leading designer, he subsequently worked in the OTK service and thereafter he transferred over to state acceptance.

And everyone here knows the leader of the state acceptance group. In the past he served as chief of the OTK and as the plant's chief designer. Everyone knows him to be a man of high principles. He is not afraid to express an opinion which runs counter to the majority opinion. His recommendations are always thoroughly thought out and well-reasoned.

This then is the individual who heads up the state acceptance group. From the standpoint of the state, he is an excellent candidate. And what about the association's general director V. Chumachenko? Indeed it is no secret that not all of the directors are pleased by high principled controllers. Chumachenko is acutely aware that he cannot "negotiate" with Tarasov. At one time, defective products were released from Plodselkhoz mash -- defects hidden in the metal or in a non-fused seam.

But it was Chumachenko who nominated Tarasov for the state acceptance position, he described his character before the rayon party committee and he had his own way. As the general director, he stood to gain from having such an exacting and knowledgeable individual as Tarasov serve as head of the state acceptance group. The director was confident: if there were complaints among the non-departmental controllers, they would be handled in a fair manner with no fault-finding. All of this happened in the beginning and the plan "collapsed" and for a period of time there were no bonuses. But the collective reasoned that it had to work better.

Life confirms the fact that the director drew the correct conclusion. Tarasov and his assistants did not become strangers to the collective. And the association's workers can see and value highly the help being furnished by the state controllers. It is believed that such collaboration provides a reliable guarantee for future success.

#### Kiyevtorgmash Production Association

Kiev RABOCHAYA GAZETA in Russian 4 Jan 87 p 2

[Article by A. Vikentyeva, Kiev, under rubric "Quality -- The Very Heart of Restructuring": "We Have Reserves -- What We Need Is Return: State Acceptance: Problems and Decisions"; first four paragraphs are source introduction]

[Text] Workers at the Kiyevtorgmash Production Association reply to the RABOCHAYA GAZETA questionnaire.

1. How do you evaluate the technical level of your articles?
2. Have conditions been created at the enterprise to produce high-quality output? What more has to be done?
3. What claims do you have against the suppliers: how can the interreaction with the subcontractors be improved?

Why Have the Test Stands Become Obsolete?

O. Televnoy, leader of a brigade of assembler-fitters at Shop No. 6, delegate to the 27th Ukrainian CP Congress:

1. I will say outright: the technical level of our output, in my opinion, does not correspond to the best worldwide models. There are many reasons for this. I want to discuss only one of them, which affects the workers directly. Many of us, in my opinion, recently have simply lost our work skills. We have become accustomed to "serve" a definite amount of time at the enterprise, receiving wages, bonuses, and other incentives in exchange. I feel that, in order to resolve the problem of output quality, it is necessary for all of us -- from the loader to the chief engineer -- to fulfill all his duties precisely and accurately.

2. Have the conditions for producing high-quality output been created? Not everywhere. More than ten years ago we received special equipment to check the articles being produced -- test stands. But in the process of operation they have received a large amount of wear and tear. Water oozes out of the test stands, but still we use them. We have become accustomed to a situation

in which the technology scheme is not observed, and we are guided not so much by the instrument readings as by our own experience. At the present time, true, welders and electricians are repairing the equipment and putting the shop's test stand equipment in order.

3. Our subcontractors are preventing us from making high-quality output. For example, the shop produces the AT-251 and AT-256 vending machines with carbonated water. A large number of components for them come from Kharkov. The V-1000 units and the SVA [expansion not given] tanks for carbonating the water are of extremely poor quality. There have been instances when the shop itself has repaired the components. We should not have to do this, but we have to take the risk of remaking someone else's output in order to keep from standing idle. Maybe we ought to invite the Kharkovites to our work stations and let them try to fit their components into our units!

It has been a half-year since we have been producing the new automatic units. The basic difficulty is the uneven delivery of parts. Frequently we have crash-work situations, and this leads to violations of the technological scheme for assembly. We hope that state acceptance will help us to overcome these difficulties.

#### Three-Shift Operation and Electronics,

A. Labushinskiy, senior foreman in Sector No. 3, secretary of shop's party organization:

1. The technical level of the larger part of our output does not correspond to the requirements of the time. There is a large number of areas of incomplete design work. The state Quality Seal has already been removed from the Mu-M packing equipment. But the article is still being produced. It is labor-intensive, has poor technological features, and takes a large amount of time away from us.

For many years in a row we have been producing without any changes certain consumer goods that are obviously obsolete. A cut glass in a vending machine with carbonated water -- now, that's backwardness! All the highly developed countries already use individual disposable cups. It is also necessary for us to take bolder steps to introduce innovations into series production, and to strive for the state Quality Seal for all the output.

The figures race is a chronic disease for most of the enterprises. If someone has overfulfilled the plan, the chase for the leader begins. The winners and, so to speak, the vanquished are judged chiefly on the basis of quantitative indicators. But with the poor monitoring on the part of the OTK [technical control department], the consumer often receives defective output. We hope that state acceptance will help to establish order.

2. For three years we have been operating on three shifts. We have machine tools with digital programmed control -- it is highly improved equipment with reliable machinery. But according to the equipment control sheet it has not been adapted for three-shift operation, and the electronics are rather weak. Therefore the decision was made to create a preventive-repair schedule. By

following that schedule, we have achieved a rather good level of equipment reliability.

3. In our association, only the assembly shops have interactions directly with the subcontractors. We work basically on machine tools with ChPU [digital programmed control], produced by the Berdichev and Gorkiy machine-building plants. In principle, we do not have any claims against the quality of their manufacture. But for the association on the whole, so far as I know, the problem of contract discipline does exist. If we have been sent a piece of work that has been done sloppily, then it is necessary, in my opinion, not to fine the suppliers at all, but rather to fine the administrator of the subcontractor plants. If the requirements placed on them are made more rigid, the question will be resolved.

Contract of Cooperation,

A. Kozak, deputy chief engineer for new technology:

1. Kiyevtorgmash currently produces 26 types of articles in the highest quality category. We have created a comprehensive program for raising the technical level of the remaining articles. During the present five-year plan we are supposed to bring the remaining 256 units of output up to the world level.

The question that we face today is: either Kiyevtorgmash will produce all its output with the highest quality category, or that output will be removed from production. The statute governing certification for the Quality Seal requires that it must be delivered on a mandatory basis for export or for comparison with the best foreign counterparts. Otherwise the article cannot be produced. In most instances, of course, this is correct. But at present we are making automatic units for the making of kvass. There is nothing to compare them with -- kvass is not produced anywhere else in the world. Will we really have to stop making them?

In my opinion, it is economically undesirable to remove from production those articles that are strictly national ones. Obviously, USSR Gosstandart must enact a separate decision that allows us also to certify output that does not have any foreign counterparts.

2. For the most part, we have the proper conditions for producing high-quality articles. Over the past three years we have been provided with highly-productive equipment with digital programmed control and with robotic complexes. At present the association has approximately a hundred of them. In 1988 we are preparing to introduce flexible automated sectors.

Much is also being done now to introduce advanced technological schemes. For example, jointly with the Chernigov branch of Kiev Polytechnical Institute, instead of metal "stars" for the heat equipment, we have introduced plastic ones. Naturally, there has been a reduction in the labor-intensity of the process and a saving of 45 tons of rolled metal per year. You will agree that this kind of cooperation is mutually advantageous, and therefore the association has concluded more than 30 contracts with scientific educational institutions.

3. Interrelations with subcontractors are a sore point. We can make a number of claims against the supply organizations -- the Kiev bases of Metallosnabsbyt and Khimsbyt. They frequently deliver not the things that we need and the things for which we have a requisition, but instead the things that they have available. Incidentally, it is not itemized by nomenclature, but just by the "gross" method. But we accept it because, without metal, the work would stop completely.

In my opinion, in order to resolve questions of cooperation with the subcontractors, it will be sufficient if each plant begins to fulfill its contract obligations strictly. I would like to believe that state acceptance will also be introduced among our subcontractors, thanks to which we will be able to systematize our claims and begin an efficient fight against defective output.

Kiyevtorgmash produces output that does not satisfy an essential need. Obviously for that reason UkSSR Gossnab has not been allocating the association those components which will guarantee the high quality and reliability of our output and will make it possible to bring up to the highest worldwide level. We are tired of being "second-class"! We want state acceptance to help us to receive what we are supposed to receive, instead of what others have refused.

If We Are Let Down, We Let Others Down,  
A Starostin, state acceptance administrator:

1. The technical level of most of the articles produced by the enterprise (approximately 70 percent), stating it outright, is insufficiently high. We see our chief task in raising the quality of the output being produced to the highest world level. We devote our basic attention to automating the technological processes. In particular, with the aid of machine tools with digital programmed control.

2. The quality of output is influenced by literally everything. State acceptance will strive for the improvement of production structure and the observance of the technological processes. I feel that the plant has the opportunities for good work. But there is also a wealth of reserves.

3. There are many claims against our subcontractors. Even the Quality Seal on the incoming articles does not always guarantee their high reliability. Frequently we are let down. But it also happens that we let others down. Take, for example, this letter from subcontractors in Kalinin: "We know that, starting on 1 January 1987, state acceptance will be introduced at your plant. Please direct attention to the shortcomings of the VOK-4/50 water cooler that you produce, and to its poor quality." And this is the answer from Kharkov in response to the same kind of warning message from us: "We promise to improve the quality of the incoming compressors."

The conclusion is simple: it is necessary for each of us to learn how to work well at our individual work station. Then there will be no problems. Incidentally, with state acceptance no one will be able to readdress the

claims. Kiyevtorgmash will bear the responsibility not only for the 70 percent of the parts that are manufactured independently, but also for everything that it receives from the subcontractors.

Correspondent's comments:

As we can see, the Kiyevtorgmash workers responded objectively and self-critically to the questions in the questionnaire. A cool attitude to the job they are doing, the neglected state of the test stands, crash jobs -- this is a far from complete list of the serious problems that the enterprise collective will have to overcome in order to fulfill the task that has been assigned to it -- the task of achieving the highest world level of output quality.

As is well known, a feature that is alien to the restructuring is the rhapsodizing about wonderful reports and partial successes. The restructuring begins with a sober evaluation of the state of affairs, with an objective analysis of shortcomings, and with the development of a precise program for the future. The collective at the Kiyevtorgmash Production Association has this kind of program. As we have been convinced, there is a firm desire to establish order on the job and to achieve the necessary changes in the quality of the output being produced.

And so we wish the workers at Kiyevtorgmash every success.

#### Lvov Motorbus Plant

Kiev RABOCHAYA GAZETA in Russian 7 Jan 87 p 2

[Article by V. Baziv, RABOCHAYA GAZETA correspondent, Kiev, under rubric "Quality -- The Very Heart of Restructuring": "Yesterday's Motorbus: State Acceptance: Problems and Decisions"; first four paragraphs are source introduction]

[Text] Workers at the Lvov Motorbus Plant reply to the RABOCHAYA GAZETA questionnaire.

1. How do you evaluate the technical level of your articles?
2. Have conditions been created at the enterprise to produce high-quality output. What more has to be done?
3. What claims do you have against the suppliers: how can the intereactions with the subcontractors be improved?

Steep Turns,  
A. Maslak, plant director:

1. Our plant produces six types of output: three models of motorbuses, two transmissions, and consumer goods. Everyone is interested, of course, in the motorbus. Currently we have three designs on the production line: LAZ-695N, LAZ-699R, and LAZ-43021. The first two operate on gasoline and are improved

models of our traditional output. The third is a diesel motorbus that was developed several years ago and was supposed to replace obsolete models completely. However, it did not pass the operational tests, and the customers have been refusing it. The chief reason is the developers -- the All-Union Experimental Design Institute of Motorbus Construction -- included in the design imperfect decisions which do not meet today's requirements. But that institute does not promise us the next improved model until 1989. That deadline cannot satisfy the plant, much less the consumers. That is why the current level of our vehicles is lagging behind the achievements of modern motorbus construction throughout the world.

2. Recently we built a new production building, we are completing the construction of an additional shop, and have introduced progressive welding and painting methods. And although we have by no means done everything, under the existing conditions we have the ability to produce high-quality output. Currently the most important thing is to overcome yesterday's psychology and to achieve the raising of quality to the rank of the basic indicator both in organizing the work and paying for the labor, and in the workers' consciousness. At the conference at the Ukrainian CP Central Committee we heard criticism to the effect that our technological processes have been neglected and one-fifth of the operations lack technical documentation. Currently a broad plan of specific measures has been developed, the implementation of which will eliminate these shortcomings.

We see a large reserve in the improvement of discipline, which is not yet at the proper level at our plant. It is necessary to improve the relations among the production subdivisions. There is one more essential circumstance. At one time we used to be proud that our motorbus was the least expensive in the world. Currently the improvement in the quality of the promising models stipulates additional expenditures, the application of new materials for the outer appearance, and the creation of passenger comfort.

3. By the nature of its work, LAZ [Lvov Motorbus Plant] is engaged in assembly production. More than 500 enterprise supply us with more than 4000 component assemblies, units, and parts. Among our subcontractors it is difficult to find any against whom we do not make claims. We are especially alarmed about the quality of the metal, the industrial rubber articles, paints, and engines. And although the state acceptance service is not yet completely ready to carry out effective intake monitoring and is insufficiently equipped technically, we are putting large hopes on it. Because our subcontractors also will operate under conditions of state quality control. All this together ought to yield gratifying results. Today much will depend upon the interaction with individual subdivisions of Gosstandart, although we have found that the work of that service is not always precise. Thus, after the OTK [technical control department], that service once again test-drives the motorbuses. Why do the same work twice, wasting gasoline? State acceptance is a measure which, without a doubt, is beneficial, but it must be protected immediately against formalism.

Where the Defective Output Comes From,  
R. Voloshchuk, state acceptance chief:

1. The motorbuses that are currently produced at the LAZ shops were developed three decades ago. So should one be surprised that they have yielded their place on the international market? The technical level is determined by comparison with the best foreign models, but there are not even any counterparts here, because our country is the only one that produces motorbuses that operate on gasoline. Motorbus builders everywhere else have already changed over to cheaper types of fuel. Here are the operational features of certain models: the LAZ-695N has seven deviations from the state standard; the LAZ-699R fails to conform to nine standards. And the recently developed LAZ-42021 fails with regard to 17 parameters to meet the requirements of the present-day technical level. There is even no need here to resort to thorough technological analysis. However, those who dictate the technical policy in motorbus construction -- the ministry and the branch institute -- are not particularly alarmed by this. Every passenger comments on the awkwardness of this vehicle, which, in addition, does not have a long service life. And this is after the plant's designers made the maximum improvements to the model that had been proposed by VKEI [All-Union Experimental Design Institute] of Motorbus Construction. Currently the institute is working on the creation of a promising design for motorbuses operating on diesel fuel.

2. If the designers create a vehicle that will bring our plant back to the positions that have been lost in motorbus construction, it will be difficult to produce that vehicle under the present conditions. For years nothing was fundamentally changed here, since we were waiting for a new model. Now the equipment, the rigging, and the tools are in a critical state. I shall not even mention the fact that things are extremely crowded in the production areas. All this not only will tie our hands in the future, but even now is the basic reason for our defective output.

State acceptance, which we partially began in October 1986, has located other problems. The central one is the psychological problem. For decades people became accustomed to certain requirements, and now, all of a sudden, there is a sharp change in the evaluation of the work performed by each person. Therefore we have had to set up a kind of "likbez" [campaign to eliminate illiteracy] -- we explain the new tasks in detail, we carry out educational work with various categories of workers. With the stipulation of the relatively even material-technical supply, most of the workers have approvingly perceived the state quality control. But the middle link to which this stipulation pertains continues to occupy a direct position. When output is returned, this is sometimes perceived as arbitrariness on our part. But after the second submittal the defective work is eliminated. Consequently, the reason for the poor quality is the person's irresponsible attitude toward his duties.

We are also alarmed by the position of the plant's OTK, with which we work in direct contact. Sometimes people get the opinion that the OTK cannot be restructured. When forming our table of organization, it was not by accident that we did not take a single OTK worker, although the overwhelming majority of state checkers are form engineer-technical workers at the plant. The very first steps of the new service have already indicated how important it is, in a time-responsive manner, to shift and concentrate manpower in the key

positions. We carry out control in four main areas: output of production; most important operations; technical documentation; and external acceptance. The control posts change their location in accordance with the specific conditions.

3. Recently my deputy took a trip to the Belaya Tserkov Industrial Rubber Articles Plant, where, in response to his requirement, the technological line was stopped. The ZIL [Moscow Automobile Plant imeni I. A. Likhachev] engines are also of poor quality: it will also be necessary to apply severe sanctions to this supplier. The state acceptance service sees its assignment not only in recording or withdrawing the defective output, but also in preventing it. For the LAZ, with its hundreds of subcontractors, external control is of special importance.

But even the internal ties are still causing production to behave feverishly. It is already obvious that operating by taking articles directly off the wheels will not yield the proper effect, and that the subcontractors must build their relations by sending articles through the warehouse. At our insistence, the enterprise specialists are persistently working on this problem.

Permanently Parked,

P. Pavliv, fitter at the body shop:

1. The plant museum has a display of the awards that were given to our vehicles at international exhibitions and rallies. That was quite a while ago. Time flies, but it is as though the motorbus is parked for a long period of time. During the past five-year plan we put our hopes on a new model. But the designers did not justify our confidence.

I've been at LAZ for more than 30 years. While working here I became a member of the CPSU and was awarded an Order of Lenin. The honor of my beloved collective is very dear to me. And, relying upon my many years of experience, I can confidently state: the Lvov motorbus builders can work at the level of the requirements of the time.

2. Now every member of the collective must re-examine his attitude to his duties. I shall not mention again those who have become accustomed to working in a slapdash manner. We have them in our shift, and our subcontractors' shops also have them. Now we tell them frankly, "That's enough! You're shaming yourself and you're shaming us. But the time has changed now!"

And I'll also mention the indoctrination of the real bosses at our enterprise. How annoying it is to see blanks that have been stamped out at the press shop just lying around in a pile. The parts get deformed, and then they are either rejected or have to be returned for additional work. Are we really to believe that it's impossible to allocate a separate place for them? Disorder gives rise to sloppiness and cools people's enthusiasm. Now it is very important to arouse everyone's work conscience. We have had enough of people hiding behind one another's backs.

Much depends on engineer support. When analyzing the technological scheme, we establish that it is very imperfect. Recently at an open party meeting I made a firm statement about this. Within the shortest period of time the technical documentation has to be brought into conformity with the standards and reproduced, so that it will be available not only at the technical department, but also in the storeroom, and at the work stations. Otherwise we are working blindly. If there is no deviation from the requirements, there will be fewer disputes with state acceptance. At the same time, the design developments should also be raised to the level of the standards.

And there is something else. During the past 15 years or so, I cannot recall a single instance when our equipment has been improved. When you raise these problems, you hear promises. How much delay can one allow, because certain pieces of machinery can be manufactured at the plant to replace the ones that are obsolete.

3. Just today the press shop sent us doors that do not conform to the standard. State acceptance returned four vehicles to us. Our subcontractors have also made their "contribution." Because of their fault we frequently sit around until lunchtime, and then, in the afternoon, we have to rush through the entire day's assignment. In this feverish activity it is only one step toward defective output. We are mostly concerned by the fact that those parts are getting through the plant's OTK. I think that the correct action was taken recently when not all the workers in that department were certified, and some of them were simply dismissed. They include people who have actually been casually chosen -- people who are unqualified and irresponsible.

That is why, last year, the consumers were forced to redo the vehicle bodies that they got from the Lvov Motorbus Plant. These are annoying but justified claims, because our worker's honor is at stake here. We simply do not have the right not to treasure that honor.

#### Correspondent's comments:

Quality is a sore spot at the motorbus plant. That was shown once again by a consumers conference that was recently held at the enterprise, and evidence of this has been provided by the numerous claims being made against the motorbus with the Lvov trade mark. That is why the introduction of the state acceptance of output at that plant is desirable.

What has been shown by the first steps? In October 1986 only one-fourth of the output was accepted at the first presentation, and the rest was returned for additional work. By November half the articles passed immediately. But those changes are only the first step in this large job that will have to be done by the entire collective. This will be promoted by taking a self-critical position in evaluating the state of affairs.

The thoughts that were shared by the representatives of LAZ have also revealed global problems at the plant, the resolution of which is long overdue. It is difficult to imagine on our streets passenger cars or trucks that are 30 years old, and yet we are still riding on buses that date back to the 1950's. The country does not have a bus that would satisfy us today.

There are several reasons for this situation. The plant workers themselves have been living on yesterday's ideas. The VKEI [All-Union Experimental-Design Institute] for the Motorbus Industry, which is situated behind the LAZ fence, during the 24 years of its existence has managed to design just one model of a diesel motorbus, the one that was previously mentioned and that has been recognized as being unsuccessful. For years the institute fulfilled various ministry production orders which sometimes did not have anything to do with motorbus building. The position taken by USSR Ministry of the Automotive Industry also contributed to that indifference. The people on the branch staff worried about developing the priority enterprises producing passenger cars and trucks -- the KamAZ's, VAZ's, ZIL's, and other giants in the automotive industry. But LAZ kept waiting patiently for its turn in the industrial rebirth. The attitude that its very own ministry took toward it, as though toward a stepchild, guaranteed it the place of an outsider on the international scene.

On the eve of the new year, LAZ was visited by I. S. Silayev, deputy chairman of USSR Council of Ministers, and N. A. Pugin, minister of the USSR automotive industry. Recognition was taken of the need to create and produce a fundamentally new domestically-designed motor bus. That problem currently requires a governmental approach.

#### Chernigov Worsted Cloth Combine

Kiev RABOCHAYA GAZETA in Russian 11 Jan 87 p 2

[Article by A. Sakhnovskiy, director of the Chernigov Worsted Cloth Combine, under rubric "Quality -- The Very Heart of the Restructuring": "Fashion and Design: The Director's Thoughts"; first two paragraphs are source introduction]

[Text] "Wear our fabrics." This is the frankly advertising recommendation that A. Z. Sakhnovskiy, director of the Chernigov Worsted Fabrics Combine, gives all its guests. Then he immediately shows his own suit: "Rather nice, isn't it? It's made out of our fabric. It doesn't cost too much, and you can easily buy it in the stores."

Most of the other combine administrators also wear Chernigov fabrics that are easily attainable by the mass purchaser. We agree that this is a rather effective and convincing argument in favor of the quality of their articles. Good results have been obtained in that direction here during recent years. The enterprise was among the first in the branch to be completely changed over to the state acceptance of output. The combine director discusses the way in which the problems linked with that system of acceptance are being resolved and what the textile makers and their subcontractors will have to do in the future.

We have this dream: not ten people, and not a hundred people, but the entire collective of many thousands of people prefer to wear fabrics that they have produced themselves. A dream that we will be proud not only of individual types of our articles, but the entire production range. When this is achieved by everyone who is producing output for the public, that will be the practical resolution of the problem in the sphere of consumer goods.

I will say immediately that, for our collective, that goal is not a distant one, one for the long-range view, but rather is a very close and feasible one. True, in order to make it a close one, it was necessary to restructure production during the past five-year plan.

That restructuring is continuing today, and is being carried out simultaneously in all spheres: the scientific organization of labor, the modernization of the equipment, the improvement of psychological and material incentives, the raising of the proficiency level and educational level of the entire collective, and the improvement of the working and everyday living conditions.

We were forced by life itself to take a sharp turn toward improving quality: it was becoming increasingly difficult for the combine's output to find a purchaser, and the trade system and garment industry had begun to cut down their production orders. By the beginning of the 1980's it became clear that partial measures would not solve the problem, and it was necessary to make cardinal decisions.

Obviously, the demand had to be our orientation marker. But then it turned out that no one knows exactly what the customer wants. We do not have a method of studying the demand which would give us with any guarantee a detailed description of the fabrics that the public is waiting for. Consequently, there remains, essentially speaking, only one objective criterion: produce a set of test consignments with a consideration of the basic fashion trends and give the customer the opportunity to make his own choice. Then the next step is obvious: whatever they take, put immediately onto the conveyor line, and whatever they do not take, remove from production.

It would seem that there could be nothing simpler. But drop into a nearby department store or Tkani [fabrics] store. Most of the sales rooms are hidden in semidarkness. Many of the bolts of fabric look at us not from the right side of the fabric, but from the wrong side. Almost all the samples lie motionless on the shelves: you do not see the fabric in movement, and you have no idea how it will look in a suit or dress.

Thus the simple idea of studying objective demand encountered a high departmental barrier. It was possible to overcome it by creating factory outlets. We opened our first department in the Tkani store on Kreshchatik, in Kiev, and then a separate Desnyanka store on Bulvar Lesi Ukrainki. It was only then that we succeeded in showing our products face to face -- in the literal and figurative senses.

It was here that we learned the actual demand for various types of our products. That information served us like a compass to guide us in deciding what variety of products to order equipment for, to prepare the various kinds of machinery, and what prints and colors to orient our artists toward. Today most of our fabrics have a quality that is superior to that of imported fabrics, and if they yield to imported fabrics it is only with regard to their commercial appearance, because of the fact that chemists cannot deliver to us even the simplest impregnation liquid.

I emphasize the importance of studying demand because the problem of quality in the textile and garment industry cannot be resolved without this -- even by the introduction of the most fastidious state acceptance. We cannot yet put our hopes on that system as a panacea to cure all the evils pertaining to quality.

It is always necessary to begin with the variety, and to study the demand: there is no standard which is able to describe in detail the consumer properties of a fabric, of clothing, or footwear. If the best-made article is not fashionable, no one will buy it today. Standards for fashion do not exist and cannot be foreseen.

At first many of us looked at state acceptance as the latest in a series of temporary campaigns. Because what could three dozen people, even well-qualified ones, change at a gigantic combine? But when they rejected every tenth bolt, there were a few who got indignant. "You used to make this kind of fabric yourselves just yesterday -- and turned it over. Now, all of a sudden, you have become well-principled..."

We, of course, explained that they should not take that way -- people have new duties and a high responsibility. However, for a long time the grumbling did not die down. A major turning point occurred after the well-known meeting at the CPSU Central Committee that dealt with the introduction of state acceptance. Then everyone realized that this is going to last for a long time, and there is no return to the past.

State acceptance was like a cold shower that sobered up many hot heads. The people who are taking it the hardest are those ran farthest ahead in the race for the "gross," to the detriment of quality. This pertains both to the workers and to the administrators.

It is well known, for example, how broadly we used to encourage quite recently the expansion of the maintenance zones. At such time not all the people assigned to several looms succeeded in adhering to the requirements of the technological scheme, but frequently we just closed our eyes to that.

But now we have to open them and have to correct our mistakes. This is something that has to be done: times have changed and there are new requirements. This is how we pose the question now: if you adhere to the quality standards, you can work in an expanded zone, but if not, you'll have to reduce the zone. Naturally, everyone didn't like that. But we realize that there is no other way. We attempt to explain this to everyone.

Convincing people, changing priorities, imbuing in people an inner need to work irreproachably, as though for oneself personally -- those things constitute complicated and difficult work. One still encounters and apparently will continue to encounter bewilderment, insults, and genuine lack of understanding. Therefore it is necessary for us, over and over again, to explain patiently, to improve educational work, and to extend it to everyone.

Time will be needed for everyone to assimilate everything and to become accustomed to the new requirements. But the main requirement is a simple one: if you have produced defective output, then correct it yourself. If you cannot correct it, then compensate for the losses. Everything is done on the basis of justice. Why should the purchaser have to pay for our defective work?

Our weavers, for example, never used to correct their own defects in the output. Instead, it was done by special people -- darners. The defective output that was discovered during the month cost the worker approximately 10 rubles. With wages of more than 300 rubles, those losses are practically unnoticeable and intangible. Especially since the OTK [technical control department] noted on the average only one out of three instances of defective output. But the losses from that for the combine and the purchaser are considerable. Now we teach the weavers themselves how to darn their flaws.

Of course, it is necessary more rapidly to improve the engineer support and the working and recreational conditions -- that is a large concern for the administrators and the engineer-technical workers. Not all of them have become profoundly aware of that yet, and a few of them are waiting for additional instructions.

Putting up a road block against defective output -- that is what people often talk about and do. And we also did that for a long time, until state acceptance began in October. It turned out that that road could be erected, albeit with some difficulty. But what were we supposed to do with the substandard fabric that had already been made -- burn it? Output valued at hundreds of thousands of rubles? But now it is obvious what we have to do: we have to warn people not to allow defective output to occur. As athletes say, we have to play well enough to win.

When people were convinced of this idea that now is obvious, it became clear that it is necessary for us to reorient the entire system of quality control. "From output control to control of the technological process" -- that is the pivotal point in our restructuring.

Previously the OTK workers located the defective output and stopped it, preventing it from moving on to the next operation or to the warehouse. Now the quality service locates and stops not the output, but the machine tool or the machine that is operating with a violation of the technological scheme and that therefore can allow substandard output to get through. This approach is called the system of preventive time-responsive control.

The system was approved in late November 1986 by an enterprise standard and became mandatory for all production links. The control is carried out in six stages. At the first, basic stage, no less frequently than three times per shift, the deputy foremen, OTK checkers, and laboratory workers examine all the work stations in accordance with a schedule. They check to see whether there are any deviations in the condition of the equipment, whether it has been adjusted well, and whether the assignment operating mode and methods are being observed.

These inspections are also carried out during every shift by the shift foremen and the senior OTK checkers, and once every 24 hours by the shop chiefs and chiefs of the production entities. Every Monday the director holds a "reciprocal claims day" with the participation of the state acceptance administrator. This resolves the questions that could not be resolved during the previous week.

In order to guarantee this kind of massive control, it was necessary also to restructure the organization of the quality service. The checkers and technologists were removed from the makeup of the shops and were collected into a single service, which was headed by the deputy combine director for quality. The opportunity was found to increase the salary rates for the personnel in the new service, in order to attract the best-qualified specialists, because they are the people, in our opinion, who must be on a professional par with the state acceptance associates. In a word, our subdivision must be a worthy partner of the state service.

Understandably, these are only the first steps in taking a new, sharp turn toward quality. It will still be necessary to work stubbornly to develop and reinforce the positive changes. But we have no doubts about the direction that that movement must take, and we are trying to travel along our path as rapidly as possible and with the least losses.

#### Karpatpressmash Production Association

Kiev RABOCHAYA GAZETA in Russian 21 Jan 87 p 2

[Article by V. Nazarchuk, RABOCHAYA GAZETA correspondent, Ivano-Frankovsk, under rubric "Quality -- The Very Heart of the Restructuring": "To the Accompaniment of a Rustle of Claims: State Acceptance: Problems and Decisions"; first four paragraphs are source introduction]

[Text] Workers at the Karpatpressmash Production Association in Ivano-Frankovsk reply to a RABOCHAYA GAZETA questionnaire.

1. How do you evaluate the technical level of your articles?
2. Have conditions been created at your enterprise for producing high-quality output? What else has to be done?
3. What are your claims against suppliers? -- how can the interaction with subcontractors be improved?

Why the Brigade Fell Apart,  
V. Mashtalov, leader of a brigade of assembler-fitters:

1. Even before the introduction of the state acceptance at the enterprise, there was an incident that literally shook the entire collective. The oblast center for standardization and metrology banned the sale of our output with the participation of a Gosstandart representative. The reasons were more than clear -- the low quality and the regular production of defective output. It is painful for me, a cadre worker, to admit that we had let things develop to that stage. Unfortunately, we had been put in conditions when we were forced at any price to produce a certain quantity of output. In the final analysis, we went down a blind alley: for a long period of time we have been unable to provide either quality or quantity. The association has not been fulfilling its plans, and we are continuing to receive claims against our presses and automatic lines. What kind of technical level can we talk about under these conditions?

2. The fact of the matter is that our technological scheme has not been completely worked out. Why? Let's allow the specialists to talk about this. I shall not touch upon the organization of the work station. Certification was carried out at our association, but that's as far as things went. The work station, for example, of the assembler-fitter does not meet the elementary requirements. On the whole, a work station, per se, does not exist at all. We continue to work without any moveable tables for our tools. If a person needs a power nut-driver or a drill, he has to run around the entire shop looking for it, whereas those tools are supposed to be suspended at every work station. If you need a drill, you're supposed to stretch out your hand and start drilling. After you have finished the operation, you shouldn't have to move it from one place to another. Having it right there when you need it will not hamper your work.

When I mention all this, I make claims not only on the technologists, but also upon ourselves, because we workers could improve many things. But we just cannot get things set up correctly. There is no solidarity, no collectivism, no zeroing in on a common final result. In our sector we were on the point of forming a consolidated brigade. But whether because we had prepared poorly for the collective work or because we had not yet grown to that extent, we just could not get the brigade contract going. We agonized for several years and, in the final analysis, the brigade broke down into small teams of three to five persons each. Formally the brigade exists, and I continue to be listed as a brigade leader, but we work separately.

Currently the situation is changing. A big impetus to these changes have been provided by the state acceptance. But here too there is no unity. We have workers who misunderstand the seriousness of state acceptance, who feel that it is only preventing them from fulfilling the plan.

3. Actually state acceptance should help us (and is already helping us) in our work with the suppliers. We have large claims against them both with regard to the quality of the parts being delivered, and with regard to the evenness of the shipments. This cannot fail, in the final analysis, to influence the reliability of the presses, because we have to work under conditions of constant crash programs.

A problem that is no less serious is the problem of the interrelations with our subcontractors within the association. We assemblers feel this particularly. With the current procedures, however poorly other shops have worked, when the output is returned by the state-acceptance agency the ones who suffer are those who perform the final operations. In order to avoid this and increase everyone's responsibility for the final result, we have begun to organize complete-operations brigades.

Technical Paradox,

I. Pila, state acceptance administrator:

1. The paradox is that there is no information about the technical level of the association's output. Of course, if one proceeds from the requirements of accelerating scientific-technical progress, there are no doubts that the

quality of the output today cannot satisfy the requirements. But that is a purely intuitive conclusion. In order to make a correct evaluation of the technical level, for example, the casting lines, it is necessary to have reliable information about their reliability and productivity. But we do not have this information at our disposal. Until the present time, more than 100 lines have been produced. Of them, 55 are already located at the customers' warehouses. They include some that were manufactured about 8 years ago. But of those that have been installed, not a single one has yet been brought up to the rated capacity.

A similar situation prevails for presses. From the point of view of the design execution, only the power presses conform to the present-day level. As for means of automation and mechanization of the stamping processes, which exert the greatest influence upon the technical level, they are considerably inferior to the best foreign models. Which indicators are especially important here? They are, first of all, the accuracy of the feeding of the blanks, and their productivity. But what accuracy can one speak of if the mechanization governing the press operates at 50 passes a minute, but the press operates at 70 a minute. What results then, as the expression goes, is just hay and straw. Moreover, we cannot be proud of the productivity of our machines. Whereas our press makes 70 passes a minute, then, for example, the equipment produced by French companies makes 270. And their accuracy is more than almost a hundred times greater.

2. What is the crux of the matter here? Are we really to believe that our designers are incapable of creating a press that would not only conform to the foreign ones, but even surpass them? Designing a press is one thing, but producing it is more complicated. What do I have in mind? The technological scheme for production. That scheme has not been worked out absolutely. In present-day production areas the output which is supposed to determine the technical level of other plants is being produced by an extremely primitive method. Production has been provided with design documents to only 70 percent of its needs. In general, the providing of technological documentation is a virgin field. Modern presses are actually being manufactured by eye. There is an acute shortage of control-measurement instruments, gear, tools, and attachments.

What has to be done to improve the situation? It would seem that all the factors have been taken into consideration in the measures that have been developed in the association. But one can already see today that not everything is being carried out. Output is frequently accepted only after the second presentation. But returning the output does not have any effect on the material compensation paid to the workers, and I categorically disagree with that, because one must be as strict as possible in making a person responsible for quality and it is always more difficult to break a psychological pattern that has developed than to form a new one. We already see among our workers today dissatisfied ones who do not understand the essence of state acceptance, and what will happen tomorrow? We ought not to disregard the main factor -- the restructuring of the psychology of the person himself, of his readiness to work under the new conditions.

3. I just want to shout out, "Oh, those subcontractors!" Why can't they work yet in such a way as not to let one another down? I would have difficulty in naming even one whose work satisfies the association.

I would like to mention our immediate subcontractor -- the technical control department of the Karpatpressmash Association -- because it is precisely that department from which we receive the relay baton. Unfortunately, the OTK has operates unsatisfactorily today. It has become a passive recorder of finished output. And yet its duties include the direct participation in the manufacture of the output. Not only control, but also, primarily, exerting an influence upon the quality of the articles in the production process. They are not doing that. Moreover, the OTK is attempting right now to shift some of its duties to state acceptance. The checkers frequently request us to authorize the sale of output that has not been completely checked, giving as their reason the fact that they do not have the necessary checking instruments.

Inferiority Complex?,

N. Shinkarenko, general director of the association:

1. I feel that practically all the output that is produced at the association fails to conform to the world level. And it is a matter not only of the poor quality of the presses and the automatic casting lines. It is also the consequence of those phenomena of stagnation which have profoundly affected the association, and especially the stagnation of design and engineering thought, as a result of which the Ivano-Frankovsk machine-tool builders have found themselves in the position of not having their own base model. Therefore the machines that have come off the enterprise's conveyor belt, and that are still coming off it, were designed not in Ivano-Frankovsk, but wherever, and not infrequently in accordance with obsolete technical production orders from various ministries. Thus, out of nine models, there is not a single one that is not one of a kind.

2. Our technologists are simply crying their eyes out, because for every model it is necessary to develop its own technological scheme, or, in the direct sense, to begin everything from scratch. Sometimes this is very complicated, if not completely impossible. And therefore we frequently hear the workers expresses many words of reproach concerning the interruption of the technological processes, and this cannot fail to have an effect on the quality of the output and on the low rate to which the work stations are supplied.

The more I penetrate into these matters, the more obvious the imperfection of production becomes. I anticipate the question: but what are you, as the general director, doing to change the situation? It is still a bit early today to talk about any major restructuring. But the main thing that we have achieved is that we have created a precise program for restructuring the production. Today the efforts of the designers and the entire collective are aimed at creating our own base design for a press, a design which must not only conform to the best worldwide models, but also surpass them.

The forecasts are optimistic, because a major turning point has already been noted. People have come to believe in the possibility of making a

breakthrough. They have been initiating a large number of interesting initiatives that promote the acceleration. For example, for the purpose of accelerating the development of new models, the designers have organized five comprehensive engineer brigades which are boldly taking on the most complicated assignments. The person who became their initiator is B. B. Yakibyak, chief of the design bureau. In the assembly shop, the initiative of striving for quality from the blank to the finished articles has been born.

3. For the time being, we unfortunately have not been protected from the pernicious influence that our suppliers exert on the final result, because they continue to work in the old way. The cast blanks produced by the Tsentrolit and Pressmash plants in Odessa are of unsatisfactory quality. And there are other plants that we are not particularly happy about.

#### Correspondent's comments:

In recent years there have been many people, in many places, who have criticized the Karpatpressmash Production Association. General directors and chief engineers have been replaced, one after the other. But that has not improved the situation, but, rather, has probably worsened it. The situation became especially bad when Minstankoprom [Ministry of the Machine Tool and Tool Building Industry] suddenly decided to unite two neighboring enterprises which had absolutely no technological links with one another -- the power press plant and the Avtolitmash plant. That was done without any elementary preparation, but as the expression of someone's will. Therefore those shortcomings that had previously existed manifested themselves more seriously. But the main thing is that this had a chilling effect upon the collective. It was then that one saw the appearance of the inferiority complex that was mentioned by those who responded to the questions in the RABOCHAYA GAZETA questionnaire. All of a sudden, claims came pouring out, as though from a cornucopia. They sometimes arrived (and currently are still arriving) with a delay of 7-8 years, that is, they are claims concerning output that was manufactured as long ago as 1978. The casting lines produced by the former Avtolitmash Plant especially make themselves known.

Everyone realizes that the situation cannot go on this way any longer. It is necessary to correct the mistakes. And that is precisely the task that was given to N. N. Shinkarenko, the new general director of the association, who previously headed the Kolomyiaselmash Plant, which succeeded in mastering the production of the fundamentally new self-propelled Karpatets PEA-1.0 loader. The new director began by consolidating the collective. It is still too early to make any profound evaluations. But one cannot fail to see those changes that have occurred at the enterprise during recent months. Those changes exist, primarily, in the moral miniclimature of the collective, in people's moods. Of course, definite frictions still exist. There are also differences of opinion with respect both to quality and to the running of the state acceptance. But nevertheless the ice has started to break up.

## State Acceptance at Chekhov Plant

Moscow STANDARTY I KACHESTVO in Russian No 2, Feb 87 pp 3-9

[Interview with Ye. T. Tereshchenko, manager of state acceptance, on 27 November 1986, by L. N. Alperin: "Labor Days of State Acceptance Trailblazers"]

[Text] "This measure--state acceptance--is a major one. Consequently, the requirements for the preparation are also special now... We must keep in mind: We have too much neglect here... For too long both engineering and technical personnel and other industrial workers have accustomed themselves to an average level and have been oriented toward lowered criteria. All this must be rectified and decisively at that... We have no other way... There is a need for sensible, far-sighted, and thorough work."

M. S. Gorbachev

From the editorial department: The Chekhov Power Machine Building Plant is one of the country's 19 enterprises which has conducted an experiment convincingly confirming the high success rate of the new nondepartmental control organs subordinate to the USSR State Committee for Standards--state acceptance. In the PRAVDA editorial dated 26 November 1986 "Acceleration and Quality" this plant reveals the list of enterprises at which, owing to state acceptance, significant positive changes occurred in work on improving the quality of output and whose experience should be studied and disseminated.

Last March, when the experiment had already fully proved to be correct and the decision on its intensification (replacement of selection control over the acceptance of limited-list articles carried out by the representation of the USSR State Committee for Standards with a continuous state acceptance of all basic enterprise output) had been adopted, our special correspondent, fulfilling an assignment of the editorial department, visited the Chekhov Power Machine Building Plant and prepared the material "State Quality Control (Talks About the Activity of the Representation of the State Committee for Standards at the Enterprise) published in the journal's June issue.

Maintaining constant communication with the plant, the editorial department closely followed the course of systematic work on forming the new service envisaged by the decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures For a Fundamental Improvement in the Quality of Output."

In November, when state acceptance began to perform its functions in a full volume, the journal's special correspondent again visited the Chekhov Plant. In his talk with Ye. T. Tereshchenko, manager of state acceptance, published below he discusses both the path traversed and difficulties overcome by the new service and the already uncovered problems, which must be solved in the process of implementing the policy of raising the quality of output up to the world level undertaken by the party.

The editorial department hopes that familiarization with the experience of one of the trailblazers will help those following the way paved by them to profoundly realize the objective need for "sensible, far-sighted, and thorough work."

[Question] Yevgeniy Tikhonovich, in March 1986 during our talk you managed the chairmanship of the State Committee for Standards, which experimentally carried out control over the development, production, and acceptance of products. There were four of you and your influence extended only to 15 percent of the plant output. Now you manage state acceptance which, as far as I know, has been almost fully formed and has been performing its functions in a full volume as of 1 November. Could you describe the basic stages in the formation of the new service?

[Answer] In accordance with the order of the chairman of the USSR State Committee for Standards control over acceptance carried out by the representation was replaced with state acceptance of output on 20 March. This acceptance began to be carried out with full responsibility, that is, with the understanding that we are entirely responsible for the quality of plant output accepted by us.

Since May, after the decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures for a Fundamental Improvement in the Quality of Output" had been published, through August we gradually increased the volume of accepted output from 15 to 60 percent, involving in this work permanent representations of the inspectorates of the Ministry of Power and Electrification and of the Ministry of Foreign Trade at the plant. The point is that these representations, which in accordance with the mentioned decree were subject to liquidation, continued to operate. I reached an understanding with them about the principles, forms, and methods of acceptance and the list and volumes of articles accepted by them and, in fact, they began to work with and for us. Subsequently, most of these workers were officially included in the structure of state acceptance.

From August, when we were given staffs, until November we recruited people and gradually extended state acceptance to all the articles produced by the plant, except for those accepted by the representation of the State Committee for Safety in Atomic Power Industry.

#### "Calculation" of the New Service

[Question] You said that in August you were given state acceptance staffs. Could you tell me who determined them and how? After all, the Statute on the Organization of State Acceptance (RD 50-612] gives very general recommendations for the structure and quantitative composition of state acceptance. It states definitely only that state acceptance staffs are approved by the State Committee for Standards and the right to appoint officials of the new service is granted to its manager.

[Answer] This statute was approved by the decree of the State Committee for Standards of 28 July. However, I happened to think about what state acceptance staffs should be as early as March, when the order of the committee chairman on developing the representation into state acceptance had to be implemented.

I must say that this was not an easy task.

The experiment has shown very convincingly that, in principle, acceptance of articles at the final stage of their production cannot become a reliable barrier in the path of poor-quality products to the consumer. Even the strictest acceptance cannot ensure the disclosure of all flaws, especially hidden ones. A latent defect manifested in the process of operation, as a rule, is the result of a technological violation occurring before acceptance and, therefore, outside its field of vision.

[Question] However, the "field of vision" of state acceptance neither during the experiment, nor now is limited only to final articles represented by the technical control department. As far as I remember, during our first talk you discussed two major directions in the work of the representation, which supplemented each other: strict uncompromising acceptance of finished output and work on uncovering and eliminating the reasons for violating the requirements of standards and other scientific and technical documents carried out on the basis of purposeful control over production at all its stages. At the same time, you especially stressed that the strictness of acceptance was a very effective means of creating favorable conditions at the plant for the development of work on preventing rejects and claims.

[Answer] All this is correct, but has a bearing on control carried out in addition to the acceptance of the final product. Furthermore, our conversation took place before 20 March, when we only carried out control over acceptance, not the acceptance itself. However, having felt full responsibility for articles with the mark of state acceptance leaving the plant's gates, we began searching for ways of decreasing the probability of acceptance of articles with hidden flaws. As a result, it was concluded that acceptance of the final product should be supplemented not with occasional inspection control, but precisely with acceptance of its most important subassemblies and parts and, moreover, with permanent acceptance carried out at different stages of their manufacture.

Now in accordance with RD 50-612-86 this problem is solved by means of permanent control over the production of products, which together with a patrol inspection of production constitutes the basic content of control over the production of products--one of the directions in the work of state acceptance on controlling the quality of output. In addition to acceptance proper, control over technical documents, control over ensuring the reliability of accepted products and claim work, control over standardization work, and control over the state and application of measuring means and over the observance of metrological rules are other directions in this work. All this has been noted down and explained in detail.

Since, as I have already mentioned, this statute did not exist in March, we ourselves had to determine who should do what so that the tasks set are accomplished reliably and efficiently. In order to determine the composition, skills, and number of state acceptance workers engaged in the acceptance of or permanent control over the manufacture of parts and subassemblies directly at shops, production sections, and work places, block control diagrams for every type of article were developed and approved at the Moscow TsSM.

We began the development of these diagrams by reflecting all--both technological and control--operations performed by the technical control department and the nondestructive control methods department in a strictly determined sequence.

As a result of an all-around and careful analysis of production technology, we determined the basic causes and places of an early manifestation of the most probable critical and significant flaws and then also the places of permanent control over the quality of manufacture of parts and subassemblies carried out by state acceptance. These places were plotted on block control diagrams in the form of appropriate points, which we called points of acceptance.

At every point of acceptance output and the necessary documents are presented to state acceptance workers, who in case of detection of some deviations make a patrol inspection of appropriate technological and control operations right up to the first preceding point of acceptance. Knowing the possible causes of certain flaws, the acceptance clerk usually does not lose much time on a patrol inspection of appropriate operations. As a rule, having determined the causes of detected deviations quickly and accurately, he promptly takes the measures necessary to prevent a possible defect.

[Question] Were block control diagrams developed for all parts and subassemblies?

[Answer] Only for those whose poor-quality manufacture lowers the consumer properties of final articles, especially their serviceability. The manufacture of all other parts and subassemblies is controlled by the technical control department and is subject to a patrol, usually planned, inspection of state acceptance.

All these block control diagrams, on the basis of which we then developed the List of Obligatory Control and Acceptance envisaged by RD 50-612-86, made it possible to determine the composition and number of acceptance clerks, that is, the basis for the service that had to be formed.

In order to determine the full complement of a state acceptance organ, we formed a matrix, whose horizontal was formed by consolidated groups of articles and its vertical, by state acceptance and all other directions in the work on controlling the quality of output. As a result, the staffs of the new service were "calculated" and the plan for recruiting necessary people was formulated.

[Question] To what extent was your so carefully substantiated plan for recruiting people fulfilled?

[Answer] According to my plan, there should be 27 people in state acceptance and according to the approved list of staff members, 25 but, in fact, there are 23.

"Robbery" for the Sake of Skilled Help

[Question] Please tell us about the structure and composition of workers of your service.

[Answer] State acceptance includes four groups of workers.

The first controls technical documents, checks the readiness of articles for certification according to quality categories, and controls the performance of periodic tests. In this group there are now six people. It is headed by a senior representative who, in fact, is my deputy. Incidentally, he was my deputy even when I was the plant's chief technologist. In addition to designers and technologists, the first group includes a worker engaged in personnel recording and secretarial work.

The second group headed by the former chief welder manages the plant's entire metallurgical and welding production. It pays special attention to the acceptance of base members in casting shops (the plant has three casting shops: for steel casting, electroslag smelting, and iron casting). In the second group there is a representative responsible for receipt control over all (basic and auxiliary) materials. A specialist controlling the correct performance of laboratory tests and the reliability of the results of applying nondestructive control methods works in the same group. In the second group there are also six people.

The third group consisting of five people accepts large fittings and bolts and the fourth, which includes six acceptance clerks, small fittings and bolts. In addition to the acceptance of final articles, they are engaged in a permanent and patrol inspection of the manufacture of their parts and subassemblies in accordance with the diagrams, which I have already discussed.

[Question] Are state acceptance workers former plant specialists?

[Answer] For the most part, they are plant specialists, as well as workers at former representations of the inspectorates of the Ministry of Power and Electrification and the Ministry of Foreign Trade.

[Question] Judging from the fact that in the past you and your deputy headed the plant's technological service and the former chief welder heads the second group, state acceptance is staffed with highly skilled specialists.

[Answer] Indeed, this is so. The former deputy chief engineer, deputy chief of the technological program processing department, deputy chief of the technological billet department, deputy shop chief, and a number of other important specialists work here. As you realize, this is not accidental. We tried to provide all technological processes and key production points with skilled control.

[Question] It turns out that you very thoroughly "robbed" the plant's engineering services. Was the administration opposed to the departure of specialists?

[Answer] This "robbery," as you say, came with blood. We had not only to ask and convince, but also to pressure.

[Question] The administration's resistance is understandable. The question lies in something else: Did the specialists themselves go to you willingly?

[Answer] Yes, they went willingly.

[Question] Can this be attributed to the prestige and high wages of state acceptance workers? Or to the fact that it is always easier to control than to create?

[Answer] Basically, the wages are the same as before, but the work is hardly easier than in production. However, responsibility in state acceptance is immeasurably higher. Here, on the one hand, there is the quality of output, for which we are responsible to the state and the USSR State Committee for Standards and, on the other, a collective of many thousands of people.

[Question] Yevgeniy Tikhonovich, can one say that, having replaced the position of the plant's chief technologist with the position of manager of state acceptance at it, in the drive for the quality of output you began to fight, as the saying goes, on the other side of the barricades?

[Answer] This is not so. As before, I am engaged in detecting and eliminating production shortcomings. Only now I do this in a somewhat different manner and, as it seems to me, with a greater success rate.

[Question] This higher success rate is determined by the extensive rights granted to state acceptance and by the fact that their use is not held back by interest in fulfilling the plan according to the volume or sale of output.

[Answer] In fact, we have extensive rights and opportunities and all our incentives are not connected with the quantity and sales of output. However, solving the problem concerning the quality of output at the expense of its quantity is not what is needed. It is necessary to ensure a plant operation that would enable the plant to produce products of a given quality in necessary volumes with minimal losses. Therefore, our task, on the one hand, is to create a reliable barrier against poor-quality products and, on the other, to help the plant to uncover and eliminate all the reasons for the manufacture of such products. In order that this help may be effective, we have recruited highly skilled specialists for state acceptance.

Incidentally, under conditions of state acceptance skills give a big return, because specialists are able not to waste time and energy on production turnover. We try to organize work so that we have time to think and jointly with the plant administration and specialists to find an optimal solution. This is especially important when a formal approach to a task is unacceptable.

[Question] Could you cite an example of an informal approach to the solution of arising problems?

[Answer] In accordance with existing technology, finished articles after painting should dry in a shop for 24 hours. However, at the end of the month, owing to production irregularity, so many such dried articles are accumulated that there is not enough room for them. In order that this does not become the reason for production stoppage, the plant director requested that we permit the delivery of articles, which have not yet dried, to the warehouse. At the same time, we were assured that, if the painting is wiped off somewhere, these spots will be painted over at the warehouse.

We read appropriate documents, gave thought to them, and proposed a solution allowed by existing specifications: To cover the articles with a ground coat in the shop and after 6 hours, during which it will dry, to transport them to the warehouse and to paint them there.

This proposal was accepted and the undertaking was successful.

However, helping the plant to fulfill the plan without damage to the quality of manufacture of products, we began a decisive fight against production irregularity. For example, in accordance with the sectorial standard during the last 10 days of the month output should not exceed 40 percent of the monthly plan. However, at the plant there are frequent cases when up to 80 percent of the monthly output is produced during the last 10 days. This has a negative effect not only on the quality of manufacture of products, but also on the quality of their acceptance. After all, both acceptance clerks and the equipment used by them have a fully determined capacity, which it is inadmissible to exceed. Therefore, I have notified the director that the maximum volume of output, which state acceptance will accept during the third 10-day period of the month, will be lowered at first by 10 percent and then by 5 percent every month, so that by the end of the first quarter of 1987 this volume does not exceed the permissible volume (40 percent).

[Question] If the assistance of state acceptance is accompanied by such severe requirements, it is unlikely that people will turn to you.

[Answer] Judging from everything, this does not threaten us. Literally yesterday, when controlling holes for bearings with plugs, galled spots began to appear in aluminum steel bodies--aluminum is aluminum. The technical control department itself stopped this production. The shop chief came to us and asked us to help find the way out of the situation that has been created. We proposed the manufacture of another measurer--with radius transitions along the edges. It was quickly made and polished and the undertaking was successful.

[Question] Apparently, you not only give assistance to those who turn to you, but you yourselves uncover problems and participate in their solution.

[Answer] During the last 2 months state acceptance has made more than 30 suggestions aimed at changing designs of articles, improving their manufacturing technology, and refining production organization. We directly participate in the realization of a number of our proposals.

The following example can be cited: Two weeks ago during stand tests of electric drives it was established that they did not develop the necessary twisting moment stipulated by specifications. On the initiative of state acceptance the chief engineer held a conference, to which representatives of the sectorial institute were invited. As a result, a decision was made to change the toothing of the worm with the wheel. Special cutters were brought literally the next day. My deputy and other state acceptance workers made the necessary calculations and together with workers cut several wheel versions. Then they conducted tests, chose the optimal version ensuring the necessary twisting moment, and issued appropriate recommendations to designers and technologists for changing technical documents.

Thus, the technology of gear wheel cutting with a longitudinal tooth modification was introduced. As a result, the transmission was made less sensitive to installation errors. However, this did not prevent us from attaining the required characteristics and increasing the load capacity of this transmission, that is, from fulfilling standard requirements.

Owing to the creative cooperation among state acceptance, the plant, and the sectorial institute, it was possible to solve this problem in 4 days.

Strictness of State Acceptance and Difficulties in Production Intensification

[Question] Yevgeniy Tikhonovich, you cited convincing examples of a successful accomplishment of an important state acceptance task--giving the plant assistance in uncovering and eliminating the reasons for rejects and claims. In fact, an informal approach, mutual understanding, and mutual assistance are needed here. However, all this is hardly acceptable during the accomplishment of the main state acceptance task--creation of a reliable barrier against the output of poor-quality products.

[Answer] Indeed, this is so. We accept final articles in a very strict manner. Otherwise, proper order cannot be introduced.

[Question] Could you illustrate this with examples?

[Answer] During a check on body welding technology significant violations of the requirements of technical documents were revealed. Welding was stopped. Order was introduced within 24 hours and welding technology became what it was supposed to be. Since work was not done during 24 hours, this created certain difficulties with the plan fulfillment.

We also stopped the acceptance of check valve bodies smelted at the steel shop without any technology.

[Question] What does it mean without technology?

[Answer] Without the necessary documents stipulating what should be manufactured and how, what requirements should be fulfilled, and how this should be controlled and evaluated. Such technology should be developed, introduced, and formulated by the appropriate act.

[Question] How long has your prohibition been in effect?

[Answer] Almost 3 months.

[Question] Is this reflected in workers' bonuses and earnings?

[Answer] It is, but negligibly, because the proportion of the production of these articles is not big.

Not the prohibitions themselves, but their results, that is, the need to work strictly according to technology, are much more strongly reflected in bonuses and earnings.

[Question] Please explain this.

[Answer] As a result of checks it was established that during the repair of castings many operations envisaged by technology simply were not performed. For example, scraping was not done before surfacing. When it was necessary to do everything that technology prescribed, output was reduced and, consequently, earnings were lowered.

Here is another example for you. According to technology, a hole in the body should be bored in three operations: rough, semifinished, and finished. However, workers bored these holes in one operation. Of course, assigned tolerances were not adhered to. When we demanded the observance of

tolerances, they began to complain that machine tools were bad. However, the check of machine tools for technological precision showed that it was a totally different matter. All three operations had to be performed, which led to a reduction in earnings. Owing to this, several people were even dismissed.

[Question] It turns out that to improve the quality of manufacture of products with the same output is a very difficult matter.

[Answer] It is difficult and not everyone accepts this, at least immediately. For example, a brigade of assemblers recently complained to the secretary of the plant party committee about the fact that, owing to the halted acceptance of a number of parts by the technical control department, for almost half a month it had nothing to assemble and, consequently, it earned nothing during that time. However, the party committee explained to that brigade that it came to the wrong place and sent it to the workers, owing to whose poor-quality work it was forced to idle. The workers came to an agreement quite quickly and matters proceeded as necessary.

In this connection it is necessary to take into account that for many years workers have been required basically to increase labor productivity. It is simpler to do this, ignoring certain technological requirements. They have become accustomed to this and often they quite sincerely do not understand why they are required to do what they did not have to do yesterday. At times they perceive the restoration of full labor intensiveness in the manufacture of articles as additional work and believe that an additional pay for it is needed.

Therefore, the party committee is engaged in extensive explanatory and educational work at the plant. For example, an expanded meeting of the party committee on problems of improving the efficiency and quality of plant work under conditions of state acceptance is now being prepared.

At the same time, in order to fundamentally solve the problem of improving the quality of output with a simultaneous labor productivity growth, it is necessary to retool the plant, primarily its casting production, because, for example, obsolete technology from the early 1950's has been applied in the steel casting shop to this day.

Time is passing and requirements on our fittings are increasing, especially on their reliability and safety, but body casting technology is still the same as many years ago.

[Question] How is the correspondence of manufactured fittings to the modern requirements placed on them ensured?

[Answer] By strict all-around control, as a result of which up to 95 percent of the castings are subject to repair. This is highly labor-intensive and expensive.

[Question] Does the solution of the problem of reconstructing the steel casting shop depend on the ministry?

[Answer] Yes, this is a sectorial problem. At the plant's insistence the plan for reconstructing this shop was developed during the 1960's. This plan was revised in 1977. The plant has been waiting for the shop reconstruction for the third 5-year period, although its plan has to be changed again.

[Question] What can state acceptance do for the solution of this sectorial problem?

[Answer] At our request the State Committee for Standards is submitting this and a number of other sectorial and intersectorial problems for a discussion at the joint meeting of the committee and board of the Ministry of Power Machine Building.

At the conclusion of our talk I would like to note especially that state acceptance at the plant has just begun working in a full complement and in a full volume. However, a great deal has already been done. It can be said that the chief thing has been done: Production technology has been brought into a regulated state, in which the causes of the appearance of critical and significant defects worsening the consumer properties of output have been virtually excluded. Nevertheless, a great deal will still have to be done so that technology fully meets modern requirements.

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#### State Acceptance at Watchmaking Plant

Moscow STANDARTY I KACHESTVO in Russian No 3, Mar 87 pp 16-21

[Interview with B. I. Kozlov, manager of state acceptance at the Second Watchmaking Plant Production Association, with L. N. Alperin, on 12 January 1987: "State Acceptance Is the Catalyst of Restructuring"]

[Text] From the editorial department: Implementing systematic control over the activity of state acceptance, the USSR State Committee for Standards examined the work of the new nondepartmental control service at the Second Watchmaking Plant Production Association.

Since a number of important aspects in the work of this service, especially in the nature of its effect on restructuring the activity of this enterprise, proved to be very interesting and revealing, we asked B. I. Kozlov, manager of state acceptance at the Second Watchmaking Plant Production Association, to answer questions by our special correspondent. A report on this talk is offered to your attention.

#### Sectorial and Individual Specificity

The Second Watchmaking Plant Production Association is one of the major enterprises of the country's watch industry. It annually produces about 10 million watches of 16 types. They include women's and men's mechanical wristwatches, men's quartz watches, electronic-mechanical clocks, mechanical and quartz alarm clocks, stopwatches, and other articles. Annual commodity output is estimated at 104 million rubles.

In addition to the Second Watchmaking Plant, the association includes three large affiliates and the Moscow Artistic Watchmaking Plant, at which, on the whole, about 11,000 people work.

Among the country's watch industry enterprises the association is considered fully satisfactory from the point of view of the quality of output. For example, the proportion of output of articles in the highest-quality category makes up 44 percent and more than 30 percent of the output is exported to various foreign countries. The technical level of Slava watches is quite high. However, not all their models correspond to the world level in all parameters. The quality of watchmaking is not yet sufficiently high and stable.

At the Second Watchmaking Plant Production Association state acceptance, as at all the 1,500 industrial enterprises, was put into effect in stages. Last October it began to accept about 30 percent of the output, in November, more than 50 percent, in December, 71 percent, and as of January of the new year, all 100 percent.

As at all other enterprises, state acceptance is to ensure both an increase in a defect-free manufacture and a further rise in the technical level of watches.

Discussing these tasks, B. I. Kozlov especially stressed that they were the facets of a single problem. Therefore, they had to be solved overallly and simultaneously. For the time being, however, this does not happen. The problem is solved in stages. Now, at the first stage, state acceptance is forced to concentrate its attention on ensuring a sharp rise in the level of a defect-free manufacture of watches.

The point is that the share of watches returned and repaired during the warranty service period reaches 2 percent. This means that every year almost 200,000 people are not satisfied with the output of this enterprise. This shortcoming must be eliminated during the shortest time. Therefore, first of all, it is very important to bring output into conformity with the requirements of existing standard-technical documents, that is, to ensure a strict observance of technological machining, assembly, control, and test processes.

How acute this task was can be judged from the fact that in October, when state acceptance began to unfold, only 4 to 10 percent of the finished output, which underwent a whole set of checks at control testing stations, was accepted on the first presentation. Only owing to the fact that the association promptly took the necessary measures and carried out vast work on strengthening labor and technological discipline did the situation begin to improve. In December the level of acceptance on the first presentation rose to at least 70 or 80 percent.

#### New View, Other Possibilities

Now, B. I. Kozlov said, the level of acceptance of output on the first presentation has reached 80 to 90 percent. However, this does not mean that all the problems connected with ensuring a stable high-quality manufacture of products have been solved. There are still many unsolved problems both in machine and in assembly shops. Thus, the first stage in the solution of the quality problem at our association's enterprises has by no means been

completed. It is continuing and stepped-up work on increasing a defect-free manufacture of products is being done.

[Question] Boris Ivanovich, as far as I know, you are a veteran of this enterprise with a 30-year length of service and you have traversed the path from a fitter to the chief engineer at this association. You worked as the chief of the technical control department for at least 9 years and as the chief engineer for 4 years before you became the manager of state acceptance. Nevertheless, you talk about the fact that extensive and difficult work on increasing a defect-free manufacture of products is ahead as though this is unexpected for you. Or am I mistaken?

[Answer] Indeed, this is so. It would seem that there are no secrets in production for me. However, a great deal is now revealed in a totally different manner. What I previously did not notice is also manifested here. Even if I did notice it, I had no time or strength to correct it. Then I again did not notice it, because I got used to and accepted it. Above all, all the time there were other, seemingly more important matters, on which both time and effort were spent. This did not seem only to me--there were different times, there were other tasks, other criteria of evaluating what was good and bad, what had to be done immediately, and what could wait.

However, even now, when the introduction of proper order into production has become the most important matter, everything, even the shortcomings that are already known, cannot be eliminated right away. After all, 15,000 technological processes operate at the association's enterprises and every assembly shop, where 400 to 500 people work, manufactures 200 to 300 different parts. Thus, the quality of manufacture of every part cannot be controlled and the observance of every technological process cannot be checked. Moreover, this is not the task of state acceptance. All this should be done by technical control department workers. There are about 950 such workers on the staff. However, 51 people are now engaged in state acceptance (in accordance with the revised list of staff members their number will increase to 71).

I don't say this in order to complain about our small number, but in order to especially stress the following: Experience in and knowledge of production are necessary, first of all, in order to reveal, among the entire set of shortcomings, so-called "sore points" of this production, in order to prepare, with due regard for them, the List of Obligatory Control and Acceptance envisaged by RD 50-612-86, and in order to determine the structure and composition of the new service.

State acceptance at the association is organized so that the following are ensured: first, a strict acceptance of all finished articles; second, permanent control over the most important parts and subassemblies, whose poor-quality manufacture is fraught with significant defects in finished articles; third, a patrol inspection of the parts and technological operations, which at a certain moment evoke doubt among acceptance clerks, that is, they suspect that the causes of defects, which can lower consumer properties, can be hidden there, or of critical parts subject to permanent control, or of the association's final products--watches. Very often a patrol inspection is made

for checking and uncovering the reasons for claims by assemblers or workers at control and testing stations, as well as for checking the results of analysis of the reasons for claims or defects eliminated by warranty shops.

Permanent control points, where critical parts are accepted, are not established forever. As the technology and organization of production of some parts are adjusted and failures in the manufacture of others are revealed, permanent control points are changed.

Since the Second Watchmaking Plant Production Association is a large enterprise, during the formation of the new service we were guided by the model block diagram of large-size state acceptance presented in RD 50-612-86. Naturally, the specific nature of the association, in particular, the fact that mass production dispersed over five Moscow enterprises was most characteristic of it, was taken into consideration. For example, there is one group of standardization, metrology, and tests for all state acceptance. But there are several groups for the control of machining and assembly production, because they are located at the association's different enterprises.

The new service has mostly people engaged in the acceptance of finished products (52 percent of the total number). They are united into four groups, that is, according to the number of control and testing stations existing in the association, because acceptance is carried out only after watches are checked at a control and testing station.

Furthermore, a watch analysis section and a receipt control section have been organized within the structure of state acceptance and there are [sections] responsible for testing equipment, instruments, and tools.

Discussing his service, B. I. Kozlov especially stressed that it was formed so that people could figure out the original causes of rejects and find the most effective ways of eliminating them. The most skilled and experienced specialists, who are well familiar with production and are able to think, and conscientious workers with principles rooting for the common cause have been recruited for state acceptance. Therefore, it is not accidental that it includes 56 percent of plant workers with a considerable length of service, more than 90 percent of workers with higher education, and 81 percent of party members.

#### Advantages of Heavy "Weight Category"

Since mass production is characteristic for the association, statistical methods of control are widely utilized during control and acceptance.

We cannot do without them, B. I. Kozlov said. In fact, the association produces more than 40,000 different watches daily. It is very complicated and, moreover, unnecessary to accept every article. The point is that output, which has undergone 100-percent control at a control and testing station, is presented to state acceptance. At the same time, watches undergo tests, whose length, depending on the type and model of an article, can be from 6 to 20 days. Therefore, it makes no sense for us to control every article after a control and testing station. We take a sampling and, according to the

results of its control, draw a conclusion on the quality of manufacture of the entire batch. When determining the volume of sampling, we are guided by the All-Union State Standard 18242-72.

[Question] It turns out that the better the technical control department works, the easier it is for state acceptance.

[Answer] There is nothing surprising in this, because both state acceptance and the technical control department do one common thing, ensuring the prevention and stoppage of an output of poor-quality products. At the same time, naturally, the more the technical control department undertakes, the less remains for state acceptance. It cannot be vice versa, because in the technical control department there are almost 950 people, but in state acceptance there are now 51. However, enjoying, in fact, all the rights of the USSR State Committee for Standards within the framework of the association, small-size state acceptance is intended to ensure an accelerated restructuring of the work done by collectives of all subdivisions and services. A practical solution of this complex and responsible problem is possible only if under the effect of state acceptance the technical control department becomes a service capable, through a systematic purposeful effect on all the links and aspects of production, of ensuring a high-level quality of output.

Such a transformation is taking place. The technical control department has begun to much more strictly control the quality of manufacture of parts and subassemblies, as well as of finished articles. Controllers themselves now reject everything that is necessary before they present output to state acceptance. This was immediately reflected in the work of all the association's enterprises. For example, plan fulfillment has now been complicated by a number of circumstances. However, the plant, as before, does not produce rejects. Production associations and services take the necessary measures so that the quality of manufacture is on a level.

[Question] Please explain why such changes occur? What is the advantage of state acceptance over the technical control department? After all, their basic weapon is the same--rejection or return of poor-quality products for further improvement.

[Answer] Indeed, the basic weapon of state acceptance and of the technical control department is the same and, moreover, the nature of its effect is the same. But the strength of effect is different, because the technical control department is the service of enterprises, while state acceptance, of the USSR State Committee for Standards. Therefore, they have, as the saying goes, different "weight categories."

Indeed, the technical control department can return poor-quality products once, twice, three times, and so forth to executors. Accordingly, manufacturers will be punished both morally and financially. However, production will continue. The very fact of return (first return!) of products by state acceptance becomes an extraordinary event not only for the subdivision manufacturing poor-quality products, but also for the entire association, because the readiness of articles for the second presentation to

state acceptance is certified by the general director's personal signature. This is done after the realization of appropriate organizational and technical measures aimed at eliminating the causes of the first return is controlled.

In brief, conditions have now been created at the association's enterprises so that their management does not risk a situation in which products are returned by state acceptance. This, in turn, creates favorable conditions so that the technical control department fulfills its functions in a full measure. In time this tendency will inevitably lead to the fact that technical control will be considered an organic part of the technology of manufacturing articles and people will begin to treat it as a very important and necessary matter.

#### Reasons for the Strength of the Psychological Barrier

Describing the reaction of the association's labor collectives to the work of state acceptance, B. I. Kozlov said that at first the situation was difficult, because by no means did everyone understand and accepted it right away as needed. However, the situation gradually began to change, to which a number of factors contributed. The publication of the materials of the conference at the CPSU Central Committee on 14 November 1986, which discussed problems concerning the introduction of state acceptance of output at associations and enterprises of industrial ministries, was the most important factor.

The press, radio, and television played an important role in the creation of the necessary psychological mood in the association's collective. People not only realized the importance and complexity of the tasks concerning an improvement in the quality of labor and output, but also became convinced that all the country's labor collectives joined in their practical solution, that things were difficult for all, that these difficulties must and could be overcome, and that for this, first of all, they must reorganize themselves and restructure work.

The work carried out at the association also became an important factor. Thus, by order of the general director the All-Union State Standard 26964-86 "Rules of State Acceptance of Output. Basic Statutes" and the already mentioned RD 50-612-86 "Statute on the Organization of Work of State Acceptance" were introduced at the association. Work on their introduction was accompanied by extensive explanatory work in collectives of the enterprise's subdivisions and services. State acceptance workers held talks with managers of subdivisions and services, spoke at shops, sections, and brigades, and took an active part in conducting party, trade-union, and Komsomol meetings devoted to the introduction of state acceptance. The association's party committee headed all this work.

Nevertheless, the problem of overcoming the psychological barrier has not yet been solved, B. I. Kozlov said. There are big improvements. However, too little time has passed. We will still have to work a great deal and in a highly intense manner.

[Question] From your point of view, what is the basic difficulty in solving this problem?

[Answer] Each one of us has long understood that a radical solution of the problem concerning the quality of output is necessary and that without this there is no progress and there are no prospects. However, we consider this obvious with respect to everyone, but not ourselves.

Each one of us will always find many very convincing reasons and justifications as to why work has not been done as it should have: Raw materials are not good, equipment is obsolete, the plan has to be fulfilled, and so forth. But state acceptance has shown and everyone has realized, or at least is realizing, that no circumstances and reasons can justify work leading to rejects and claims. Therefore, no matter what has caused rejects and whether the direct manufacturer is guilty of them or not, state acceptance will not pass rejects. This does not at all mean that state acceptance is not interested in the causes of rejects and in direct culprits. Just the opposite: State acceptance must uncover the reasons for the appearance of defects and give the maximum possible assistance in eliminating these reasons. State acceptance workers will explain matters, will directly participate in the development and realization of appropriate measures, and will enlist whomever necessary for their fulfillment, but will not pass rejects.

It is clear that in such a situation it is necessary either to repair rejects, or to prevent them completely. Since rejects are now repaired at the culprit's expense and this is fraught with the possibility of not managing to fulfill the plan or the established output norm, it would seem that the alternative is clear. However, practice has shown that not everything is so simple.

First of all, it has become obvious that a defect-free manufacture of products is very often accompanied by an increase in labor intensiveness. However, this lowers output significantly and, consequently, workers' wages.

The point is that for many years an increase in labor productivity and a decrease in production costs occurred without an improvement in technology and without production mechanization and automation--mainly through a reduction in and simplification of technological operations.

As a rule, existing design and technological documents envisage everything that is necessary for a defect-free manufacture of products. For example, according to existing technology, one is supposed to polish a surface in five operations, but a worker, in an attempt to increase his output, makes only three. The same is with part turning: Instead of the three operations prescribed by technology, he limits himself to one. Naturally, this impairs the surface quality. On the other hand, labor productivity and output grow and, consequently, earnings increase. Of course, all this was taken into consideration when output norms and rates were revised. Now, however, when under the effect of state acceptance it is necessary to "pass" all the envisaged technological operations, it has become very difficult to fulfill former output norms. It is not surprising that in some cases this gives rise to conflicts.

## Difficulties Accelerating Restructuring

An analysis of the reasons for the emergence of conflict situations shows that in a number of cases on existing equipment, with the best will in the world, a defect-free manufacture of products is impossible. For example, in the automatic shop, when in the search for the causes of a defect the adjuster was pinpointed, it became clear that equipment did not have to be adjusted, but repaired or replaced. At the same time, it was revealed that in that shop preventive maintenance was not carried out for several years in succession, although reports on its execution were received regularly.

Now, to rectify the situation, equipment is urgently repaired and adjusted. Similar work is carried out at all the association's enterprises. At the same time, as B. I. Kozlov stressed especially, engineering services now experience the powerful influence of production workers, owing to which highly intensive work on adjusting all technological links and on uncovering and most rapidly eliminating production bottlenecks has expanded at the association. The departments of the chief technologist and of the chief mechanic operate in an especially intense manner.

The pressure by production workers on engineering services engendered by state acceptance sharply activated not only the work aimed at the solution of tactical problems connected with the introduction of proper order into production, but also of the most important strategic problems in restructuring connected with intensification. Active work has begun on a radical retooling of the association's enterprises necessary both for increasing the output and raising the quality of watches up to the world level and ensuring their competitiveness. All this has found its appropriate reflection in the goal-oriented overall "quality" program. Now this program is being further improved with due regard for the new conditions connected with the introduction of state acceptance and with the transition to self-support and self-financing.

[Question] In connection with the inevitable transition to the solution of problems at the second stage the following question arises: Will state acceptance gradually shift its attention to preproduction stages in the life cycle of output?

[Answer] As a defect-free manufacture of articles increases, the attention of state acceptance will shift to the scientific and technical level and quality of developments of new articles, to tests of prototypes, and to the technological preparation of production. At the same time, it is very important to solve the problem of how to attain the fullest realization of design plans.

The point is that there are frequent cases when in design studies everything is thought out carefully, is coordinated, and corresponds to the highest requirements. Later, however, when technologists join in the work on designs, such a "perfection of technological properties" occurs that there is much less innovation in the new article. When shop chiefs and then foremen and brigade leaders join in this endeavor, little remains of the design plan.

This does not at all mean that, when developing new articles, it is possible to ignore the enterprise's real capabilities and not to consider the opinion of technologists and production workers. Nevertheless, I believe that state acceptance should help designers, on the one hand, to develop what consumers need and what will be admittedly certified in the highest-quality category and, on the other, bring this development to work places without any significant losses. And although technological nature represents the most important indicator of the quality of a development, requirements on technological nature should not be carried to the point of absurdity. Still, production for a design, not a design for production. Therefore, there should be no fundamental deviations from designers' schemes, which facilitate the life of production workers, but worsen the consumer properties of articles, especially their external appearance.

Of course, this will not facilitate the work of engineering services. However, the intensification of activity aimed at raising the organizational and technical level of production brought about by state acceptance will make it possible to confidently and stably advance, not lagging behind the rapidly growing requirements on the technical level and quality of output.

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#### Letters to Editorial Department

Moscow STANDARTY I KACHESTVO in Russian No 3, Mar 87 pp 21-22

[Readers' questions and answers by the editorial department: "State Acceptance in Questions and Answers"]

[Text] In his letter to the editorial department the chief of the Technical Control Department at Yaroslavl Synthetic Rubber Plant asks to explain: Why, in addition to the All-Union State Standard 26964-86 "Rules of State Acceptance. Basic Tenets," the Statute on the Organization of State Acceptance (RD 50-612-86) was put into effect and to what extent are the requirements of this document obligatory?

The All-Union State Standard 26964-86 "Rules of State Acceptance of Output. Basic Tenets" establishes the general rules of state acceptance and tests of output, including the procedure of presentation for tests and acceptance, the procedure of conducting tests of finished output and making decisions on its acceptance on the basis of test results, relations among parties during the performance of tests and acceptance, and forms of documents formulated during tests and acceptance. Standard requirements are obligatory on enterprises manufacturing products and state acceptances at them, as well as on other organizations interacting with them in matters concerning state acceptance of output.

The Statute on the Organization of Work of State Acceptance (RD 50-612-86) worked out as a development of and supplement to the Statute on State Acceptance approved by the USSR Council of Ministers regulates the organization of work of state acceptance at associations and industrial enterprises, including the organization of control over the quality of output;

interrelations of state acceptance with an enterprise and other state acceptances and territorial organs of the State Committee for Standards; organizational matters concerning the activity of state acceptance; recording and reporting in state acceptance; forms of documents.

The Statute on the Organization of Work of State Acceptance is obligatory on the State Committee for Standards and the organizations and institutions subordinate to it.

G. K. Gurkin from Tula critically analyzes the Statute on the Organization of Work of State Acceptance (RD 50-612-86] and considers it necessary to introduce some clarifications into it. For example, he does not agree with the fact that, first, the size of state acceptance should be taken into account when the List of Obligatory Control and Acceptance is worked out and, second, a patrol inspection made by state acceptance workers can be planned.

1. Controlling the activity of enterprises concerning matters of the quality of output and its acceptance, state acceptance organs should not and, moreover, cannot replace technical control services.

In contrast to the technical control department, which ensures constant operational and finishing control over the quality of manufacture of products at all production stages, state acceptance is obligated to uncover the basic reasons for the manufacture of poor-quality products and to exert a purposeful effect on the administration in order to eliminate them most rapidly. Therefore, the size of state acceptance, on the average, comprises only 10 percent of the size of the technical control department.

To ensure the solution of problems facing state acceptance, during the annual elaboration of the List of Obligatory Control and Acceptance its manager must take into account a number of circumstances, including the size of his service. Otherwise, he will not be able to correctly distribute the duties among state acceptance workers and to plan their activity.

2. Practice convincingly indicates that the efficiency of a patrol inspection largely depends on its suddenness. This does not contradict the directive contained in RD 50-612-86 that "a patrol inspection can be planned and unplanned (initiative)."

When checking certain aspects of activity not covered by the List of Obligatory Control and Acceptance, it is advisable to plan everything that lends itself to planning.

This contributes to a smooth and efficient activity of state acceptance.

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## RESTRUCTURING STATE CONTROL OVER STANDARDS, PRODUCT QUALITY

Moscow STANDARTY I KACHESTVO in Russian No 2, Feb 87 pp 62-66

[Article by V. I. Sashnikov, deputy chief of the State Inspection and Territorial Organs Administration of the USSR State Committee for Standards, and Ye. A. Avsiyevich, department head at the All-Union Scientific Research Institute of Standards: "Urgent Problems and Ways of Restructuring State Inspection of Standards and Quality of Output"]

[Text] A fundamental improvement in the quality of output is one of the key economic and political tasks in realizing the policy of the 27th CPSU Congress for an acceleration of the country's social and economic development and the most important factor in economic intensification for the purpose of most fully meeting the growing needs of the national economy and the population.

The party and the government have envisaged a large set of organizational, economic, legal, and other specific measures to improve the quality of output, whose realization should ensure a decisive breakthrough in this important matter as early as the current five-year plan. At the same time, it is necessary to more rapidly utilize such considerable potentials for improving the quality of output as strengthening technological discipline, absolutely observing the requirements of standards and specifications, increasing the efficiency of systems for quality control in products, improving labor organization, strengthening technical control services at enterprises, and so forth. The June (1986) Plenum of the CPSU Central Committee cited examples of enterprises, which without special expenditures, owing to their conscientious attitude toward labor, strengthening of labor and technological discipline, and implementation of a number of necessary organizational and technical measures, were able to ensure an output of products in strict correspondence with standard requirements on existing equipment.

Under these conditions the significance of nondepartmental state control of the USSR State Committee for Standards--state inspection of standards and measuring means and state acceptance of output--has increased sharply.

As is well known, as a result of the experiment conducted in 1985-1986, the new form of state inspection--control over the production and acceptance of the most important machine building output by permanent representations of the USSR State Committee for Standards--in accordance with the decree dated 12 May

1986 of the CPSU Central Committee and the USSR Council of Ministers acquired the right of independent existence as state acceptance of output.

With the introduction of state acceptance of output at almost 1,500 enterprises of 28 industrial ministries state inspection of standards and measuring means does not at all lose its significance but, conversely, should acquire a fundamentally new quality, which would make it possible to increase its effectiveness and efficiency fundamentally.

Intensification of the work done by territorial organs of the State Committee for Standards and their close interaction with state acceptance and law protection organs are the only ways of solving this problem.

In this connection it is necessary to especially note that the unacceptability of extensive development of state inspection results from an analysis of its functioning during the 11th Five-Year Plan. For example, during the previous five-year plan territorial organs of the USSR State Committee for Standards made 215,000 checks, including at 24,000 enterprises in 1985. On the basis of check results the sale of poor-quality products was prohibited more than 70,000 times and over 41,000 economic sanctions were applied. In 1985 administrative proceedings were instituted against 21,400 enterprise officials guilty of violating rules concerning the standardization and quality of output.

However, despite the more than 1.5-fold growth of the number of checks and the fourfold increase in the sum of applied economic sanctions in 1985, as compared with 1981, as well as the extensive utilization of other legal means of effect on enterprises, during the 11th Five-Year Plan state inspection did not become an effective lever of improvement in the quality of output, jobs, and services. The share of enterprises violating standard requirements in 1985, as compared with 1981, virtually remained the former (1985--67.2 percent of the number of those checked; 1981--65 percent).

During the last 2 years of the 11th Five-Year Plan the USSR State Committee for Standards adopted a number of measures to improve the organization of state inspection. In particular, in 1985 inspection encompassed all products in the highest-quality category and machine building output, which was of the greatest national economic importance, was checked every quarter. However, this proved to be insufficient.

An analysis of the existing situation showed that not individual measures were necessary, but large-scale restructuring encompassing all the aspects of functioning of the state inspection system, that is, organizational, technical, methodological, legal, and social, as well as all those ensuring this functioning--from the state inspector forming an initial idea of the quality of checked output to managers of the state inspection system adopting decisions on the utilization of appropriate measures of effect with respect to violators of standards.

To ensure an overall approach to such restructuring, it is possible to single out the following directions in intensification of state inspection of standards and measuring means:

First, expansion of the content of activity carried out by territorial organs of the USSR State Committee for Standards through the mastery of fundamentally new functions based on modern equipment;

second, intensification of pressure on sectors and enterprises by changing over from a periodic selection to a systematic continuous state control on the basis of an increase in the labor productivity of state inspectors and introduction of intensive inspection technology;

third, improvement in the organizational and economic mechanism of state inspection and management of territorial organs of the State Committee for Standards (planning, organization, reporting, stimulation, and so forth);

fourth, introduction of the achievements of scientific and technical progress when outfitting territorial organs of the State Committee for Standards;

fifth, activation of the human factor.

Let us examine what should be done in each of the indicated directions in intensification in order to ensure a fundamental restructuring of state inspection and to increase its effectiveness and efficiency.

Expansion of the content of activity carried out by territorial organs is determined by the fact that the decree dated 12 May 1986 of the CPSU Central Committee and the USSR Council of Ministers entrusted a number of fundamentally new tasks to the USSR State Committee for Standards.

The point is that the indicated decree made it incumbent upon the USSR State Committee for Standards to ensure the following:

coordination of the activity of ministries and departments aimed at attaining stable quality and reliability indicators and a high technical level of output;

constant analysis of the work of associations, enterprises, and organizations on improving the quality of output and adoption, jointly with ministries, of measures necessary to stop the output of inferior articles with a full-volume use of the rights granted to the USSR State Committee for Standards.

Realization of these functions intensifies the role and responsibility of the USSR State Committee for Standards in the implementation of a unified state policy in the area of quality of output. Its local conductors on behalf of the State Committee for Standards are its territorial organs. Therefore, such highly important, new tasks as the following are entrusted to them:

constant analysis of the work of associations, enterprises, and organizations on improving the quality of output;

analysis of the state of affairs with the technical level and quality of output in individual rayons, cities, oblasts, krays, and autonomous and Union republics.

The basis for a successful accomplishment of these tasks has already been established. For example, according to the directive of the State Committee for Standards, all industrial enterprises in regions have been attached to state inspectors who, in addition to their own checks, follow all the other information on the quality of products produced by these enterprises. Furthermore, TsSM and laboratories for state inspection of standards and measuring equipment actively interact with state acceptance organs. Head organizations for state tests of output, various inspectorates for the quality of output, law protection organs (procuracy and arbitration), statistical administrations, financial organs, price formation and USSR State Bank organs, repair organizations, consumers, trade, service sphere enterprises, and so forth can also be sources of information.

Thus, sources of information are quite sufficient to form a clear idea of the quality of output. Nevertheless, the USSR State Committee for Standards envisages the establishment of data banks necessary for evaluating the technical level of all the most important products produced in a region in all TsSM and laboratories for state inspection of standards and measuring equipment in 1987.

Tasks concerning analysis and coordination should be examined in interconnection, because the logical connection of these new functions of state inspection organs lends a new quality to the content of their activity and enables them to concentrate a systematized, not fragmentary, set of all the most reliable information on the technical level and quality of products produced in a region. As a result, state inspection organs will become the only source of generalized information on the quality of output. This will not only substantially increase the significance of state inspection bodies in strengthening state discipline, but will fundamentally change their role in the entire mechanism of improvement in the quality of output.

It should be added to the above stated that the analytic work of state inspection bodies also envisages an analysis of the results of state inspection of standards and measuring means, of the reasons for an inopportune introduction and violations of standards and specifications, and of the scientific and technical level of standards and measuring means and assistance during their development for the utilization of modern scientific and technological achievements.

The solution of the set of analytic problems should give an impetus to the computerization of state inspection envisaged by the program for developing an automated departmental integrated system of the State Committee for Standards [AIS-standard] for the period until the year 2000 and by the program for retooling territorial organs of the State Committee for Standards.

The concentration of many-sided information on standardization, metrology, and the quality of output and its systematic analysis enable territorial organs of the State Committee for Standards, in addition, to evaluate the level of quality of output in regions and the organizational and technical level of enterprises, to know their actual capabilities for ensuring an output of high-quality products, and to purposefully and actively eliminate by means of

inspection the reasons for violations of standards and the obstacles to an improvement in the quality of output.

Intensification of the work done by territorial organs of the State Committee for Standards envisages the mastering of a number of other important, new tasks.

The decree dated 12 May 1986 of the CPSU Central Committee and the USSR Council of Ministers gave a directive to ministries, departments, associations, and enterprises to develop in 1986 goal-oriented scientific and technical programs for improving the quality and reliability of output for 1986-1990 and for the period until the year 2000. Proceeding from this, the State Committee for Standards set for its territorial organs the task of ensuring the development of republic and regional goal-oriented programs for raising the technical level and quality of output and of establishing control over their realization. These so-called "quality" programs are being developed everywhere. They make it possible not only to plan all work on bringing domestic output up to the world level, but also to plan in a substantiated manner the output of products in the highest-quality category throughout the years of the five-year plan. At the same time, a strict interconnection between the goals and measures to achieve them is ensured.

Many territorial organs of the State Committee for Standards have already actively contributed to the development of republic and regional "quality" programs and sometimes have actually headed this work. In 1987 and during subsequent years they will have to control in an intensified manner the realization of the assignments and measures of these programs in order to also actively contribute to the attainment by regions and enterprises of the values of indicators of the technical level and quality of output envisaged by "quality" programs both for specific types of articles and for all products produced by an enterprise, region, and republic.

Control over the realization of "quality" programs is a new function of state inspection organs, which is of great national economic significance, because these programs place all work on quality on an efficient planning and organizational basis.

The decree dated 12 May 1986 of the CPSU Central Committee and the USSR Council of Ministers envisages a number of measures for the development of workers' creative initiative aimed at ensuring the output of high-quality products and strengthening execution discipline. At the same time, it considers it advisable to establish quality groups at associations, enterprises, shops, and sections, considering them a form of concrete participation and active effect by all workers on the maximum possible improvement in the quality of output and performed operations.

The State Committee for Standards made it incumbent upon territorial organs to give enterprises systematic methodological and practical assistance for establishing quality groups and ensuring their efficient work. Furthermore, territorial organs of the State Committee for Standards should study and disseminate advanced experience in the establishment and work of quality groups, which is already available at such enterprises as the Frunze

Instrument Making Plant imeni 50-Letiya Kirgizskoy SSR, the Tula Chayka Sewing Production Association, the Podmoskovye Firm, the Sevkavielektronmash Kabardino-Balkar Association, the Riga Rigas Audums Association, and so forth. The following can be the basic directions in the work of acting quality groups:

development of proposals on eliminating the reasons for rejects and claims, increasing the reliability of manufactured articles, introducing advanced technological processes, improving labor organization, and raising the production standard;

development and application of labor techniques ensuring a defect-free manufacture of products;

instruction in advanced techniques of manufacturing high-quality products.

As a rule, subdivisions engaged in overall systems for quality control in products head the organization of work on establishing and ensuring the functioning of quality groups at enterprises. Therefore, in territorial organs of the State Committee for Standards it is advisable to also entrust work connected with the organization of quality groups at enterprises to departments (sectors) engaged in control over the functioning of overall systems for quality control in products.

Other versions are also possible. However, the state inspector, to whom a specific enterprise is assigned, should fully master this matter in all cases. Moreover, quality groups can become a good support for him in the cause of improving the quality of output at the assigned enterprise.

The set of new tasks entrusted to territorial organs of the State Committee for Standards is directed to a significant degree toward ensuring the fulfillment of the decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures for a Fundamental Improvement in the Quality of Output" by enterprises and organizations in republics and regions. Therefore, state inspection organs, in fact, should exercise control over the fulfillment of the requirements of this decree. Examining the activity of territorial organs of the State Committee for Standards from these positions, it is necessary to differently approach their work with technical control services of enterprises.

The point is that for many years territorial organs of the State Committee for Standards considered the unsatisfactory organization of technical control at enterprises and the lack of principles by technical control department workers some of the reasons for the output of poor-quality products. All this was stated in check documents. However, the problem, as before, remained open: The efficiency of technical control did not rise. Nor did specific checks on the fulfillment of the Standard Statute on the Technical Control Department approved by the USSR Council of Ministers give the necessary result.

An all-around analysis has shown that the underestimation and humble status of technical control services are the basic reasons for such a situation. The development of production outstripped the development and outfitting of

control. For the most part technical control had a low level of mechanization and automation. On the average, controllers' wages were 1.5-fold lower than the wages of basic production workers and depended on the fulfillment of enterprise plans for volume indicators. Such wages led to a considerable labor turnover at technical control departments and to understaffing of these services at the rate of 20 to 25 percent of the authorized strength. The number of specialists with higher education among engineering and technical personnel at technical control departments is one-half of their number in basic production. Hence the ignorance of the fine points of the technological process, the lack of a detailed analysis of the reasons for rejects, and the low level of organization of receipt, operational, and acceptance control.

With the publication of the decree dated 12 May 1986 a favorable possibility of fundamentally restructuring the technical control system was created. To intensify the role of technical control departments in improving the quality of output and in creating a reliable barrier in the path of output of poor-quality products, a set of organizational, economic, and educational measures, including the following, was envisaged: strengthening the cadre composition of technical control services, enhancing the skills and principled nature of controllers and the prestige of these services, and equipping them with modern control and testing means. Therefore, in the process of state inspection territorial organs of the State Committee for Standards should, on the one hand, check the observance by technical control services of the requirements of the decree dated 12 May 1986 of the CPSU Central Committee and the USSR Council of Ministers for intensification of control at all the stages of production of products and, on the other, contribute to the fulfillment at enterprises of the requirements of the indicated decree in the part of improvement in the skills of technical control department workers, equipment with testing and control means, and other measures aimed at an unconditional fulfillment by technical control services of the functions entrusted to them.

The establishment of skilled, well-equipped, and principled technical control services will enable state inspection organs to utilize them as allies in the common cause of fundamentally improving the quality of output.

The following should be added to the above-examined directions in intensification of state inspection through an expansion of the content of activity carried out by territorial organs of the State Committee for Standards: implementation of metrological certification of information measuring systems, robotized complexes, flexible restructured systems, testing and measuring complexes, and testing stations and laboratories; execution of state inspection in connection with the realization of overall programs for metrological support for the national economy; metrological servicing in public health, in the area of environmental protection, and in the provision of labor safety; execution of state inspection in connection with the observance of certification conditions and of the quality of certified products.

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## VASKhNIL PRESIDENT ON APK RESTRUCTURING, TECHNOLOGY TASKS

Moscow SELSKAYA NOV in Russian No 4, Apr 87 pp 4-7

[Interview with A.A. Nikonov, president of All-Union Academy of Agricultural Sciences imeni V.I. Lenin: "Paying Attention To Operational Experience"]

[Text] At the present time, much is being said and written about restructuring. It is at times viewed as a rearrangement of workers from one place to another. But this creates only the appearance of a reorganization. It actually consists of profound qualitative changes in the economy and in the administrative methods.

The essence of the tasks confronting agrarian science today can briefly be described as follows: to develop methodological principles which will ensure a breakthrough in all directions in connection with development of the agroindustrial complex and particularly with regard to labor productivity.

In the annual publication by the TsSU [Central Statistical Administration] entitled "USSR National Economy," the same figures have been cited for many years: labor productivity in our agriculture is 20-25 percent compared to the U.S.A. This can no longer be tolerated.

[Question] In your opinion, how can this breakthrough in labor productivity be achieved?

[Answer] The problem is multiple-plan in nature. I will touch upon just one of the more promising means.

Three years ago, with our assistance, the Novosibirsk scientists created a management model for a collective consisting of 3-5 individuals, one capable of working roughly 1,000 hectares. This model was recommended for use by eight kolkhozes and sovkhoses in Novosibirsk and Kurgan oblasts.

In the near future, we will summarize fully the bookkeeping results of two years of operation and for the time being we can provide the following advance information. One worker engaged in our country's agriculture produces an average of 7,000-8,000 rubles worth of output. Yet the output at experimental KIT'S [experimental intensive labor collectives] amounts to 40,000-100,000 rubles.

I became thoroughly acquainted with one such collective. At the Bolshevik Kolkhoz in Ordynskiy Rayon in Novosibirsk Oblast, 1,340 hectares of a feed-grain crop rotation plan were assigned to three machine operators. In 1986, they produced 780 tons of grain per individual and their overall output was 78,000 rubles.

The labor productivity of other intensive labor teams is roughly at the same level. This is already a breakthrough, a qualitative leap forward!

In a recent decree of the CPSU Central Committee entitled "Urgent Measures for Raising Labor Productivity in Agriculture Based Upon the Introduction of Efficient Forms for Organizing It and for Cost Accounting," it was noted that among the various forms for a collective contract the best results were turned in by numerically small intensive labor teams and brigades, to which land, equipment and other means of production were assigned on a contractual basis for an extended period of time.

But this work could perish on the vine if we were to proceed in the manner so often used in the past: "Yes, let us welcome an excellent undertaking! Let us introduce it everywhere and for everyone." Thought must be given to avoiding a large-scale campaign and proceeding in a consistent manner and without haste. All of the objective prerequisites for success must be created and the collectives must be converted over to the new operational methods.

[Question] What exactly do you have in mind when you mention objective prerequisites?

[Answer] Let us listen to the opinion expressed by four members of KITs. They advance four conditions. First of all, a voluntary approach in the selection of a small number of psychologically compatible people. Secondly, rhythmical support in the form of transport vehicles, fertilizers, chemicals and equipment. And still they maintain: "We do not need monitors. We need scientific consultation that will enable us to use intelligently each scrap of earth, regardless of whether or not it is on a northern or southern slope. We must know plant physiology, be familiar with all stages of plant development and be able to exert an influence on the plants during each such stage." And the fourth condition -- "do not command us!"

I asked the machine operators: "Since you have a feed-grain crop rotation plan, do you not wish to have a certain number of animals for fattening in order to smooth out your labor expenditures by seasons? The response by members of the team once again convinced us regarding their thrifty and interested attitude towards the work: "This is true in principle and yet all of our time that is not required for the cultivation and harvesting of crops is spent improving the condition of the equipment supplied to us by industry. We repair all of the holes through which grain is lost from the combines and we gang the machines such that several operations can be carried out simultaneously during one pass. You will not find any grain losses on our fields following the harvest work. But on the other side of the road, the losses will amount to 5-6 quintals. And why? They failed to follow our example and are operating their equipment just as it was received from the plants."

An attempt was made to send, by way of assistance, a team of intensive labor combine operators from other collectives. The team was rejected out of hand: "Those people need hectares and rubles. We are interested in the quality of the work. We have no losses and our wheat is strong."

[Question] And what is the situation with regard to wages in the KIT's? Indeed, on more than one occasion it has been a stumbling block for the contractual collectives.

[Answer] In 1985, the personnel in the team which I am referring to earned an average of 430 rubles per month and last year -- more than 600 rubles. Yes and this surpasses by a factor of 2-3 the wages in other collectives of the farm. Thus the proportion of wages in the production cost structure declined by more than twofold. Moreover, a chief consideration was the fact that labor productivity increased considerably more rapidly than did wages.

The experience of intensive labor collectives forces one to think. At the present time, there are several such teams and brigades throughout the country. I am confident that with the passage of time there will be hundreds and even thousands. And they will all say: "Do not command! Land has been assigned to us for 5 or 10 years and we accept responsibility for it." What remains to be done for the kolkhoz and sovkhos leaders? Indeed, many of them have become accustomed to issuing commands, despite the fact that the party's Central Committee requires a decisive conversion over to economic methods of administration.

The functions of the organs of administration should be changed. They must shift their attention to social development and the infrastructure, they must carry out more and better supply work and they must establish links with scientific institutes. This will bring about qualitative changes in the economic mechanism.

[Question] Is it not true that such changes must take place not only at the farm level?

[Answer] This is quite true. And the changes will affect the RAPO's [rayon agroindustrial associations] in particular. They have been in existence for more than two years. The partners in the agroindustrial complex have united somewhat, but as yet only in a formal sense. The kolkhozes and sovkhos have not realized what they expected from this reorganization. It is obvious that the existing structure requires further improvements.

[Question] How do you view all of this?

[Answer] In my opinion, an interesting thought was expressed in this regard by Vasiliy Aleksandrovich Starodubtsev, an intelligent and talented economic executive, chairman of the Kolkhoz Council for the RSFSR, chairman of the Kolkhoz imeni Lenin in Novomoskovskiy Rayon in Tula Oblast, Hero of Socialist Labor and Candidate of Agricultural Sciences.

He is of the opinion that an effectively functioning agroindustrial association can only be created on a cooperative basis. Such an association

must include kolkhozes, sovkhozes and service and processing enterprises --all operating on an equal basis. An association council is elected and not assigned and its chairman is chosen from among the most competent and respected farm leaders. The working staff of the present RAPO is made subordinate to this council. Thus its size can be reduced by roughly a factor of four. Thus a step will have been taken towards retreating from commands and from administration. Administration is a method of control that is acceptable only under extreme conditions. We must all remember this fact. We must learn how to control with the aid of economic levers and price systems which still are not economically sound.

[Question] But indeed, is there not another variant -- production associations of the Kuban Agroindustrial Combine type?

[Answer] I do not believe there is any conflict here. Does the Kuban really remain as a RAPO or as an administrative superstructure? No. But it does represent one possible method. I will cite still another. But why must we circulate one decision throughout the entire country, representing one-sixth of the globe? There must be no pattern here and particularly in view of the fact that this is an experiment. We must and we are obligated to find the best opportunities for intensifying the economy and production operations.

[Question] But this requires improvements not only in the economic mechanism but also in the administrative methods and in the technology. In this regard, I would like to ask exactly how do you evaluate the program for and the results realized from the use of intensive technologies?

[Answer] We recently summarized the preliminary results of the first two years of use of intensive technologies in the grain economy. In 1986 the increase amounted to 24 million tons of grain. In the European part of the country, all other conditions being equal, the intensive technology produces on the average more than 1 additional ton of grain for each hectare and in the eastern regions and beyond the Urals -- more than one half ton.

The quality of the products has also improved. Compared to the last five-year plan when the state annually purchased roughly 5.5 million tons of strong wheat grain and 460,000-470,000 tons of durum wheat grain from the kolkhozes and sovkhozes, last year the figures were approximately 10 million and 1.4 million tons respectively. Let us examine this from an economic standpoint. On farms in Stavropol Krav, for example, an additional ruble invested in the intensive technology furnished 1.82 rubles worth of additional product. Unfortunately, such effective work is not being carried out in all areas. We are still encountering great differences in yields and in reimbursement for expenditures.

It is already possible at the present time to draw several important conclusions from the experience accumulated in the use of intensive technologies.

A technology is only a fragment of a management system. In order to achieve the potentially possible effectiveness, all of its components and not just the technology must be directed towards intensifying production. Use must be made

of a social "program," and a technical program, the reproduction of soil fertility and many other factors.

Thorough preparations must be made for converting over to the use of an intensive technology. The results expected were not realized in those areas where proper concern was not displayed for the skills of the workers, where stable collectives were not formed and where the work of the collectives was organized in a poor manner.

The intensive technology misfired in those areas where logistical supply was not organized properly for the production collectives.

Finally, we became convinced that the intensive technologies must be employed within the framework of farming systems, with maximum consideration being given to the specific conditions. Agriculture requires knowledge and the taking into account of all objective factors. Here routine actions are like unto death.

[Question] Does not the introduction of intensive technologies have an adverse effect on logistical supply for those farms which have still not converted over to them? Does it not turn out that some have everything and others nothing? And under such conditions is it possible to make a judgment concerning the true effectiveness of the new technologies?

[Answer] First of all, allow me to express my opinion regarding the term "introduction." There is something forcible about it. It is like driving a nail home. Even the very best works of scientists must not be implemented by means of administrative methods in the absence of interest, stimuli or an understanding by the production workers of the importance of a particular innovation. It is impossible to combine all of these factors.

Let us now discuss the intensive technologies. At the present time, they are being employed on 31 million hectares of grain crops. It is expected that this area will be expanded to 50 million by the end of the five-year plan.

The essence of the intensive technologies consists of supplying the fields with everything that they need, in the absence of flaws and deficiencies, and achieving maximum results in this manner. A concentration of resources is needed under the most favorable conditions in the interest of obtaining the greatest return. To outfit "all sisters with earrings," as we attempted to do earlier, is unwise. In the final analysis, we must obtain not 4 tons of grain per ton of mineral fertilizer, as is the case today, but rather twice this amount.

For example, we waited for large deliveries of mineral fertilizer for use on farms in the nonchernozem zone. Large amounts were made available and yet a proper return was never realized. Why? Because in Pskov, Kalinin and some other oblasts lime was not applied to the soil prior to the mineral fertilizer becoming available. Fertilizer produces only negative results against an acid soil background.

Generally speaking, it is often very difficult to separate science from practical work in agriculture inasmuch as a creative, individual and dynamic approach must be employed for each field and on each farm.

[Question] Aleksandr Aleksandrovich, what is science doing in the interest of developing animal husbandry? Indeed, this branch requires just as much intensification as farming.

[Answer] If we exclude China, our country has more livestock than any other country in the world. In terms of productivity however, we have for all practical purposes been standing idle for 30 years.

Recently a group of scientists from VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin], using a computer, analyzed the production of animal husbandry products today and also that planned for 1990. It turned out that the present level of branch intensification is such that in order to carry out the Food Program it will be necessary to spend 21.7 billion additional rubles for facilities and the logistical base, increase feed production by 98.1 million tons of feed units and acquire 2.2 million more workers.

VASKhNIL is presently developing a program for the intensification of animal husbandry. A great amount of attention is being given in this program to improving the pedigree and genetic qualities of the animals, that is, to improving the principal means of production. Extensive use will be made of biotechnological achievements, particularly the transplanting of embryos. Fine studies are available in this area, studies which can be of assistance.

Recently the USSR Council of Ministers approved bonuses for works in the area of agroindustrial production. In particular, mention was made of the work performed by scientists at the Lithuanian Veterinary Academy and the Lithuanian Institute of Animal Husbandry and also by specialists attached to the Kaunas Meat Combine. They employed a basically new approach for raising the beef productivity of cattle. And here is the result. Over the past 20 years, meat production in the republic increased by a factor of four (the average increase throughout the country as a whole was only by a factor of 1.7).

However, improvements in the pedigree qualities of the herd represent only one aspect of the work. And today the potential of the livestock is such that it is possible to obtain 3,000 - 3,500 or more kilograms of milk annually from a cow and to obtain up to a kilogram of weight increase daily. The realization of the biological potential of the animals is being held up by a weak feed base. This is why feed production plays such a large role in the program for the intensification of animal husbandry operations.

At one time the Stavropol NII [scientific research institute] of Farming, jointly with specialist-practical workers representing 15 farms in Kirovskiy Rayon, developed a feed production system for 60,000 hectares. This made it possible to obtain 43 quintals of feed units for each head of cattle -- 16

quintals more than was formerly the case. The production of animal husbandry products here during the five-year period increased by 60 percent and the milk yield -- from 2,400 to 4,000 kilograms.

Many such examples can be cited. But on the whole -- and this is stated with a great deal of certainty -- agrarian science is under an obligation to agriculture. It must furnish assistance in the development of economic administrative methods and particularly cost accounting. Scientific-methodological assistance is needed for mastering the collective contract and for converting agricultural enterprises over to the principles of self-support and self-financing. Scientific comprehension of the questions associated with price formation is still being awaited.

[Question] Aleksandr Aleksandrovich, is it not true that the restructuring which is underway at the present time will necessarily affect the organization of science?

[Answer] "In order to become an active participant in the reorganization, commented M.S. Gorbachev during the January Plenum of the CPSU Central Committee. "science itself must reorganize to a large extent. Life is hurrying us onward. Those who do not remain abreast of the new scientific ideas will fall behind. This is the question raised by our period -- a period of great changes in science and engineering, changes which are unprecedented in human history."

Our first task involves displaying concern for the scientific personnel. At the present time, two generations of scientists are in serious need of retraining. Yes and we are generally experiencing a shortage of skilled personnel. Domestic and foreign experience is convincing: for each 10-12 scientific workers, there must be at least one doctor of science. And yet we have many scientific collectives which have no doctors of science.

We decided to create a doctorate program attached to the VASKhNIL Presidium, a two-year program. It will accept candidates of science who are not more than 40 to 45 years of age and who have completed important studies. It is our recommendation that academicians of the USSR Academy of Sciences and VASKhNIL and other important scientists be assigned to assist them in the form of consultants.

Improvements must be carried out in the graduate study programs. Recently there has been a reduction in the number of youth entering these programs. There have not even been any competitions.

[Question] What is the explanation for this?

[Answer] In my opinion, there are two reasons. One has to do with the wages paid to scientists. At the present time, the wages in the agrarian science are lower than the average for the national economy. This was never the case in the past. The second reason -- the unfavorable moral climate which at one time was created around an agrarian scientist. Thus it develops that the wages are not particularly good and are criticized almost every day, for work performed and also for a lack of work.

Meanwhile, meetings with many leaders of leading farms have served to convince me that they all have agreements with scientific institutes. they make use of scientific recommendations and they listen to science and do not complain about it.

I would like my words to be understood correctly: complaints must not be confused with healthy criticism. These are different things. Recently I held a discussion with a journalist who criticized one of our institutes rather sharply. I must admit that it was rather vexing and unpleasant. But subsequently, upon becoming more thoroughly acquainted with the situation, I discussed the article with the author and came to realize that he was correct. We can only be thankful for such criticism.

[Question] What must be done to improve the wages for scientists?

[Answer] There are presently two categories of scientific workers in our institutes -- junior and senior. This is clearly inadequate for differentiating wages "according to services." The USSR Academy of Sciences has already converted over to a five category system. This example should be followed by VASKhNIL. In addition, the leaders of institutes and other scientific installations are authorized, jointly with social organizations, to maneuver the wage fund for the purpose of issuing material incentives to scientists who are performing fruitful work.

[Question] What changes are planned in the organizational structure for the agrarian science?

[Answer] An organizational reorganization is not an end in itself. Its purpose is to develop closer contacts between scientists on the one hand and kolkhozes, sovkhoses and other agricultural enterprises on the other. Some improvements have already been achieved in this regard. However, it must be confessed that the void separating the requirements of economic practice from the return of scientific institutes is still quite great. An expansion in the network of scientific-production associations will be of assistance in overcoming this void.

It would be a mistake to overlook the scientific forces which agricultural production has at its disposal. There are kolkhozes and sovkhoses in the country which have 5-6 candidates of science assigned to them. Agricultural combines, agricultural firms, cooperative associations at the rayon and oblast levels and production systems will function with the active participation of scientists.

We are strengthening contacts with the USSR Academy of Sciences. Nine true members of the "great" academy have added to the VASKhNIL staff. Joint laboratories, fifteen technological centers and an entire series of other forms of cooperation are being created.

A need exists for improving the system for financing the agrarian science. The capital investments which are being allocated today for improving this science are clearly inadequate. But the state is unable to give any more. How can this be?

A special agroprom fund could be of great assistance. Here there is something that can be adopted from many foreign countries. In France, for example, the agrarian technological institutes do not receive so much as one franc from the state. They are fully financed by cooperative unions which allocate five percent of their income to a scientific fund.

[Question] In your opinion, how could such a fund be formed and distributed?

[Answer] There are several recommendations. They must be thoroughly discussed and all of the "pros" and "cons" weighed very carefully. Only one fact, the need for such a fund, is absolutely clear. Such a fund could provide the means for long-term scientific research work. Production will provide an order, pay for it and obtain a scientific product. Does this make sense? In my opinion, yes.

In conclusion I would like to state that never before have the agrarian scientists been confronted with such grandiose tasks. A need exists for mobilizing all forces and resources and utilizing all of the achievements of scientific-technical progress. It is the duty of science to undertake truly large-scale tasks, to draw conclusions and to ensure that the results of studies are made available for practical use on an extensive scale in a consistent and persistent manner.

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7026

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# STAVROPOL LABOR INCENTIVE, RESTRUCTURING PROBLEMS AIRED

Moscow PRAVDA, in Russian 18 May 87 p 2

[Article by V. Ryndin, chairman of the Zavety Iliche Kolkhoz: "Why An Incentive?"; first paragraph is source introduction]

[Text] Grachevskiy Rayon, Stavropol Kray--One happens to meet a colleague -- a kolkhoz or sovkhoz leader and he hears: "Work has become very difficult. The demands have increased and there is greater responsibility." Yes, but at the same time an expansion has taken place in the rights of farms and new and important incentives have appeared. Improvements are being realized in production administration, the rayon agroproms [agro-industrial committees] are becoming stronger and they are performing in a more confident manner.

What then is holding us back? Is it frequently indecisiveness or timidity? It is as though we ourselves are being deceived. Earlier habits are failing us.

One large problem in the rural areas is that of stimulating labor. The existing wage systems to a large degree have become obsolete. Instead of abolishing them, a preference is being shown for renovating, restoring and modernizing them without changing their essence. Harm is thus being caused by democratization of the economy.

In raising this question, I would like to refer to the experience of a kolkhoz which I have been directing for almost a quarter of a century. I will never forget how they selected me to serve as chairman of the administration. The kolkhoz members entertained doubts regarding the reliability of my candidacy. There was some basis for this. The position turned out to be an intermediate one.

Why were my predecessors changed so often? Many of them remained loyal to piece-work wages. This method was highly respected. Nobody thought of abandoning it, since it was used everywhere. However, it is no secret that piece work wages disrupted the link between a peasant and the final result. At times, it led to a paradox. For example, a hailstorm would occur and the wheat crop would be knocked to the ground. A natural calamity and it was expected to cause some grief. But there were those who took pleasure in it: resowing work promised additional wages for the machine operators. Indeed, the wages depended upon the extent to which the machines were used. The

idling of machines was often turned into an end in itself, since it often resulted in senseless payments. The farm suffered losses and yet very few were disturbed by this fact. In essence, the psychology of a piece-worker was egotistically oriented. I launched a campaign against it beginning with my very first days.

There came a time, albeit not immediately, when a majority of the kolkhoz members began giving some thought to the harm caused by the piece-work system. It was at this point that they began converting subunits over to the collective contract. This is popular at the present time and needs no publicizing. But at that time, two and a half decades ago, its introduction aroused some anxiety. The controlling organs were constantly asking if sufficient thought had been given to its introduction. In particular, they looked with disfavor upon temporary advances. Skeptics viewed it as being a direct step towards wage-levelling. I explained that a ruble issued in the form of an advance represented only a portion of one's earnings, with the total amount being dependent upon a final computation based upon the quantity and quality of the output.

I will not state that the collective contract "went to work" immediately. The kolkhoz realized a return several years following its introduction. The profitability curve moved upwards. From fields which formerly furnished 13-15 quintals of grain, they began obtaining two and three times more. The productivity of animal husbandry increased noticeably.

An incentive must compliment an individual and reveal his talent and capability. The kolkhoz members began obtaining that which they were entitled to by law. The people were transformed. They displayed thrifty sharpness and they realized steady growth in their output production. And they did not overlook the quality of their products. As is known, it is encouraged by additional payments. In short, all factors were considered. All but one: at what price were these successes achieved? Quite often this price greatly exceeded the reasonable limits. An overexpenditure of expense limits was justified by references to objective causes. A drought, a hailstorm or excessive rainfall.

There was an explanation for everything and yet the main question concerned how the work was to be carried out now, with the kray's kolkhozes and sovkhoses converting over to self-financing. Here, instead of explanations, specific measures were needed for lowering expenditures. Indeed, production must be developed in the absence of state subsidies.

A need still exists for organizing an anti-expenditure mechanism in the agroprom. Experience which we accumulated here in Stavropol Kray would be suitable in this regard. For many years in a row, the Kazminskiy Kolkhoz in Kochubeyevskiy Rayon has been paying wages based upon a computation of gross income. They learned from us. There was nothing to be ashamed about here. I discussed this with specialists prior to departing on temporary duty.

The payment principle was infinitely simple. There is the gross product. This is what is produced by a farm over a year's time. From the initial value, we deduct material expenditures in order to arrive at the gross income. A portion

of it must be used for wages. What remains is the farm's net income. In this chain, all elements are closely associated and completely balanced. The greater the gross output yield, the higher the quality and the fewer the expenditures for such output, the higher will be the overall gain. The earnings of the personnel will increase and the kolkhoz's economy will become stronger.

Certainly, we returned home with a pile of papers and methods. Not all of them were suitable. The specific conditions of one's own farm had to be taken into account. In accordance with the methods employed at the Kazminskiy Kolkhoz, we computed the norms, determined the material expenditures per hectare of sowing and per head of livestock and we prepared the rates for the types of work of a stable nature -- as a minimum for a five-year period.

This work had but one virtue. Everything was done on our own initiative. The former experience with material incentives was not an obstacle, but rather it helped to explain to the kolkhoz members the need for such restructuring. They supported it actively.

The products are not needed at any price. Unified planning-accounting prices were computed for each type. The cost accounting tasks were based upon these prices. The subunit leaders were issued limit-checkbooks.

The personnel themselves, without prompting, are searching for the path leading to economic advantage. Twenty one machine operators were working on a rural tract. The workload for each one of them -- approximately 70 hectares. Earlier, nobody ever mentioned the fact that this was a low figure. But when they received only 7 kopecks of additional payment per ruble of advance, they began devoting some thought to the situation. Should everything be left as was the case in the past? And what if there was a secret vote? It was here they made up their mind. A group of seven subsequently left the collective. Work had obviously been found for them on the farm.

There have also been improvements in animal husbandry. Last year, 98 calves were obtained from every 100 cows. We are still not increasing the milking herd. But milk production is increasing by means of productivity. Moreover, a high percentage of fat content is making it possible to increase the "gross yield." From a material standpoint, this is being stimulated as prescribed. The winners are those livestock breeders whose work is associated with the fattening of cattle. The shepherd brigades have taken a step forward. Sheep raising has produced considerable earnings. In turn, there has been an increase in additional payments issued to those who earned them.

I discussed all of this at a recent general meeting for the kolkhoz members. It was noted that last year they sold 8 million rubles worth of products. This was 1.1 million more rubles worth than the figure called for in the plan. Thus the material incentive fund has increased accordingly -- more than one half million rubles.

And what about shortcomings? They were also discussed. Specific complaints were addressed to many leaders. In particular, owing to carelessness on the part of these leaders, only 42 percent of the overall quantity of hay placed

in storage was designated as being of 1st class quality. Some subunit councils concern themselves only with matters of secondary importance and tend to ignore major concerns. In some sectors, for example, a careless attitude is being displayed in connection with exercising control over the operation of equipment.

Based upon their own experience, the kolkhoz members have become convinced that the greater the income of a farm the higher will be the well-being of its members and the degree of satisfaction of their social and cultural needs. We have a spacious palace of culture, secondary school and a hospital. We are erecting housing using our own resources. We have baked goods and bath and washroom combines and a water-line. But all of our work and concerns are based upon the interests of the state. The more grain, meat and milk that we produce, the stronger will be the country's economy and the well-being of our people.

What conclusion can be drawn? We must strive harder, recalling that there is no gain where there is no pain. Meanwhile, the experience of the Kazminskiy Kolkhoz in stimulating labor is still not being employed by many farms in Stavropol Kray. Some believe that it has not yet matured and others simply feel that they can do without it. This is a great deception and one which cannot be tolerated.

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## MOLDAVIAN AGROPROM RESTRUCTURING IN 1986 EXAMINED

Kishinev SELSKOYE KHOZYAYSTVO MOLDAVII in Russian No 1, Jan 87 pp 4-5

[Unattributed article: "Year of Agroprom Into a Year for Reorganization"]

[Text] A year of work by the new organs for administering the republic's agroindustrial complex has shown that they are definitely promoting the initial positive results in improving agricultural production. The service they performed is borne out by the fact that in 1986 the republic fulfilled its plans with respect to 10 of the 12 principal types of products. The growth in the public sector of the economy amounted to 9 percent. The processing industry produced 12.5 percent more meat products, 11 percent more granulated sugar, 61.6 percent more fruit juices and 28 percent more canned goods.

But if we question ourselves strictly as to whether or not the republic's agroprom [agroindustrial committee] truly found itself, then we must honestly answer -- no.

This is true owing to the fact that the system's operational results on the whole could have been considerably greater.

Moreover, the demand today is considerably greater since the agroprom commenced its activity during the period of reorganization and acceleration.

Timidity and sluggishness are manifesting themselves throughout the agroprom in production intensification, in introducing the achievements of NTP [scientific-technical progress] and in the economic mechanism for management.

Yes and the required reforms have still not been carried out in the operational methods or in the central apparatus of Gosagroprom [State Agroindustrial Committee] for the Moldavian SSR and its subunits in the various areas -- the RAPO's [rayon agroindustrial associations]. The system that has been created for a single organ of administration for agriculture has made it possible to carry out a radical reorganization, but this reorganization must be carried out by personnel within the agroprom who are habituated to administrative and bureaucratic work methods, excessive paper work and blind faith in the force of a directive.

But a chief concern is the fact that a legal basis has appeared for increasing the role played by economic leaders and raising their responsibility for the status of affairs at a kolkhoz, sovkhoz, interfarm enterprise or plant.

Here is just one example. Recently, because of a breakdown in operations, the Kamenskiy Rayon Party Committee released from their positions the chairman and secretary of the party committee at the Kolkhoz imeni Vladimir Ilich. The head of the farm V.A. Tarnogrodskiy and the new secretary of the party committee I.A. Spatar, following an analysis of the work being carried out on the farm, drew the conclusion that many of the shortcomings noted were the result of an incorrect crop structure. The amount of land allocated for grain crops was excessively high and the proportion for forage crops extremely low. The kolkhoz chairman submitted his recommendations to the RAPO, where for the most part his views found support.

But this is not the case in all areas. Here is an opinion expressed in this regard by still another kolkhoz chairman -- Comrade Kravchenko (Krasnyy Sadovod Kolkhoz in Slobodzenskiy Rayon):

"They do not provide us with independence and we are unable to display initiative. For example, in order to work successfully our contractual collectives must possess a firm knowledge of the established plans for five years. The procurement figures furnished to us from on high produce discord. And confusion is created. The collective is by no means confident that positive results will ensue at the end of the year, since the control figures are changed arbitrarily. Thus the personnel do not receive the awards planned for the final results. Meanwhile, they must keep pace with additional procurement plans."

We are unable to modernize the farm's principal production operations and this occurs at a time when there are 8.2 million rubles in a bank account.

Firm plans. Unchanged for a period of 5 years. For all years of the five-year plan. This is of basic importance with regard to converting management over to a truly economic basis. Above-plan operations must be carried out in accordance with raised prices or prices established based upon market conditions.

Unfortunately, in view of the opinion stated above, we cannot maintain that this is already happening. But indeed it should be this way! It is already happening at the Kuban Agroindustrial Combine, the experience of which has been approved by the CPSU Central Committee. We are making plans for the creation, by way of an experiment, of just such a combine. Only it should be created more rapidly, its operational results evaluated more rapidly and the experience accumulated should be made available to all in a more rapid manner.

Time does not allow us to prepare for work in a slow manner.

One of the chief tasks of agroprom is as follows: to break down the departmental barriers between the kolkhozes and sovkhozes and the so-called partners. Has success been achieved in this regard. For the most part, yes. But not everywhere or in every case. Considerable complaints are being

addressed against Selkhozkhimiya. It appears to be in no haste in carrying out its work and it is not completing the work when needed or in the manner required. In Brichanskiy Rayon, for example, an analysis was carried out and the officials became convinced that the kolkhoz's return from an application of mineral fertilizer was twice as effective.

This results from the fact that former partners still are not displaying proper concern for the final results.

Grain production. The republic's Gosagroprom, the RAPO's and each farm must devote maximum attention to increasing grain production to 3.6 million tons by 1990. But no progress is being noted in this work and in fact there is even some lost ground. Only weak use is being made of the potential available for the use of industrial technologies. The lowest gross grain yield over the past 10 years was harvested in 1986. The harvest areas are declining in size. In particular, the production of grain corn, one of the republic's traditional crops, is in dire straits. We are sowing very little corn on irrigated tracts. Nor are we satisfied with a situation in which mineral fertilizer being allocated by the government specially for crops under cultivation with an industrial technology, is being employed for other purposes.

The protein problem. This is a critical problem in our republic. If it is not resolved, high results will not be achieved in animal husbandry. Pulse crops, peas and soybeans, especially soybeans -- herein lies the key to improving public animal husbandry. Owing to a shortage of plant protein, we are expending 300,000-320,000 more tons of grain than we should. It is true that in 1986 the republic obtained 20,000 tons of soybeans, twice as much as the amount for 1985. However, even this amount was small.

There are also serious shortcomings in the production of sunflowers. It is said that the drought was the guilty party in 1986. But the conclusions drawn by the participants in a seminar in Dnepropetrovsk were summarized by Comrade N.V. Nikonov, secretary to the CPSU Central Committee: even during a drought, stable yields can be obtained provided all of the agrotechnical rules are observed. But it should be emphasized once again: only when the entire complex of agrotechnical measures is observed.

Approximately 1,300,000 tons of vegetables were sold to the state in 1986. But let us examine the assortment. Tomatoes, tomatoes and more tomatoes. Certainly, they are needed. But the consumers of vegetables suffer when too much reliance is placed upon a single crop. Carrots, onions, cabbage, greens and melon crops are not being sold in sufficient quantities and this situation should be corrected.

The RAPO's must devote more attention to the animal husbandry complexes. Arguments concerning their effectiveness must be put aside. They are effective in those areas where the advantages of large-scale production are employed in an intelligent and persistent manner and where concern is displayed for the personnel and for creating a strong feed base.

The Floreshty complex for beef production is just such a complex: it operates on the basis of a brigade contract. It has an even higher role with regard to

solving the more important tasks of the enterprise. The leaders meet regularly with the workers and answer all of their questions. It is by no means an accident that complaints to higher organs and anonymous letters have disappeared completely here. As early as 1981, committees were created for carrying out monthly checks on the reliability of the data presented. Thus a barrier was erected against further problems arising. As a result of the work carried out, the rate of growth in output compared to the average rate of growth for the 11th Five-Year Plan was 35 percent. The state purchased 2,700 tons of beef at an average weight per head of 612 kilograms. The profitability amounted to 70 percent.

Feed quality. The quality of feed is closely associated with normal animal husbandry operations. At the same time, the RAPO's are not devoting proper attention to the construction of forage yards or haylage and silage installations. These are not complicated facilities and they produce considerable results. We are losing too much feed as a result of a deterioration in its quality during the storage process. As the saying goes, we are penny-wise and pound-foolish.

The wages on farms throughout the republic are exceeding the growth in labor productivity. This is a very negative indicator. Many farms are existing on the basis of bank credits. The total amount of overdue payments for such loans is very great. At the same time, large amounts of unused equipment have accumulated at the kolkhozes and sovkhoses -- 203 million as of 1 October 1986. Immobilized capital constitutes a tremendous burden for the farm economies.

There were 9 million rubles worth of unnecessary expenses at kolkhozes during 9 months of 1986. One million per month. This represents an excessive extravagance. It must be terminated.

Kolkhoz trade is in operation throughout the republic. Last year the farms sold considerable quantities of vegetables, fruit and grapes to citizens in behalf of their planned task and above-plan production of goods. But this trade must be carried out with the required scope and enterprise.

There is a mutual advantage here. The citizens receive high quality products at a suitable price and the farms earn additional profit. But the production of diverse products must be organized on farms which earlier engaged in specialized production. No longer will the workers attached to these farms be able to divert fruit and vegetables from citizens in Strashenskiy, Kalarashskiy, Kotovski and other suburban rayons, thus causing dissatisfaction among residents of the capital and rural residents.

It was not too long ago that one could even suspect that the highest rates for withdrawal of the population from villages to the cities would occur in Moldavia. And this occurred owing to the fact that the new organs of administration failed to devote proper attention to developing a socio-cultural base in the rural areas. There are still many brigades in which elderly persons and old people are working. What will happen when they retire from work?

Scientific-technical progress in field crop husbandry and animal husbandry -- here is the only path to be followed for solving the current and future problems concerned with the republic's demographic situation. This problem must be solved and as well a better solution must be found for the problem of sharply raising the level of intensification. Increased attention must also be given to socio-cultural construction in the rural areas.

Many incidents involving such negative phenomena as fraud and deception of the state were uncovered within the republic's agroindustrial complex last year. Well deserved punishments were handed down to many leaders. We have every right to expect that such situations will not be repeated. But at the same time, a need exists for warning those who relish false praise and inflated successes that no mercy will be shown to them if they revert to old methods.

The problem of retaining experienced business-like leaders stands out as a priority task of the agroprom organs. All too often we replace leaders with workers whose business and moral-political qualities have not earned our 100 percent approval. Before long, they must themselves be replaced. The RAPO's must openly and publicly create a reserve of back-up men for leaders at all levels. A leader must have confidence in the stability of his position and a rising young generation to whom he can transfer his ideological convictions, experience and knowledge.

The party organizations must exercise firm control over the system for training and educating personnel.

The reorganization must be substantial in nature and not just a formal undertaking. Much depends upon this being the case. The mechanism for adapting to new conditions is already well organized at the present time. And the personnel must be checked in terms of actions and not just on the basis of words. And one must be able to single out truly business-like individuals who are experiencing difficulties and who require assistance and support.

If the agroprom organs can solve this task, they should be able to solve all tasks assigned to agricultural workers by the party during the 27th CPSU Congress.

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## FEED PRODUCTION LAG, PASTURAGE LAND DEVELOPMENT DISCUSSED

## S &amp; T Implementation

Moscow VESTNIK AGROPROMA in Russian No 15, Apr 87 P 2

[Report by V. Iglovikov, general director of "Korma" Scientific Production Association, in SELSKAYA ZHIZN supplement: "In Cooperation with Production"; first paragraph is source introduction]

Fodder production is a large and complicated branch of agriculture. Unfortunately, it must be admitted that as yet the potential possibilities of the fodder base and the tempo of its development cannot be satisfactory to livestock breeders. The basic reason is departmental disjunction, both in scientific-technical provision for the needs of fodder procurement agents and in the lack of a well-ordered mechanism for the rapid advancement of completed scientific elaborations into practical application.

At the same time, fodder production can be increased by more than one-third right now, without any special expenditures. Suffice it to say that as of now, scientists have proposed 60 progressive technologies whose successful application could double fodder crop yield. For the majority of natural-economic zones in this country, technologies have been developed and tested in practice for obtaining 5,000 fodder units per unirrigated hectare and 12,000 per irrigated hectare. There are varieties of alfalfa, clover, and other permanent grasses whose hay output in natural conditions reaches 130 centners per hectare and 200 centners per hectare under irrigation, varieties of corn with an output of up to 800 centners of green mass, and of fodder root crops with a yield of up to 1,000 centners. By these and other parameters they concede nothing to varieties grown in England, Canada, the German Democratic Republic, Czechoslovakia, and other countries.

The value of scientific elaborations on the enhancement of the productivity of cultivated pastures and hayfields, and the cultivation of fodder crops under specialized crop rotation is in no way inferior to the value of those applied in other countries. Fodder procurement and storage technologies, which ensure a 95 percent preservation rate for nutrient substances, are on a par with global achievements.

What, then, is holding back the development of the branch? First of all, the low level of technical provisions for almost all fodder production processes. No modern, highly productive silage and haylage loaders, fodder crushers, or fodder carts are being produced.

Our country has the largest natural meadows, hayfields, and pastures in the world. However, from 320 million hectares of such lands, we obtain only about 100 million tons of fodder units. This is exceedingly little. And yet we have the possibility of enhancing their productivity. Over 300 varieties of grasses have been localized for virtually all zones and for any purpose. Progressive technologies to improve those lands have also been developed. But, unfortunately, all these achievements find their way with great difficulty into everyday practice.

Here is what happened to only two technologies. The first is the development of scrub areas in wooded zones as fodder lands with a productivity of up to 6,500 fodder units per hectare and an economic efficiency of up to 170 rubles. For the assimilation of this technology, only one machine is needed instead of the nine that are used at this time. The technology is under patent protection. But there is no FKN-1,7 shredding scrub clearer, which means that there is, in essence, no such technology and no development of 42 million scrub-covered hectares. And yet this machine has existed for a long time in drawings and test models, but no one to this point has taken it upon himself to arrange its mass production.

Another example. Solonetz soils occupy 50 million hectares in this country. The Siberian Scientific Research Institute of Fodders and the All-Union Scientific Research Institute of the Butter and Cheese Manufacturing Industry have created regional productivity enhancement technologies for them. But in order for them to be efficiently utilized, an ALS-2,5 grass-seeding unit is essential. It, however, has also not been put into production.

Virtually no special units for the improvement of desert pastures -- ploughs for stony soils, chisel ploughs, and seed harvesting and sowing machines --are produced.

The list of equipment which that is essential to fodder producers but which has not even seen the light of day could be continued. But is there really any need?

A most important task for the "Korma" Scientific Production Association is to have improved areas constituting not less than one-third of those under fodder production, actively to seek out ways of providing them very rapidly with highly productive equipment.

The first step has already been taken. In "Krasnaya Poyma", our experimental farm, research is being conducted jointly with the Scientific Research Institute of Agricultural Mechanization on the refinement of the AZ-3,6, a unit for the accelerated grass seeding and rejuvenation of water meadows. This kind of creative collaboration is the correct route to the creation of the

first class machines which are now already in demand, and not in their tens and hundreds, but in their thousands...

Another important task is the selection and seed-growing of fodder crops. In the past five-year plan, 80 varieties have been presented for state variety testing, including 11 from the All-Union Scientific Research Institute of Fodders. Among them are "lugovskaya 83," "lugovskaya 85," and "Uzunovskaya 83" vetches, "vega" alfalfa, "VIK 84" meadow clover, "VIK 86" English ryegrass, "morshanets" brome, "VIK 85" timothy grass, and others. In those same years, 6 varieties grown by institute scientists were relocalized and the localization for 15 varieties was expanded.

Special consideration is given to the growing of "vetch" varieties. Success in selection is largely contingent upon more effective methods that are developed or improved in the lead institute for the creation of permanent grass varieties.

However, we are still lagging behind somewhat. As an example, in the creation of intensive varieties of permanent leguminous grasses with high seed productivity which can stand up against uncongenial environmental factors, diseases, and pests. The field workers in northern regions are waiting for us to produce rapidly maturing corn varieties and hybrids and single-stemmed fodder root crops.

We hope to rectify this situation in the coming years. In particular, work is proceeding on the creation of rapidly maturing corn hybrids in the "Nemo" ("Non-Chernozem Zone-Moldavia") series.

The assimilation of elaborations will become one of the main tasks of the "Korma" Scientific Production Association. It is well known that results come when science is turned the needs of production and production is turned toward science. The experience of Moscow Oblast in the assimilation of the achievements of scientific-technical progress in fodder production bears witness to this.

At one time, the All-Union Scientific Research Institute of Fodders drew up suggestions on the development of fodder production in the oblast up to 1990. They were approved by the oblast soviet executive committee and the agroindustrial committee. A complete program of branch improvement for the Twelfth Five-Year Plan, which includes the most recent scientific-technical elaborations was compiled on this basis.

The Eleventh Five-Year Plan has demonstrated the effectiveness of a union between science and production. As a result, procurements of crude and green fodders in the oblast have increased by one-third, while productivity per hectare has reached almost 40 centners of fodder units. The organization of varietal seed growing with the immediate participation of the All-Union Scientific Research Institute of Fodders has ensured a high yield: the relative number of varietal sowings has grown sixfold.

The industrialization of fodder procurement and storage, which is extensively applied in collective farms and state farms near Moscow, is increasing the

preservation of nutrient substances and improving fodder quality. In the Twelfth Five-Year Plan, it is planned to bring the procurement of hay by progressive techniques up to 764,000 tons, of silage with the use of chemical conserving agents up to 2.1 million tons, and of haylage up to 1.8 million tons, which will raise fodder output to 200,000 tons of fodder units

In Ramenskiy Rayon, a complete fodder production program, whose coauthors and coexecutors are association scientists and rayon specialists, is being successfully assimilated. In only three years, it has proved possible, on the same areas of land, to increase fodder procurements almost twofold, to bring them up to 26 centners of fodder units per head in one stalling period. During this time, milk yield has risen by almost 1,000 kilograms per cow.

But the "Korma" Scientific Production Association puts out not only scientific elaborations. By the end of the five year plan, it is intended to produce on an annual basis about 500 tons of high reproduction permanent grass seed for specialist seed farms, over 2,000 tons of grain forage crop seeds, about 200 tons of fodder root crop seeds, and also other agricultural output to a value of 15 million rubles.

#### Land Improvement

Moscow VESTNIK AGROPROMA in Russian No 15, Apr 87 p 4

[Report by A. Olyashev, director of Fodder Production Subdivision, USSR Gosagroprom, in SELSKAYA ZHIZN supplement under the "High Productivity for Fodder-Producing Lands" rubric; "Solicitous Care for Meadows and Pastures"; first paragraph is source introduction]

It is essential to pursue the melioration of native meadows and pastures in as well-planned and purposeful a manner as the renewal of arable land.

When the conversation turns to livestock breeding, and especially to dairy cattle breeding, an emerald meadow bathed in sunlight, a herd of cows, and a farmyard with fragrant hay come to mind. Are these images from the distant past or a present-day reality?

Really, have meadows not lost their role in intensive agricultural production? Scientists and outstanding workers consider green grass to be an exceedingly valuable fodder which contains all the nutrient substances an animal needs. Moreover, pasturing has a beneficial impact upon animal productivity and health, promotes the acquisition of high-quality output, and substantially lowers expenditures on the production of that output. A fodder unit of meadow grass costs only 1.5 - 4 kopeks.

Native fodder lands, which occupy 59 percent of agricultural land, are expected to become one of the most important sources of fodders. Significant means are allocated every year to their improvement. In 20 years, over 21 million hectares of hayfields and pastures have been radically improved in this country, 1.1 million hectares of irrigated meadows have been created, and almost 200 million hectares of fodder lands have been irrigated. And for all

that, their productivity has remained low. Last year, only 7.1 centners of hay were obtained per hectare of native hayfield and 12.2 centners per hectare of improved hayfield.

But why are the capital investments that are directed toward meadow melioration not yielding as much as they should? There is no unambiguous answer to this question. Of course, negligence in economic organization is, above all, having an adverse effect. But the unsatisfactory state of crop technology on those lands is no less significant. At the present time, 195 million hectares await radical improvement. These are hayfields and pastures which are overgrown with scrub, which have turned into swamplands or become waterlogged, which have been damaged by water and wind erosion. Moreover, over 126 million hectares of potential fodder lands are located on saline terrain.

Measures taken in recent years have made it possible to increase the tempo of melioration work. This work is being purposefully pursued in the collective farms and state farms of the Ukraine, Belorussia, Lithuania, Estonia, and Kirgizia. The situation is different in Kazakhstan, Uzbekistan, and Georgia, where plan assignments are not being systematically fulfilled.

The tempo of fodder land melioration in the Non-Chernozem Zone of the RSFSR is causing alarm. The subdivisions of Glavnechernozemvodstroy [the Land Reclamation in the Non-Chernozem Zone Main Administration] of the Ministry Land Reclamation and Water Resources have a powerful material-technical base and specialized, highly productive equipment at their disposal here. Nevertheless, the volume of melioration projects has been dropping sharply in recent times. And even plans which have been amended by being scaled down are not being met. As a result, for the years of the Eleventh Five-Year Plan alone, the farms of the Non-Chernozem Zone have been deprived of 1.7 million hectares of improved and 54,000 hectares of irrigated hayfields and pastures.

Increasingly great significance is attaching to the radical improvement of fodder lands in the arid zone, and above all to the creation of protected pasture belts and the initiation of desert plant cultivation. Our selection specialists have grown for this purpose special varieties of mock cyprus [prutnyak], chess, (keyreuk), eurotia, and other fodder plants which are capable of making efficient use of the meager water resources of the desert. After pasture improvement in the "Karnab" state breeding station in Samarkand Oblast, its productivity rose to 15 centners of dry mass per hectare, a four- to fivefold increase. But advanced experience is as yet being assimilated in an extremely unsatisfactory manner.

It must be frankly stated that some farm managers have still not overcome the dependent mind-set: let the water management organizations busy themselves with meadow and pasture melioration, they say. This can hardly be termed the correct approach. Do collective farms and state farms not have enough fodder lands which they can put to rights by their own efforts?

The experience of mechanization detachments in Ivanovo, Tyumen, and Pskov oblast farms is indicative in this respect. So, 220 detachments and units were operational last year in Ivanovo Oblast. In three years, they brought

about the radical renewal and reseedling of almost 23,000 hectares and performed topsoil improvements on 95,000 hectares.

A meliorated hectare is the farmer's gold reserve. But melioration in itself is still no guarantee of high yields. For renewed lands to work at full strength, an entire complex of agrotechnical techniques must be precisely performed. So, for every 100 kilograms of additional fodder units obtained from one hectare of leguminous grasses, no less than two to three kilograms of phosphor and five to six kilograms of potassium must be applied, plus an extra five to six kilograms of nitrogen for grasses. Without this, expenditures on melioration will not yield as much as they should.

The immediate tasks -- the timely performance of necessary work in hayfields and pastures in spring -- must also not be forgotten. This is all the more important this year, when the situation with regard to water is looking good in the majority of regions in this country.

It is a known fact that pastures provide the very earliest fodder. Where does pasture management start, and what is the correct way to utilize pastures?

It is expedient, first of all, to create melioration units equipped with the necessary machinery. There should be no lack of personal responsibility in this important matter. Practical experience convinces us that, given the correct organization of labor, one machine operator can perform all the work of pasture management (fertilizer application, cutting down the remains of uneaten grass, delivery of water for the cattle) for 200 hectares. Before getting down to work, each unit should previously acquire production flow charts for the consolidated pastures and hayfields. It is important to remember that every day's delay in pasture and hayfield management will cause losses in productivity.

For the efficient utilization of pasture grass, fully and without detriment to the subsequent productivity of the lands, it is essential to make a correct definition of what the land is to carry. A violation of the rules of closed pasturage leads to the trampling of pastures, to grass damage by cattle.

On seeded areas, and especially in leguminous grass and after-grass stands in wooded zones, the ice crust should be crushed at an early stage with the help of rollers and harrows (transversely across the sown area) and also by spreading nitrogen fertilizers on undrained depressions. To prevent grass rot, which is particularly dangerous to leguminous grasses, it is essential to drain the water in a timely manner.

Partially cut grass stands can be quickly restored by giving them a supplementary dressing of mineral fertilizers. Leguminous grasses are given a supplementary dressing of phosphor and potassium fertilizers. If the legumes have dropped, then nitrogen fertilizers are applied first.

To obtain early pasture fodder, early maturing grasses with a predominance of cock's-foot grass, meadow foxtail or Hungarian brome grass are chosen. Nitrogen fertilizers, applied in dosages of 45 kilograms per hectare as early as possible, help to speed maturation. Fertilizers are applied later

elsewhere, when the grasses begin to grow, increasing the dosage to 60 kilograms per hectare.

In wooded zones in spring, it is important to sow grasses in a timely manner on areas prepared in fall and to speed up the feeding of degenerated grass stands, provided that they do not contain inveterate or hardy weeds.

After the snow has gone from steppe regions, continuous and broad-row sown areas, but not closed sown areas in the first year of use, are subjected to early spring harrowing. This technique reduces daily moisture losses to 40 - 50 tons per hectare and increases meadow productivity by five to seven centners of dry mass.

On plots which are suitable for basin irrigation, it is desirable to make the most extensive possible use of shallow water zones by constructing banks, earthen dams, and diversion ways. The flooding lasts for no more than 5 to 7 days for alfalfa, 10 to 12 days for chess, 12 to 15 days for brome grasses, and 20 - 25 days for wheat grasses and wheat-foxtail grasses. Basin irrigation makes it possible to increase meadow productivity in the steppe zone to 40 centners of hay per hectare. So, on the "Noviy byt" state farm in Nikolayevskiy Rayon, Volgograd Oblast, haylage yield in basins has reached 31 centners of hay per hectare, and on the collective farm imeni Lenina, in Belyavskiy Rayon, Orenburg Oblast, it has reached 45 centners of hay per hectare.

In order to accelerate green mass maturation, the flooding periods for a part of the basins -- for wheat and brome grass stands, for example -- can be reduced to seven days. This makes it possible not only for active grass growth to begin earlier but also for runoff water to be reused.

In early maturing grass stands where there is a predominance of chess, Hungarian brome grass, cock's-foot grass, and other native grass stands whose composition is of value, nitrogen fertilizers, calculated at a rate of 45 kilograms of active substance per hectare, should be applied.

To prevent spring erosion in forest-steppe and steppe regions, it is essential to speed up slope improvement and to do the seeding while there is a sufficient supply of moisture in the soil. The seeding consists of a ground cover of annual crops which are harvested for green fodder. Cut grass stands are sown at an early stage with annual ryegrass, cock's-foot grass, meadow fescue, or Hungarian brome.

On farms where it is intended to begin early cattle pasturing, the grasses should be given additional nitrogen fertilizer. Chess and brittle fire bar and also fine-sod grasses (sheep's fescue, June grass) and other grasses and ephemeral pasture lands respond well to this agricultural technique; their productivity rises by a factor of 1.5 to 2. But this should not be done with sagebrush or salsola grass stands, since additional fertilization can lead to a reduction in the kinds of grasses suitable for fall and winter sheep pasturing.

In mountainous regions, the most efficient technique for enhancing the productivity of native and sown pastures and for obtaining early green fodder is by application of nitrogen fertilizers, firstly on plots which are located on warm southern slopes, which makes it possible to begin cattle pasturage earlier than usual. It is recommended that pasturing be started on southern plots, and above all on those whose grass stands contain many grasses which make poor eating in the later phases of development (sheep's fescue, feather grass, and variegated fescue).

In mountainous regions, the extensive stretches of fodder lands are usually heavily overgrown with harmful and poisonous plants. A constant struggle must be waged against them by cutting them down or by applying selective herbicides. And it is important to apply herbicides in spring. Mineral fertilizers are applied to raise the yield, and grasses are sown on heavily denuded stands.

All agrotechnical work in meadows should be performed within optimal time frames. Failure to carry out measures in spring not only reduces their effectiveness but not infrequently renders their application entirely pointless. There is a special management variant for each type of meadow, and agronomists specializing in meadows are needed if those variants are to be applied on farms in a competent manner. Unfortunately, on the majority of collective farms and state farms, there are no specialists who know how to run meadow-pasture holdings. Given the existence of enormous expanses of native hayfields and pastures, it is impossible to get by without someone who knows how to handle meadows competently.

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## CEMENT INDUSTRY INTENSIFICATION DISCUSSED AT MEETING

Leningrad TSEMENT in Russian No 5, May 87 pp 9-11

[Report by A. P. Vitushkin: "Scientific and Technical Progress--The Basis of Intensification of Cement Production: Report on the Conference of Chief Engineers of Glavtsement [Main Administration of Cement Production] enterprises"]

[Text] In December 1986, a conference of the chief engineers of cement industry enterprises was held at the Sukholozhsktsement Combine. More than 50 representatives of plants, institutes, repair trusts and enterprises took part.

The experience of developing and creating effective heat-exchange devices on rotating ovens 5X185 meters in size and fulfilling retooling plans approved by the Main Administration of Cement Production as well as problems of creating and introducing systems for automatic regulation of production processes were examined in detail.

The conference was opened by A.N. Ryabtsev, director of Sukholozhsktsement Combine.

He noted how important the first year of the 12th Five-Year Plan was for the enterprise's collective. In 11 months of 1986, above-plan production in the amount of 400,000 rubles and 23,200 tons of cement and 48,000 tons of clinker was put out above plan. At the combine, plan indicators for labor productivity, average grade of cement and the relative share of production of the highest category of quality were exceeded. Significant savings in fuel and power resources were achieved.

In connection with the operation of railroad transportation of raw material and water discharge at the quarry, reduction of production cost became a serious problem for the combine.

V.Ye. Avdeyev, chief engineer of the Glavtsement Production, reported that in 11 months of 1986, the plan for the sector's basic technico-economic indicators had been fulfilled. This was a worthy contribution of the cement workers, who took into consideration the physical wear and obsolescence of a large part of the enterprises' production capital.

But it is too soon to feel complacent, as 9 cement enterprises failed to complete plan targets. On the whole, the administration has an overexpenditure of resources and about one-third of all the plants are operating erratically.

In the past 11 years, cement production has dropped at individual enterprises, the moisture content of slurry has increased and the coefficient of use of rotating furnaces has decreased by 3-5 units.

During the three preceding 5-year plans, the relative norm of fuel expenditure dropped on the average by 0.7 kg/t kiloliter per year. During the 12th Five-Year Plan, cement workers will have to reduce this indicator each year by 2.5 kg/t kiloliters. The main directions for reducing power outlays are: to increase the share of the dry method of cement production, to reduce the moisture content of slurry and also to intensify production for all processes.

These questions demand the closest of attention. For example, to this date feeding of slag from the cold end of a furnace has been slow in being introduced, yet this technology has excellent indicators of equipment productivity and of fuel economy.

Eighty percent of the enterprises have difficulties with dust-removal equipment. And for 3 years now, the fabrication of a rotor granular filter has been continuing much too slowly.

Study of new methods of management and their active introduction in the cement industry have become really necessary.

E.V. Gizatulin, chief engineer of the Sukholozhsktsement Combine, spoke of effective heat-exchange devices for rotating furnaces 5X185 meters in size.

During 1971-1975, in assembly of these units, they were provided with triple thread garland chain screens. It was found in the process of operation that such a screen in the case of raw material used by the combine is ineffective: the heat-exchange surface is inadequate, the chains form tangles. For all practical purposes the furnace must be stopped after 5-6 months of operation and the screen has to be changed in its entirety.

In 1975, the combine's collective together with the Sverdlovsk branch of Orgproyekttsement [All-Union State Special Office for Starting, Adjustment, Planning, and Design Work in the Cement Industry] adopted a decision on installation in the furnaces of a quadruple thread spiral chain screen of freely hanging chains with a chain mat heat exchanger made of short ring garlands. The length of a section of the chain screen is 33.5 meters and of the chain heat exchanger 15.5 meters. The screen's chains are 3.6 meters in length and of the heat exchanger 2.8 meters. The total surface area of the chains is 5,490 square meters and the total weight is 273 tons (see the journal TSEMENT, No 11, 1978, p 9).

As a result, the operation of the furnace units has improved significantly, burning out of the furnaces has been eliminated and on the average the temperature of emitted gases has dropped by 70 degrees Centigrade.

E.V. Gizatulin stressed that with the new design of the chain screen, the total expenditure of the furnaces has not grown, their operational time has increased and the freely hanging chains have made it possible to eliminate overflows of slurry, ring formation, filling up of viscous slurry in a section as well as snarling of the chains and formation of tangles. He proposed for plants changing or modernizing the chain screen to provide information on progress of the work and its results to all cement workers through publications of the All-Union Scientific-Research Institute of Scientific and Technical Information and Economics of the Construction Materials Industry or the journal TSEMENT.

In conclusion, the engineer described the experiment conducted at the combine of work on the raw-material mixture without clay with the following composition: limestone, nickel slag and coal wastes. The preliminary results were reassuring. The relative expenditure of fuel was significantly reduced (see the journal TSEMENT, No 5, 1981, p 15).

Yu.G. Redko, chief engineer of the Karachayevo-Cherkessk Cement Factory, pointed out the usefulness of such conferences for exchange of experience on the work of enterprises. After visiting the roasting shop of the Sukholozhsktsement Combine, there appeared in his notebook an entry of 11 measures to be introduced at his plant. The chain screen of the Sukholog workers was effective, in its introduction at his enterprise, the Karachayevo-Cherkessk cement workers would face a difficulty--spreading of the slurry was less than here, but they must try without fail to make a "mat." They found the microprocessors in the grinding shop to their liking.

Yu.G. Redko noted that there were also things at his enterprise that could be learned from. For example, the automated system of technological-process control for chemical correction of flowing raw material was operating well. Now the slurry takes 17 hours to be prepared, while formerly it required 42 hours. The introduction of slanting partitions between chambers as well as gas-mazut burners went well.

He voiced the opinion that improvement of the operation should start with the solution of simple problems. For example, with improvement of the quality of whitening bodies [melyushchiye tela] supplied to the plants.

The experience of related sectors should be studied and employed more actively.

Chief engineer N.A. Burlov spoke of problems that the cement workers of the Razdan plant need to solve. They include the considerable flue-dust emission from the furnace units, the need of increasing the coefficient of equipment use (it is curbed by the clinker cooler's inadequate capacity) and also upgrading qualifications of personnel.

A.Ya. Litvin, chief engineer of the Belgorod plant, proposed bringing up for the consideration of the sector's scientists ways of further reducing fuel expenditure in roasting.

Another no less important question is increasing the capacities of existing enterprises. At the Belgorod plant, projected capacities have been utilized 117 percent. Consequently in A.Ya. Litvin's opinion, the only solution is expanding the grinding division by 3 mills. But this proposal was not approved.

A.M. Makarov, the chief engineer of the Novorostsement Combine, pointed out that as a result of planners' lapses many enterprises had to engage in operational development of heat-exchange devices on their own.

He believes that at the Sukholozhsktsement Combine the problem was solved by preparing material in the central part of the furnace in which the temperaturing of outgoing gases is reduced to an adequate degree.

The speaker noted that the operational development of the heat-exchange device requires taking into account an enterprise's raw-material conditions. In this instance, outright copying would be a mistake.

At the present time, the Novorostsement Combine is operating stably. The basic problem is gas fuel limits. Thus, the Oktyabr Plant is at the extreme end of the gas pipeline and the gas flows at a lower pressure. At the same time the cement workers select far from all the prescribed limits.

A.M. Makarov proposed distributing the gas not according to individual enterprises but according to the region. For example, if furnaces at the Novorostsement Plant are undergoing repairs, then their share of fuel during this time could be picked up by the Karachayevo-Cherkessk plant so that the allocations would not be lost and there would be no possibility of shunting.

As before, the important question of repair of production buildings, structures, silos and pipes remains unresolved.

Supporting A.M. Makarov's opinion, senior scientific associate I.A. Prozorov of the Scientific-Research Cement Institute, remarked that the design of the chain screen should be individual for each plant, taking into account the special features of the enterprise, although the general tendencies employed at the Sukholozhsktsement Combine should be used.

The "mat" employed here is not a universal means. For example, at the Shchurovskiy plant or in the case of NTS [low-temperature separation] technology, the one-layer "mat" would become filled up. Moreover, it is necessary without fail to take into account the properties of the slurry and its ability to build up crusts on the chains.

Candidate of Technical Sciences V.I. Shein (Kharkov Institute of Municipal Construction Engineers) spoke of how feeding slag onto the lattice of the clinker cooler is used.

He stressed that the Kamenets-Podolsk factory is one of the sector's few enterprises whose management fully utilizes proposals of scientists for improvement of technology.

For the purpose of introducing feeding slag onto the lattice of the clinker cooler, it was necessary to raise the level of laboratory service, to study carefully the real phase composition of the clinker and also to select experimentally the flame length of the gas-mazut burner, as visibility in the furnace deteriorates.

There was concern that spilling would increase through the grates. This did not occur, but the load on the cooler's lattice increased.

In dried out slag, incipient belite and pseudowollastonite phases were disclosed. On the average, productivity of the furnace units increased 3 percent, although the temperature of the secondary air dropped by 150 degrees Centigrade on putting 20 tons of slag into the Volga-75SA cooler.

Formerly at the Kamenets-Podolsk plant, for 400 grade portland cement with the addition of 20 percent, fluctuations of slag content were normally plus or minus 4 percent. After the application of fed slag to the clinker cooler, this indicator dropped to 0.5-0.8 percent.

It was pointed out that the strength characteristics of cement did not change, but in steaming the activeness of concrete increased, and the user was able to use 300 grade in place of the 400 grade cement.

Without due preparation by all the services, especially the laboratory, the innovation should not be used. An example of this is the Shchurovskiy plant where the recommendations were not taken into account and correction was not properly handled of the raw-material mixture and of restructuring of all the technological processes. For this reason, the experiment was unsuccessful here.

A.I. Gusev, the chief engineer of the Krasnoyarsk plant spoke of the difficult conditions of development of his enterprise.

The plant is within city limits, so there is no possibility of expanding it, and the cadre situation is poor with a 30-40 percent shortage of workers.

Yu.A. Baychurin, the chief engineer of the Mikhaylovtsement Production Association, started with the fact that he had proposed for the sake of objectivity to take into account the amount of coal contained in used coal waste and in the total expenditure of fuel by the furnace unit.

He reported how the automated system of technological-process control for grinding the raw material was operating at the enterprise, and also how sorting of whiting bodies was mechanized.

Chief engineer N.Ye. Sobolev reported on modernization of the Balakleyskiy Cement and Slate Combine's equipment during the 11th Five-Year Plan.

Here a mill for wet self-grinding was installed, an ESh-15/90 excavator for extraction of watered chalk, armored lining on mills and new electrofilters were set up and an automated system of technological-process control of the raw-material department was introduced.

Installation was completed of a heat recoverer from bodies of rotating rotating furnaces designed by Yuzhgiptsement [State All-Union Institute for Planning Cement Plants and Scientific-Research Work]. True, the combine has a claim on quality in fabrication of the unit.

N.Ye. Sobolev considers successful the introduction of an automated system of technological-process control for roasting with the aid of the Lipetsk Special Planning-Design and Technological Bureau of the Soyuzavtomatstom All-Union Scientific-Production Association and of a well-organized information dispatching service.

Despite difficulties at the combine in getting raw material, Yuzhgiptsement so far has not provided a plan for working the new quarry. In addition, the enterprise has been 7 years in need of planning and constructing a modern packaging division.

It is planned in the future to provide slag (or basalt) from the cold end of the furnace for economy of fuel.

In conclusion, N.Ye. Sobolev complained about the poorly organized information service at the sector's enterprises. Cement-worker colleagues do not even know what has already been introduced and is being used successfully,

The principal theme of the talk by V.L. Rubin, chief of the department of the chief power engineer of the Main Administration for Cement Production was economy of fuel and power resources.

It is necessary to introduce more actively power conserving measures: rolled armored lining for mills, inclined partitions between chambers and also grinding intensifiers.

In the future, the sector's enterprises will get new 4VRK compressors that require careful and competent operation.

In speaking of the sector's retooling, one must not forget the problems of repair workers. This is how Ye.S. Boyko, chief engineer of Soyuztsemremont, began his talk.

In 10 months of 1986, repair workers replaced at cement plants 500 linear meters of rotating-furnace shells. Of 14 replaced mills, only 2 were of large diameter and only 4 regulators of new design were installed. In installation of equipment, cement workers are not always concerned with subsequent maintenance repair work. For example, regulators at the Voskresensktsement Production Association and at the Novorostsement Combine were installed in such a way that it would be impossible to open them for repair work in the future. It also happens that they change the body of a mill but leave the old bottom.

It is difficult to speak of mechanization of labor-intensive repair work when in 1986 not a single crane with a large load-lifting capacity was received.

For effective work and organization of labor on the basis of cost accounting, repair workers must have valid estimates and technical documentation for rebuilt equipment.

The creation of a specialized administration for repair of electrofileters and supporting equipment was a big help.

The present chief of a department A.K. Yeroshkin acquainted us with the structure of the Grozno Promavtomatika Scientific-Production Association. It includes VNIPIPromavtomatika [Promavtomatika All-Union Scientific-Research and Planning Institute] the special planning-design and technological bureau of Neftegazpromavtomatika with the experimental plant and the planning part and the servicing service training the customer's personnel. As of today, the Promavtomatika Scientific-Production Association is capable of carrying out work dealing with the introduction, adjustment and servicing of automated systems in the sector.

Developments of the Grozno automation workers are being successfully used at the Akmyantsement Production Association, the Sukholozhsktsement Combine and the Ulyanovsk and Karachayevo-Cherkessk plants.

In the '80s, implementation began of systems involving the use of microprocessor equipment (the TOPAS complex) intended for the creation of an automated system of technological-process control for the preparation of a raw-material mixture and grinding of raw material with simultaneous centralization of display of operative information and operative control.

The GRAS-micro 0.6 system is intended for control of roasting in rotating furnaces 5X185 meters in size. Development is starting of an automated control system for bar coolers regulating blowing for the unit's chambers.

In conclusion, A.K. Yeroshkin noted that enterprises seriously engaged in automation have acquired the possibility of fuel economy, stabilization of the roasting process as well as accident-free work. Expenditures on repairs have been reduced.

The general automation level of the cement industry was analyzed by chief designer A.B. Smolyanskiy (All-Union Scientific-Research and Planning-Design Institute for Automation of Enterprises of the Construction Materials Industry). He dwelt in greater detail on introduction of new equipment that was functionally not inferior to the best world models as well as on the distributed control systems.

Classification by type of those solutions which reduce expenditures by a factor of 3-4 underwent particular development.

It is planned in the future to make wide use in the sector of programmed (digital) microcalculators. Their use does not require a knowledge of programming technique.

There are major problems in sectoral instrument making. In connection with tightening of requirements imposed by Gosstandart, indicators of viscosity, of control of filling mills and others have been removed from production. The speaker sees the way out of the situation to lie in cooperation with CEMA countries where good comparable models of these instruments exist.

But this is not the only possible solution of the problem. With expansion of the information and notification service, it is possible to manage through one's own efforts. For example, the USSR Ministry of Ferrous Metallurgy has a good gamma sensor for quality control of raw materials which is so needed by cement workers.

A.B. Smolyanskiy reported that in the future the publication of the collection "Tsementnaya promyshlennost SSSR" [The USSR Cement Industry] will include a section called "Automation."

The state of labor and equipment safety procedures at the sector's enterprises was described by S.A. Ponomarev, the leading engineer of Glavtsement.

During the 11th Five Year Plan, a comprehensive plan concerning these indicators was fulfilled as a whole. The labor conditions of 1,400 persons were improved, new preventoriums, dining rooms, rest centers, kindergartens and nurseries were put in operation at enterprises. Competitions and reviews are regularly held on questions of labor safety procedures.

Unfortunately, an atmosphere of intolerance of violations of labor and production discipline has not been created at all enterprises of the Main Administration of Cement Production. Consequently, work on prevention of violations of labor safety practices is still being poorly conducted.

At the Mordovtsement Production Association, shower and dressing rooms are in an unsatisfactory condition. Violations occur in power operation--no required barriers exist around conveyor lines.

Indicators relating to labor safety practices at the Voskresensktssement Production Association and at the Podolsk plant are deteriorating.

If two enterprises were to be compared--the Podolsk and Vorkuta plants--it would be impossible to say that the work conditions at the second plant are simpler. But at the Podolsk plant, discipline violations have become a common occurrence, while at the Vorkuta plant there has not been a single serious incident recently. This is the result of well-organized labor discipline and labor safety practices.

In the future, the transition of a number of enterprises to the dry method of producing cement is planned. Therefore they now need to solve the problem of dust control since requirements for protection of the external environment have grown.

It is necessary to pay more attention to the operation of quarries, compressor and gas management and power equipment.

A great deal depends on a technically competent approach to the matter by managers of enterprises. For example, for all cement workers, a problem is operation of safety instruments in crane work. Due to difficult conditions and presence of dust, circuit breakers sometimes do not work on cranes. At the Topki plant, thyristor control of cranes operates faultlessly, and it should be introduced at other enterprises.

At the conclusion of the conference, pertinent decisions were adopted.

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## RECONSTRUCTION OF ANGREN COAL PIT LAGS

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[Article by T. Rodionov: "Reconstruction of the Angren Open-Pit Coal Mine"]

[Text] Every time I'm in Angren, a lot of the specialists employed by the organizations reconstructing the open-pit coal mine here paint the same picture for me--they show me the pit's cross-section, giving the slope of the pit in degrees and explaining, "The angle of this pit is wrong. If only it were gently sloping. But it is steep, and passes under the surface so that the coal reserves are covered by rock, so we have to remove more of the overburden."

But the search for a solution to this problem has already been on the back burner for years. Why? There are both objective and subjective reasons at work here. One of them is that the overburden rock at Angren is not just an obstacle on the way to the coal. The rock itself is a valuable raw material, as it contains kaolin. The kaolin clays of this region are generally acknowledged as being valuable for the manufacture of industrial building materials, particularly brick. In the future, if the appropriate production methods (which do not now exist) are developed, it will be possible to use the Angren aluminas to produce aluminum. This is why, in accordance with a decision made by USSR Gosplan, the State Committee on Natural Reserves and a number of other union and republican departments, the overburden needs to be saved for later use.

It will undoubtedly cost a pretty penny to do this: this rich soil disappears beneath the tailings, thus complicating the entire technological cycle of coal extraction, raising prime production costs and retarding the progress of the work. But again, we must not destroy the kaolins.

This is precisely why previously uncovered seams are being worked in pursuit of an immediate effect, and the new working front is being prepared behind schedule. This short-sighted strategy has had a lamentable effect on the work of the entire mining complex. Even today, when vigorous measures to bring the "home fronts" up closer have been recalled and are being implemented, the lag in strip-mining amounts to approximately 20 million cubic m of rocks, and the arrears for coal extraction have increased tremendously. Chief Engineer of the Angren Coal Pit V. Manuilov has come up with these estimates: we need to bring

over 56 million cubic m of overburden to the surface every year in order to wipe out the shortfall. This is the only way the loss factor--a cubic m of coal for every six cubic m of rocks--will be regained. And only then will we have a way opened to the final objective--the extraction of 10.3 million t of coal annually, which will be needed by the Novoangrenskaya GRES [State Regional Electric Power Station], which is now under construction.

In fact, this is precisely the reason that it was decided more than 10 years ago to reconstruct this coal pit. And today, when the need for additional fuel has become an objective reality, it has to be shipped to the Novoangrenskaya GRES from coal basins in the RSFSR. The unified plan developed by the general planner--Karagandagiproshakht [Karaganda State Planning Institute for Mines]--calls for 7 priority complexes, two of which have been completed. This year we have to complete the third phase, which is supposed to increase our annual coal take by 1 million t.

But what is astonishing is that I have only gotten ambiguous answers to the question of how much of an increase was effected by the many millions of rubles in capital investments which were spent on the first two phases of the reconstruction. Even though the project planning document directives called for an increase of 500,000 t after the first phase was put into operation and 700,000 t after the second phase was turned over. Where is this little bit of coal, whose railcars were used to ship it to whom, and whose heaters and boilers are burning it?

The people I talk to are making helpless gestures, and the specialists from the Angren Coal Pit and the general contractors are shrugging their shoulders. The anticipated increase in coal extraction hasn't come about yet. And it's not just that the time-table for reconstruction is already six months behind schedule and that we've racked up a half million ruble overexpenditure. We in Angren believe that the problem lies in the project plan itself, or rather in its lack of conjunction with the actual needs of production.

As V. Manuilov assesses the situation, "The Institute presented us with a mining and transport oriented plan. Now what does this mean? It means that the plan does not coordinate the reconstruction projects with the increased volumes of coal extraction. A great deal of the plan needs to be reexamined."

Uzbekshakhtostroy [Uzbek Mine Construction Trust] specialists agree. But then why did the client and the general contractor fail to quell these concerns on time when they were reconciling the project plans at all stages of the reconstruction project?

I understand that the question of who the others were, those who came to replace some of the directors who are no longer with us, is rhetorical, and that the biography of this project is no longer counted in years, but in five year plan periods. The replacement directors could have corrected the project plans, and could also have required the needed refinements and alterations from the general designer. But neither has been done. They haven't had time yet.

"It was our fault," say representatives of the client and the general contractor, agreeing with the above conclusion. "We overlooked things and let things slip through. But put yourself in our place: Karagandagiproshakht issues the documentation a little at a time, far behind schedule, which gives us no time to reflect on it or appraise it.

The same thing happened at the second construction complex, which was turned over for operation in June of this year--six months behind schedule. In the indents drawn up by the institute and accepted for use by USSR Gossnab, some three needed machine tools and assemblies, equipment and a variety of cable products were left out. And then a great deal of equipment not called for in the plan showed up. And neither the client nor the general contractor had the designs used for making comparisons and refinements. In a situation such as we were faced with, some misunderstandings will obviously occur.

At times the progress of this reconstruction job brings to mind a conveyer, the start button of which can be pressed by anyone involved in the reconstruction project and who is moved by the mood of the moment, by caprice or by departmental interest. This is why the conveyer fails to operate and why it comes to a stop, idles in neutral, and causes emergencies. In how many of the minutes from large and small meetings around the Angren Complex have formulations appeared briefly, obligating them to do this and that, and threatening that the most stringent measures would be taken should these things not be done. USSR Gossnab ordered representatives of Soyuzsvetmetuglekomplekt to see without fail that needed equipment is built and that needed materials and auxiliary assemblies are provided. And later on, for some reason, it turned out that there are time-tables but no orders, orders but no funds, and funds, but no designated manufacturer-supplier. A supplier was found, but the equipment needed is of an altogether different type. For two months prior to the scheduled start-up of the second phase of the reconstruction over a thousand units of all sorts of equipment were lacking and for several days prior to the prescribed deadline the operation was dozens of km of cable short. It was not until May of this year, when all the time-tables had collapsed, that the flotation machine arrived. Its dimensions were 3 m by 4 m, and so the wall of the prefabricated construction wing had to be dismantled, the panels had to be removed and the casements had to be destroyed. And this involved above-normal outlays.

Non-conformity to prescribed procedure and irresponsibility are the primary scourge of this tremendous construction project. And everyone involved in the project is responsible for this approach having been taken. For example, the Ministry of Railways manufacturing plants were ordered to equip our new buildings with machine tools to be used for special repair work on rolling stock and with dozens of units of non-standard and other equipment which is manufactured solely in these plants. Did they do it on time? They wouldn't have dreamed of it. Quite simply, they defended their position by saying, "We ourselves don't have enough of this equipment." Then why were the highest levels of management given assurances, and the concerned parties deceived?

There are, so to speak, handfuls of discrepancies between words and deeds at this construction site. We walk through a plant which repairs mining

transport equipment. It is the largest facility involved in the reconstruction project. Its erection has also been broken down into stages. The second block of this enterprise has been put into operation while construction of the first is still underway.

But there is a great silence out in the construction area. The silence is broken, not by the din of machines, but by a loud argument.

In exasperation, S. Chadin, chief of SU-6 [Construction Administration], of the Uzbekshakhtostroy Trust, is asking: "Why aren't you laying the trench? You were already supposed to have had this work done for me!"

"And how am I supposed to fit the Belarus beneath the beams? You've disrupted the production process! And you'll answer for it!", shouts N. Asanov, chief of PMK-15 [Mobile Mechanized Column], of the Uztransspetsstroy Trust.

In the maelstrom of explanations and mutual reproaches concerning the work, this picture starts appearing: either there was no tractor, or the construction workers got in a hurry, but the beams were laid on the ground before the trench was dug beneath them. How is the equipment, which isn't here either, by the way, to be fitted in there? No one knows. Apparently, everything already done will have to be torn down and disrupted again.

The result? Another argument. The above-mentioned section under Asanov has gotten a late start digging the trench, leaving the third section of the Uzbekshakhtostroy Trust's SMU-1 [Construction and Installation Administration], led by F. Ibragimov, with no working front.

"We're two months behind schedule," grieves Ibragimov.

We note that the time-table has already been adjusted to take into account what is now a lag of six months.

"But now, and with what, am I going to pay my men?" It is N. Asanov again. "The plan has been reworked, and the work volumes have been reduced by 16,000 cubic m of soil, but it still has to be removed! Why doesn't the general contractor get together with the planners and take care of this problem?"

"The trouble is with the planners," says A. Grechushkin, leading Chief Engineer of the Uzbekshakhtostroy Trust, shaking his head. "We're tired of quarreling with them. A representative of the Karagandagiproshakht Institute was here, and he promised to look into our problems post haste, and with that he left...on vacation. And that's typical of this operation."

For those involved in the reconstruction project, the second construction complex was decisive. Here, the volume of construction and installation work amounted to almost R25.5 million. Compare: the present third phase was estimated at only R15.8 million in construction and installation work. Dozens of projects were turned over, including a mobile production base, one of the blocks of the mining and transport equipment repair plant, 11 km of heat supply system lines, the Shakhta Station, with its equipment maintenance complex, the Karyernaya Station, a tailings dump, two secondary traction

substations, a waste-water disposal and water piping system, many km of communication lines and so on. What's more, we've provided some backlog for the third phase. This is why A. Grechushkin suggests that we can make up for most of the lag. But right away, we hear the condition: if the planners don't let us down. But unfortunately they continue to fall down on the job. Examples? If you please:

The construction workers started the excavation work for reconstruction of the Porodnaya Station. This involved hauling away millions of tons of earth from the stripping reserve. The importance of this project in eliminating the greatest bottleneck to coal extraction is obvious. Judging by the blueprints, it was dumped right at the operating point for cleaning out the dumpcars. The removal of this earth was not provided for in the project plan.

"Dismantle the cleaning point!", demand the builders.

"How? Where should we take the earth?", vehemently protest the operational personnel, who can't work a single day without a clean-out point.

So there's another protracted argument, a hurried altering of the blueprints, and miracles involving supply: you see, we need to get rid of both mechanisms and materials which are wearing out, and we need to construct a new dumpcar cleaning station. And meanwhile, the 30,000 cubic m of earth which need to be dumped in this spot lie untouched.

What are the planners doing about this? With annoyance, the people involved in the reconstruction explain that the planners are drawing a "sketch" No one is enthusiastic about their hurriedly compiled blueprints.

"Anyhow, we are trying to keep from thinking about their slipshod work, and are working as we see fit," comments A. Grechushkin.

Similar detours [kulbity] cost a pretty penny, and keep raising the price of construction. We need to change the design of the Uglesborochnaya Station renovation, which is part of the third construction complex: they forgot to link the relaid railroad tracks with the already-operating structures and engineering service and utility lines.

There are still no project documents for the concentrating mill or the production complex for extracting and grading coal. We know that the latter project is particularly important, not only for the coal pit, but for a great many departments. Along with the run-of-mine coals, coals containing valuable components are being mined at Angren, and these components must be reclaimed after burning the coals and used in industrial production. This discrete use of these coals is not yet being carried out here, and rare earth elements are escaping with the ash.

And so it is that the overall cost of the above projects exceeds R40 million, the normative time to construct them comes to no less than four years and it takes about a year to prepare areas sitting almost on the edge of the coal pit. This deadline has already been surpassed, thus setting the stage for a serious lag and causing a great deal of concern at the open-pit mine and

within the trust. Meanwhile the projects have yet to be included in a single stage of the reconstruction, nor are there blueprints for them, and this threatens to carry this portion of these jobs into the next five-year plan period.

Nor do many of the other projects have contractor designs. On the other hand, the replacement of ferroconcrete ties by wooden ties on the rail lines has been put into the design. As the people I talked to asked, shrugging their shoulders in bewilderment, why use the state's capital outlays to do these jobs if the substitution of the ties could be paid for using the customer's operating expenses? It would cost a lot less.

However, it looks very much like the general planner cares very little about the reconstruction costs. A construction project ties up millions of rubles. Hence the cliché that a million more or less doesn't matter. And this is why mistakes, heaped one atop the other by difficult times, cover the construction project. In my presence, N. Ponomarev, senior engineer of the coal pit's capital construction department, padded the balance of the projects now under construction with additional outlays. The planning amendments here are going to cost over R1 million. One can only conclude that these vast sums of money are the result of simple oversight, omissions in the estimates, or simply errors!

So does the coal pit really need the mobile production base which is now under construction? Or more accurately, did the spur lines, switches, lines and signal lights need to be planned on such a vast scale? All these are controlled by automated equipment costing over R100,000. The Tashkent Railroad Terminal, overloaded as it is with a similar plethora of equipment, would be hard-pressed to compete with this. What purpose does it serve?

"Railroad repair crews will be brought here twice," explains A. Grechushkin. Naturally this is a luxury not called for in the plan. Just over there is a 20-room fire station for two fire trucks. And it, too, costs over R100,000. Oh well, it's not our money."

V. Manuilov, chief engineer of the coal pit, was somewhat more circumspect in his assessment:

"We need a voluminous mobile production base. We are re-laying over 120 km of railroad track, and this will increase as the coal pit grows larger."

"But you don't really repair all the track at once; the wear on it isn't so bad that we need to be endlessly bringing in repair gangs," I try to reply.

"This is a long-term project, which will be eating up our resources until after the year 2000."

We assume so. But what about the fire station? It is a project which, though expensive, is also necessary, or so believes Vladimir Nikolayevich (Manuilov). True, he was unable to explain the huge scope of its construction, but agreed that many areas of its design need to be examined.

What is Karagandagiproshakht [Karaganda State Planning Institute for Mine Construction] doing to find effective local solutions to the problems which arise, and to correct those parts of the plan which can still be corrected?

"They are sending out a landing party," they joke disconsolately in the trust and in the coal pit management. "They come here, take a turn about, make some promises and then start corresponding with us."

They showed me the minutes from last year's major joint USSR Minstroy [Ministry of Construction] and USSR Minugleprom [Ministry of the Coal Industry] conferences which dealt with rebuilding the coal pit. The June entry: Soyuzshakhtoprojekt [All-Union Mine Planning Association] is to take command of an integrated regular works department at Angren, deadline: 15 June. September: No work planning group has been set up in Angren, which prevents the effective elimination of planning deficiencies...." Conclusion: set up a planning subdivision in the city right away. But now we already have the minutes for October: "In connection with the mandatory replacement of equipment, conductor and cable products, and planned alterations, immediately organize in Angren...."

As you can see, not a single solution was executed. The planner's landing party prefers to stay at the construction area, playing the part of the neutral arbitrator, drawing their travel allowances and spending days corresponding on every trivial questions.

"We need them in Angren, and permanently," unanimously announce A. Grechushkin, V. Manuilov and a representative of a UzSSR Minmontazhspeksstroy [Ministry of Installation and Special Construction Work] subcontractor. "They will create all the necessary working and living conditions. At present, this is the most complex and largest construction project in the republic, and there are still many unsolved problems. But why, in the final analysis, is the directive, issued by two union ministries, not being implemented?"

The logic of my respondents is based on national interests. In actual fact, this construction project, with its R275 million in capital investments and about R200 million of construction work, isn't even half finished. This means that a lot of money can still be saved by using judicious technical resolutions and reexamining individual sections of the project plan. But the main thing is to strengthen the hitherto weak connection between the reconstruction now underway and its final result, which is to extract up to 10.3 million t of coal every year.

"And it could also be," those involved in the reconstruction say apprehensively, "that we will reconstruct this pit and still won't mine the amount of coal we need."

This concern stems from the technical resolutions called for in the plan. For example, no provision has been made for a reliable drainage system to protect the coal pit from runoff from mountains and streams. The problems of increasing the stripping volumes have been ignored, but you can't get to the coal without first stripping away the overburden. In Angren, we took extreme measures, and obtained the consent of the USSR Council of Ministers to work

the Appartak reserve section, since the reconstruction of the main coal pit has not yet produced any appreciable result.

As A. Skorokhodov assesses the work of the coal pit services: "How many times have we needed to get the next project up to full equipment strength, and the supplier merely throws up his hands in despair because he doesn't have it, so we don't get it. But look at the documents--everything is supposed to be in the warehouses. So you and the supplier go to the warehouse together, and there sits the equipment. It turns out that they don't know what they have right in their own pocket. Is this any way to run a business?"

Agreeing with A. Skorokhodov that the supplier has often let this construction project down by failing to supply full equipment sets, A. Grechushkin cites an example of another lack of coordination--this time with a subcontractor. One of the Uzbekshakhtostroy Trust's best brigades, headed by A. Zborivtsom, was sent to build a drainage canal and a series of water development works. But first, a half million cubic meters of earth were to have been removed. This was supposed to have been done by the Uztransstroy Trust, but they organized the operation in a slipshod manner.

The supplier has his own complaints against the builders, too.

"They try to choose the more costly projects and leave the smaller ones for later," opines E. Kichikov, senior engineer of the coal pit. "For example, what kept the builders from turning over the central station and materials warehouse for the contact station at the Karyernaya Station on time? All the equipment needed to complete this project was available and it should have been turned over last year, but they didn't start building it until this year."

There are reasons for each such reproof. The supplier has already registered a statement of claim for over R32,000 against the Uzbekshakhtostroy Trust. What's worse is that it's still a long way from these reproofs to the matter at hand. But it needs to be said that all those involved in this construction project are making full recompense for their neglect. And not only the planners. They are still waiting in the wings. And meanwhile, the Novoangrenskaya GRES [State Regional Electric Power Station] is increasing its capacities....

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## NOVOANGRENSKAYA GRES, COAL SUPPLIES AT ODDS

Tashkent EKONOMIKA I ZHIZN in Russian No 12, Dec 86 pp 30-35

[Article by V. Sholokhov: "Complacency Prolonged: The Problems Arising at the Novoangrenskaya 'Electricity Factory' Require Immediate Solutions"]

[Text] By now it has become clear that further growth of the national economy of Uzbekistan is being hindered by its power production base. There is not enough electric power--our new enterprises are being kept from reaching their planned capacity and those already in operation are being changed over to a "subsistence ration" of power. Agriculture is receiving less than its share of electric power and is increasing the amount of manual labor. It is growing darker in the streets of our cities and settlements. The electric lights in our apartments are growing dimmer.

The year 1986, during which our water levels were low, fully revealed the complex nature of the power supply problem. Our hydroelectric power stations' generators almost froze. Our hopes were pinned on the thermal electric power stations. The question was put point-blank: will there be enough power, and will the yearly and five-year plans be fulfilled? We had no alternatives.

That is why our national economy's number one task was to put our operating heat and electric power stations on full capacity and keep them at that level, and to struggle to put the power-production projects we are now building into operation. The most important of these projects is the Novoangrenskaya GRES [State Regional Electric Power Station], two of whose power blocks are already generating current.

## INERTIA IS A DRAWBACK, TECHNICAL PROGRESS IS AN ADVANTAGE

The Novoangrenskaya GRES is a first magnitude star in the constellation of Uzbekistan's power production facilities. This power station is presently one of the largest thermal electric power stations in Central Asia. It sits in the republic's industrial center. When all eight of its power blocks are operating, the station has 2,400,000 kW capacity and an annual electric power output of 14 billion kW/hours. This will be sufficient both to supply power to the numerous consumers of the Angren-Almalyk Industrial Zone, and to transmit surplus power into the Central Asian Power System.

Inasmuch as this station did not reach full power until the 12th Five-Year Plan period, it could be called a 21st century project. Is this a realistic assessment?

This is a standard station, the design for which was drawn up in the early 1960's. World power engineering has made major advances since then. First of all, year after year the process of electric power generation has improved thanks to prime cost reductions and improvements in boiler fuel combustion. Radically new equipment was developed and put into operation during this period, thus greatly improving the technical and economic indicators for operating our thermal electric power stations. The same period saw the modernization of centers and sections whose job it was to speed up the transporting and improve the preparation of fuel and reduce its consumption and losses. Numerous environmental protection measures were taken. In a word, accelerated scientific and technical progress helped improve and refine the power production industry which is embodied in our thermal electric power stations.

From this point of view, the Novoangrenskaya GRES, which is still under construction, seems obsolete. Advanced technological thought has affected the design of this power station only slightly, giving it only certain minor advantages, comparable to similar facilities of 20 years ago. As pointed out in the report made by M. S. Gorbachev during the 27th CPSU Congress, "We are put on guard when new projects are built and filled with obsolete equipment, and when costly plans are developed, but fail to attain the highest technical and economic indicators for this industry."

No, I am not urging that construction plans be shredded and new ones made for every new electric power station so various innovations can be inserted: use both those which have already proved themselves in practice and those which have been "prescribed" only for power engineering. But we do need to give consideration to the most promising proposals when developing our planning estimates.

What would help achieve much greater efficiency for the Novoangrenskaya GRES? For example, we could totally eliminate our still considerable in-transit fuel losses by constructing a pipeline which, by connecting the GRES with the coal field, would ensure an uninterrupted fuel supply. This method is already in use in both world and domestic practice. We know of cases of coal being hydrotransported for distances of up to 500 km. It is only a little over 30 km to the Angren Coal Pit.

How does the customer feel about this? "We feel it ADVISABLE to supply coal via pipeline when setting up the 'coal pit-to-GRES' unified technical cycle," explained our republican Minenergo specialists. "As long as the Angren Coal Pit is not fully prepared to ship coal this way, we see no reason to stop using rail shipments."

And that's the long and the short of it. Because the Angren Coal Pit is not ready, there's no reason to change the supply procedures. But the Angren pit is in fact being modernized. When the plan for the basic renovation of the coal field was being worked up, the idea of transporting fuel along a pipeline

to the power station never came up. But it could have, and should have come up, since this is a less costly alternative, is simpler and requires far less manpower resources to operate. It is even ecologically cleaner! What's more, there was nothing to prevent this alternative occurring to someone. The modernization of the Angren Coal Pit was begun, not only in tandem with construction of the giant Novoangrenskaya Power Station, but also for the purpose of taking the needs of this huge consumer of the Angren lignites as fully as possible into consideration. Another alternative which also deserves our attention consists in drawing the gas produced at the Podzemgaz [Underground Gas] Station in Angren along a pipeline to the GRES, the more so since after 1986 electric power station boilers will be converted to operation on Shurtan gas.

On the one hand, this huge electric power station seems inactive. There are very few people around the production blocks, and only the barely discernible whitish thread snaking up from the 325-m summit of the smoke stack and a light cloudlet of steam over the cooling tower confirm that the station is indeed operating. And how it is operating! The boiler for a single turbine burns 200 t of fuel every hour, and this increases to 250 t per hour when the turbine is working at full capacity. And if you take into account that the efficiency of the fuel burned at a GRES never exceeds 38 percent (according to the design, these are its optimal figures), then the streams of smoke and the steam cloudlet are not so innocuous. At best, over 60 percent of the power obtained, produced and released at the cost of so much labor, does no more than warm the sky.

Can the station's operational efficiency be improved? With the equipment installed here--not significantly. There are, of course, different ways to express concern for the power-production industry such as by implementing efficiency recommendations for conserving the energy produced by burning coal etc., and the total yield of a combustible fuel can be increased by part of a percent. And although this is important and necessary work, the energy savings can by and large still be counted in matches.

Another, and far more effective method which would improve the efficiency of thermal energy use by up to 50 percent and more calls for the inclusion of MHD-generators, which operate in accordance with the magnetohydrodynamic principle into the network of power-producing generators.

The essence of their operation lies in the fact that the hot gases produced by burning coal, gas or mazut are ionized, thus producing plasma. When this plasma enters the MHD-generator channel and flows between the poles of the electromagnet located there, voltage is formed and current begins flowing.

According to UzSSR Minenergo, it won't be possible to use this type of equipment for ten years, since there is presently neither a design or a prototype for it. Moreover, no such coal-fired industrial equipment has been developed, and experiments with gas-fired equipment are only now underway.

But this is not altogether true. Like much else which has to do with the technology associated with the industrial utilization of coal, the magnetohydrodynamic principle of producing electric power isn't new, having

been first propounded by Faraday. The first MHD-generators were tested in laboratory conditions in various countries of the world almost 20 years ago. The first experimental pilot MHD-generator made its appearance in our country as long ago as the 1960's, thus allowing us to accrue some operational experience, to debug the design and to make an in-depth study of the complex physical processes which take place in these generators. In 1971 the Moscow Power Network received the first electric current generated by the U-25 MHD generator, which has a maximum output of 20,400 kW.

As the academicians V. Kirillin and A. Sheyndlin wrote in 1978, "thanks to the gains made by the Soviet Union, all the conditions now exist for constructing industrial MHD-generator-powered plants." MHD-generators are now installed at the Ryazanskaya GRES.

The point is not why none of this advanced equipment has been placed at the Novoangrenskaya GRES. The problem needs to be looked at from a broader perspective: for now, the development of new types of highly-effective power engineering equipment is presently lagging behind the more urgent demands of the power production sector. It is perhaps premature to be talking about putting MHD-generators into widespread operation. But it would be worth it to stipulate this feature in a power station design, even if for the distant future. And it should be done with this condition: either USSR Minenergo or UzSSR Minenergo, having included in a project plan the introduction of an installation for a specific time period, would also assign the scientific developers the specific task of so many MHD-generators for the Novoangrenskaya GRES, operating under such-and-such conditions, on such-and-such fuel and with such-and-such technical and economic indicators.

But no such thing is happening. Once again we are encountering the traditional inertia in thinking, the ideal of which is to follow unswervingly the criteria of a design which, even though it is obsolete, will do the job, and even better, has proved itself over a quarter of a century. But we need to bear constantly in mind that something which does a satisfactory job today will require radical changes and improvements tomorrow.

The following fact shows the ultimate end led to by such an economic policy for planning and constructing power stations: present plans call for the partial modernization of the 1st and 2d power blocks, so as to get them up to planned capacity sooner. More up-to-date equipment is to be installed and the technology is to undergo refinements.

This kind of modernization contradicts socialist economic management principles, as massive capital outlays have to be put into altering sections which could have been improved at the planning and construction stage.

#### HOW OBJECTIVE ARE "OBJECTIVE" CAUSES?

On the one hand, the Novoangrenskaya GRES is being built according to a tested design. In principle, the entire mode of the construction of this facility should be adjusted and refined. No complications need arise here. On the other hand the operational personnel are constantly chiding the builders with complaint after complaint about the poor quality of their work.

Altogether, the power engineering workers counted 140 items as being among the most substantial shortcomings in the first two power blocks put into operation. The builders failed to put auxiliary facilities into service on time (such as propane-butane gas plants, a repair and equipment block, a workshop for repairing mill exhaust fan rotors, the GRES rail station etc.). The situation is bad with regard to the construction both of housing and especially of social and cultural facilities in the power workers' settlement of Nurabad: the funds for construction of hospitals with polyclinics and a 320-place kindergarten have not been used, nor has construction of the Energetik Club begun. The long awaited 9,000 person capacity public center was finally turned over after 9 years, and sports fields, stores and a cafe are appearing only with difficulty.

And although the usual procedure is to criticize construction workers, I am not going to do this. And here's why.

True, there are few highly-skilled construction workers at the Novoangrenskaya GRES. But in the first place, this is taken into account when the normative deadlines for the term of the construction work are set, and should have no substantial effect on its progress, and in the second place, if the present progress of this construction job is analyzed from these points of view, then the picture begins to look a bit strange: there is not a single brigade which has managed to work smoothly through the years, both within the deadline and with high quality.

Why is this? A great many of the construction collectives are well known, not only at this construction project, but in the republic as well. For example, the multi-purpose brigade headed by the UzSSR's distinguished builder Ismankula Yuldasheva who, as part of a socialist competition took upon herself the obligation of increasing her brigade's labor productivity by 10 percent in getting the 3d power block started up ahead of schedule, and urged the other collectives to follow her example.

This initiative was widely taken up, and now many construction and installation workers are doing shock work, and working on double and triple shift schedules. In being at the construction site, you can't help but compare its progress with the intense rhythm of such widely renowned historic construction projects as Turksib [Turkestan-Siberia Railroad], Dneproges [Dnieper River Hydroelectric Power Station imeni V. I. Lenin], Magnitka and BAM [Baykal-Amur Mainline Railroad]. The only difference between then and now is that these builders are much better equipped. They have highly productive equipment and small-scale mechanized equipment at their disposal, which lightens and speeds up their work while improving its quality. Their arsenal includes progressive working methods, erection and assembly methods using large prefabricated modules and methods for installing materials and equipment taken directly from arriving transport. All these methods have been approved in the country's best construction collectives.

There is no single method, but a system. It is the same system which is based firmly in clients' and contractors' mutually understanding each other and mutually taking care of each other's interests. The foundation does not

consist in feverishly supplying materials, with the requisite theatrical throwing up of the hands and the subsequent calms.

But silence usually reigns over the construction project. Why then, it is asked, do we have multiple units of the most up-to-date equipment for use with advanced labor methods, if the construction site stands silent because of disruptions in deliveries of construction materials, and equipment which need to be installed? Thus, the Alma-Ata Boiler, Auxiliary Equipment and Pipeline Plant, of Soyuzenergomontazh [All-Union Electrical System Installation Production Association] delays its deliveries of 130 t of gas conduit and 55 t of non-standard equipment for the 3d power block. The Novomoskovsk Boiler and Machinery Plant and the Kursk Boiler, Auxiliary Equipment and Pipeline Plant, both of which are part of Soyuzenergomontazh, are behind in deliveries to the power station being built, of hundreds of t of output, without which the construction project is literally stifled. The Volga Metalwork Plant and enterprises within Glavenergokomplekt [Main Administration for the Supply of Power Engineering Equipment in Complete Sets] continue to be chronically behind in their deliveries.

This leads, in the final analysis, to rush work and heroic high-tempo duty shifts in those enterprises where the work needs to be done simply and intelligently, distributing their strength uniformly throughout the work. Can the rate of progress of the work done on this construction site be accelerated by bringing in above-norm numbers of construction workers who are not so much involved in the matter at hand, but rather interfere with each other? This old-fashioned brand of "acceleration" fails to meet the requirements put on contemporary builders.

This kind of haste turns out badly, not only for the construction workers, but mainly for the state. There is no way of telling, for example, the extent to which unfinished installation jobs have "frozen" the chemical water treatment shop's automated system which controls the filter regeneration and reduction processes--all of which is now done manually, and "by eye". Without the mechanization provided for in the design, loads are transferred to the reagent storage facility by hand. The hurried (stay within the deadline!) construction workers have postponed "until later" putting the plenum-exhaust ventilation system into operation, and now the workers of the reagent preparation department are forced to breathe alkali and sulfuric acid vapors. Because of the hasty work done by the construction and installation workers, the work on the first two power blocks, which went into operation last year and this year, is as feverish as it ever was. And so far they haven't managed to get them up to their planned capacities within the deadline.

Speaking of normalizing contractual relations with the suppliers, we should mention the qualitatively new mutual relations now existing between the GRES builders and the Leningrad Metals Plant Association. Having built the anniversary, one-hundredth 300-mW turbine intended for the power station's 3d power block ahead of schedule, the Leningrad workers offered a "workers' competition" to the Novoangrenskaya GRES construction, installation and operators' brigades. The point of the competition was that the turbine builders had displayed their concern for the fate of their product, and this meant all the way from the manufacturer to the operator. On their part, they

are still servicing their creation like a company ought to: at the Novoangrenskaya GRES, one often encounters specialists of a wide variety of specialties from the Leningrad plant. They are there to help our power production workers install this extremely complicated equipment, and they stay until it is brought up to its designed output.

This kind of interrelationship with equipment suppliers has obvious promise. In turn, the Novoangrenskaya GRES management, with a similar offer to support the "working competition" for deliveries among all positions, turned its attention to the other enterprises which supply it with equipment, and which have the same close connection with the power station. And encountered the same root-deep complacency and devotion to their own narrow departmental production interests, which have taken some 10 years to take shape. Meaning that, as before, there will be more letters of complaint and plumper folders about non-deliveries, construction deadlines will be disrupted and construction quality will be kept to a low level.

This tight knot of contradictions which was caused first of all by the attempt to account for the "gross output" and to sell output to the client for less in spite of an urgent demand for it, can be untangled by changing all the enterprises now based on self-support [samookupayemost] and self-financing over to operating on a cost-accounting basis. This isn't being done yet, and it's difficult to be sure that the supplier enterprises located outside of Uzbekistan are totally concerned about the Novoangrenskaya GRES, even though this project is mentioned in the Basic Directions for the Economic and Social Development of the USSR.

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## REPORT BY CENTRAL COMMISSION ON OIL FIELD DEVELOPMENT

Moscow NEFTYANOYE KHOZYAYSTVO in Russian No 1, Jan 87 pp 71-73

[Article by V. Ye. Gavura and I. P. Vasilyev, under the "Information" rubric:  
"Materials of the Central Commission on Oil Field Development in the USSR"]

[Text] The Central Commission on Oil Field Development in the USSR held meetings during April-May 1986, at which the participants examined the planning documents for the Tatar ASSR fields and the production chart for developing the Kharyaginskiy Oil Field in the Arkhangelsk Oblast. They also discussed a technical scheme for developing fields by using the VVG [Wet In Situ Combustion] method for two fields being developed by the Tatneft Production Association (the Vishnevo-Polyanskiy and the Pionerskiy fields). The schemes were drawn up in the MING [not further identified] (Sh. K. Gimatudinov, planning director). In both of these fields, plans call for VVG to be used in the Bobriki Horizon deposits of the Lower Carbon, which, judging by their geophysical characteristics, meet the criteria for use of this method of recovery. These fields have not been put into development.

At the Vishnevo-Polyanskiy Field, the primary deposit of the Bobriki Horizon (which is the production formation using in-situ combustion) is confined to the southern and northern domes. The formations occur at an average depth of 1,300 m. The porosity ranges from 5.1--35.6 percent, the oil saturation varies from 6.5 to 95.4 percent, the maximum thickness of the producing formation is 19.2 m and, according to data from hydrodynamic research, the permeability of the wells is 0.64--1.64 square micrometers. In formation, the oil has high viscosity (121 mPa per second). In section, the formation can be isolated into three productive interbeds, divided by thin argillaceous interbeds. The reservoirs are 7.4 X 2.1 km. Testing of the in-situ combustion method, with air injected into the formation until the deposit is completely developed was suggested for an area where the wells are spaced in a seven-spot system in a pattern 250 X 250 m in the southern, and 350 X 350 m in the northern sections.

At the Pionerskiy Field, the terrigenous deposits of the Lower Carbon (the Bashkirian-Serpukhovskiy and the Vereya reservoirs) contain commercial amounts of oil. The average depth at which Middle Carbon deposits occur is 1,000 m and 1,250 for the Lower Carbon, with an oil-saturated formation thickness of 2.6--4.4 and 2.7--5.5 m respectively, a respective permeability of 0.68--1.8

and 0.94 square micrometers, respective porosity of 14--16 and 26 percent and a respective in-formation oil viscosity of 74 and 149 mPa seconds. It is proposed to test the in-situ combustion in the Bobriki Reservoir, which occurs in the Karasin Uplift, in an areal seven-spot well-spacing system on a 300 X 300 m grid. Plans call for the remaining reservoirs of the Bobriki Horizon to be developed using the areal seven-spot well-spacing system (on a 300 X 300 m grid), and to develop the Middle Carbon formations on a natural flow regime.

The production schemes take up the problems of constructing the field facilities and protecting the oil field equipment from corrosion.

During the discussion of the planning documents, the VNII [All-Union Scientific Research Institute] suggested that, after the burning zone has been formed in the formation, we contemplate a changeover to advancing the thermal edge by injecting cold water, and the possibility of forming a linear system of field development (Pionerskiy Field). The Central Commission approved the production schemes and have charged the Tatneft Association with accelerating the putting of the above fields into development.

The project documents were drawn up by the TatNIPIneft [Tatar Scientific Research and Planning Institute for Petroleum] (G. F. Verevkina, L. V. Prosvirkina, A. G. Sharipov, M. G. Mfalyutin and S. A. Solovyev, planning directors). The project documents for 5 areas (the Abdrakhmanovskiy, Alkeyevskiy, Vostochno-Suleyevskiy, Chishminskiy and Sarmanovskiy fields) were examined. These fields have entered into the last stage of development.

The primary development formation in the Abdrakhmanovskiy area is formation D1 in the Pashiya Horizon, formation D0 (zero) in the Sarmanovskiy area's Kynovskiy Horizon, and beds D0+D1 in the remaining formations. They occur at depths of 1,750-1,800 m. The ruggedness factor is rated at 1.5--5.6, with bed D1 of the Abdrakhmanovskiy area exhibiting the most ruggedness, and stratum D0 of the Sarmanovskiy area having the most monolithic structure. The porosity is rated at 17.9--19.5 percent, the viscosity of the stratal oil is 3.4--6.5 mPa seconds, the permeability of the producing formations fluctuates from 230 (Sarmanovskiy area) to 499 square micrometers (Abdrakhmanovskiy area). The oils are categorized as sulfur-bearing and paraffin-base crudes.

All these areas are being developed on the basis of development plans approved in 1978. For the majority of the areas (other than the Abdrakhmanovskiy), the previously approved project documents have been all but realized. As for the Abdrakhmanovskiy area, the estimated level of oil recovery has not been reached because of incompletely implemented design resolutions relating to well drilling, for setting up flooding sources and forming independent systems, because of the effect on individual strata and also as a result of a lag in renovating the PPD [formation pressure maintenance] system.

A combination of geological and technical measures is being implemented in the areas to improve the field development systems: the drilling of the wells in poorly-developed sections, water flooding, cyclic flooding with alternating direction of the filtration flows, forced fluid withdrawal, injection of sulfuric acid and PAV's [surface-activating agents] in accordance with "one-time" procedure. The most significant effect was derived around the

Vostochno-Suleyevskiy and Alkeyevskiy areas, where the method of treating formations with alternating direction of the filtration flows has been widely disseminated.

An in-depth geological field analysis of the present state of development has brought to light major flaws in the operation of the areas under discussion. The pace of development is quite slow for low-permeable collectors (aleurolites), the development of which requires an independent stimulation system. Because of the absence of differentiated stimulation of every formation and the lack of high-pressure pumps, the oil reserves found in individual sand lenses, water-oil zones and aleurolites are not being actively developed. The range in which new methods for increasing the yield of oil from these formations are being implemented is inadequate.

The Central Commission examined a wide range of measures for further improving development of these areas. The following measures have been proposed for the Abdrakhmanovskiy area: the setting up of independent flooding systems in the low-yield discontinuous beds (a, b1, b2 and v); additional division and setting up of independent blocked flooding systems along the highly-productive beds (beds G1, G2, G3 and D); to form--around the Alkeyevskiy and Vostochno-Suleyevskiy areas--additional dividing-well series along formation "a" for the purpose of developing cyclic flooding; to set up a divide-and-flood system in the Chishminskiy area on formations D0 and D1 along with additional dividing well series; to bring new regions in the Sarmanovskiy area into development by placing wells in a 600 X 600 m grid and by making use of contour flooding, and through the implementation of transverse division.

During the discussion of the project documents, the suggestion was made that it was inadvisable to drill certain low-yield producing wells in the flooded areas of reservoirs, in thin (less than 2 m) aleurolite zones of a formation where there is no flooding system, in high-yield zones for the purpose of compacting the grid and inadvisable to drill compacting producing well series in the Sarmanovskiy area (compaction of the grid from 600 X 600 m down to 300 X 600 m). The attention of those specialists involved in planning has been directed at the poor justification of the normative base used in calculating the economic indicators associated with development, i.e., the norms for capital investments fail to take into consideration the actual status of construction of these projects or the real cost of drilling wells. Mention was made of the need to use mathematical models in planning, as they reflect physical processes more fully.

The Central Commission approved the refinement of the development plans for the Abdrakhmanovskiy, Alkeyevskiy, Vostochno-Suleyevskiy and Chishminskiy areas, the production scheme for the Sarmanovskiy area, the measures which were proposed for improving the development system and even the suggestions put forth during the commission's discussion. Plans call for the low permeable collectors in formation D0 a region in the Chishminskiy area to be drilled out in stages; and concerning the Sarmanovskiy area, it was suggested that the question of the advisability of compacting the well grid be taken up at a later stage in the area's development. The Tatneft and TatNIPIneft associations have turned their attention to the need to change the planning and production resolutions.

The production scheme drawn up by VNII and PechorNIPIneft for developing the Kharyaginskiy Oil Field (S. V. Safronov and A. K. Tsekhmeystryuk, planning directors) has been gone over. This field is located in the Nenetsk Autonomous Okrug, part of the Arkhangelsk Oblast. Among its most typical features are: An extremely wide range (from the Middle Devonian to the Lower Triassic of petroliferousness contained within a multistratal geological cross section; the almost total saturation of the oils with paraffin, the content of which comes to 25 percent (except for Formation I); the high congelation temperature of the oil (up to 30 degrees C.), which necessitates the maintenance of formation temperature while developing the reservoirs, so as to prevent the appearance of non-Newtonian substances during lowering of the formation temperature; the extensive development of the huge perennially frozen rocks which, in many areas, are 300-350 m thick; low surface temperatures.

Twenty oil-bearing strata have been discovered in the field's cross-section. These formations contain no less than 30 separate oil pools. Throughout the cross-section, all the pools have been grouped into six independent productive formations.

| Parameter                  | Productive Formation |       |            |             |             |             |
|----------------------------|----------------------|-------|------------|-------------|-------------|-------------|
|                            | I                    | II    | III        | IV          | V           | VI          |
| Oil-saturated thickness, m | 1.3-8.1              | 18.9  | 3.3-8.2    | 1.2-7.9     | 2.8-5.3     | 2.8-3.7     |
| Porosity, %                | 8-12                 | 10    | 14-20      | 21-23       | 22          | 22-28       |
| Permeability, mcm          | 0.095-0.206          | 0.188 | 0.05-0.078 | 0.365-1.074 | 0.060-0.295 | 0.266-1.219 |
| Coefficient: sandiness     | 0.44-0.93            | 0.31  | 0.34-0.76  | 0.53-1.00   | 0.32-0.76   | 0.49-0.86   |
| ruggedness                 | 1.0-5.6              | 14.5  | 3.5-5.5    | 1-5         | 1.9-3.3     | 1.3-3.4     |

Productive Formation I (which occurs at an average depth of 3,800 m) includes 5 productive strata. the majority of which are not lithologically consistent or developed in the section delimited by the area. The main pool is a stratal roof deposit, and is confined to quartz sands. Formation II (which occurs at an average depth of 2,700 m) has been represented as a large highly productive deposit in the reef carbonates of the Upper Devonian. The pool is a stratal roof deposit and is lithologically and tectonically screened from the north, east and south. Formation III (the average depth of which is 1,900 m) includes two oil strata within two non-connected cupola-shaped uplifts. The terrigenous-carbonate rocks are distinguished by their high zonal heterogeneity. Within the Sakmarian-Asselskian carbonate depositions the

pools are underlain by bottom water and are lithologically screened in the Artinskian depositions. Formation IV (which occurs at an average depth of 1,800 m) unites four strata in terrigenous depositions of the Upper Permian. The primary reservoir is a stratal roof deposit and is represented by highly permeable sandstones and extends around the entire area. Formation V (average depth: 1,700 m) joins reservoirs of four formations composed of polymictic sandstones and located in the middle portion of the cross-section of the terrigenous stratum of Permian-Triassic rocks. With regard to oil reserves, the most important formation is stratum P2-V. The VI production formation (the average depth of which is 1,500 m) connects the reservoirs of four formations of a Triassic terrigenous section. The largest reservoir is confined to the lowest stratum within the southern dome. The polymictic sandstones range inconsistently and are frequently completely replaced by other rocks. The remaining geological and physical parameters for these productive formations are shown in the table above.

The activity of the contoured region of the reservoirs has not been studied. The oil reservoirs of formations I, II, V and VI are lithologically, stratigraphically and tectonically screened around their outside oil-bearing contours for over 50 percent of their perimeters.

In 1979, PechorNIPIneft drew up a production scheme for developing a pilot section of the Kharyaginskiy Field. The scheme has been approved by the Bureau of the Central Commission as a plan for a test development on natural flow. A section in the central portion of the field was selected for carrying out the experimental pilot operations. The cross-section of the section was divided into three productive formations: I (the lower) reservoirs in the Middle Devonian (Formations IV and V); II (middle) a reservoir in the Upper Devonian depositions of reef origin; III (upper) is a reservoir in the depositions of the Kungurian Stage. The sizes of the well grid for the formations are, respectively: 300 X 300, 1,000 X 1,000 and 500 X 500 m. Construction has begun and preparations are underway for drilling production wells on the pilot section. The field has not been put into commercial development.

The production scheme for formations I, III, V and VI provide for the use of triple-zone recovery systems working in tandem with selective flooding with the well placed in a 600 X 600 m grid. In Formation IV we will use contour flooding, which can be changed over when needed to block flooding in the triple-zone well system, and in Formation II--flooding along the reservoir perimeter combined with contour flooding, with a well grid spacing of 1,000 X 1,000 m. The following suggestions have been made: to develop formations I, II and IV immediately; to implement priority development of blocks 9 and 10 of Formation IV on a natural flow prior to contour flooding; in the process of doing this to precisely define the geological structure of the reservoir and especially the contour zones; to conduct geophysical and hydrodynamic research of the producing wells, and study the activity of the edge waters; to conclusively solve the problem of the stimulation system to be used on Formation IV by using the results of an analysis of the obtained data.

It has been recommended that formation pressure be maintained and initial formation temperature be held by injecting hot water into the formation while

developing the field. For all formations located in sections being contour flooded, it has been suggested that heated water be injected at a temperature of 90 degrees C. (formations I and II) and 60 degrees (formations III and VI). It is planned to drill out the fields using the cluster drilling method. The structure of the producing and injection wells should include thermal insulation jackets. The primary operating method will be the Mechanized method (ETsN [Electric Centrifugal Pump], and SShN [Oil Well Sucker Rod Pump], and compressor-assisted gaslift).

In the course of its discussion, the commission emphasized the need to make a study of the scientific and technical problems associated with developing the Kharyaginskiy Field, and the need to draw up a program of priority tasks for putting this field into commercial production. Mention was made of the importance of studying the geocryological conditions along the entire depth at which perennially frozen rocks occur.

The Central Commission approved the production scheme for developing the Kharyaginskiy Field, its basic principle positions, the technical and economic indicators and the proposals made in the course of the discussion. Taking into account the complicated geological structure of the field and the available geological and physical information, the estimated oil recovery factors have been accepted as preliminary and must be refined in accordance with the results of the drilling out of the field and the geological field analysis of the conditions in which the oil reserves are extracted. It is considered advisable to continue operation of the pilot section according to the plan for test development. In grouping wells into clusters, consideration should be made for applying the principle of the interchangeability of well grids around an oil-bearing area.

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