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East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2425

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[Article by Engineer Peyko Ralchev, BDZh SO [Bulgarian State Railways Economic Trust] chief safety auditor]

[Text] The resolutions of the 12th BCP Congress and the 8 December 1980 BCP Central Committee Politburo formulated the main tasks related to the functioning and development of railroad transportation during the 7th Five-Year Plan and through 1990. The main requirements facing the railroad workers are to improve the quality and efficiency of passenger transportation and freight haulage, to introduce strict order and discipline in the work and to ensure regular and safe rail transport. The BDZh SO leadership must take comprehensive steps aimed at decisively improving labor and technological discipline in all subunits in order to ensure the strict observance of regulations and improving train traffic safety and shunting.

A number of organizational technical steps were taken during the first 2 years of the 7th Five-Year Plan to increase traffic safety. Most of them are conducted within the framework of modernization and reconstruction of the material and technical base of railroad transportation.

The plan of the BDZh SO for the 8th Five-Year Plan for projects directly related to traffic safety calls for considerable funds totalling 9.61 percent of BDZh SO overall capital investments. A number of steps related to modernization and reconstruction are being taken, paid out of capital repairs funds. In 1981 and 1982, with the help of the combined forces of the Ministry of Transport troops, the Repair and Restoration Enterprise and the various railroad and power sections, 2,425 km of tracks were examined thoroughly, a section of the power grid and electric power installations underwent capital repairs, 526 km of tracks were renovated, 1,071 km of tracks underwent medium repairs, 132 km of jointless tracks were laid and 627 switches were replaced.

The high pace of capital repairs and doubling the tracks in some heavily travelled sections in recent years, provided the real possibility for surmounting the lagging in track updating and medium repairs in 1983.

The initial difficulties in the installation of a comprehensive automated traffic control system in the Sofia-Plovdiv section are being successfully surmounted. This creates the possibility of speeding up the installation of an automatic block system, automatic locomotive signalling, dispatcher radio communications and route-relay centralization not only in this section but also in other sections, as stripulated in the corresponding program.

A number of other measures are being implemented as part of the program for upgrading train traffic safety during the 8th Five-Year Plan, which was adopted by the BDZh SO Economic Council. The principal among them are the following:

-- steps are being taken to upgrade the reliability of technical facilities, such as reducing the number of train divisions and derailments, protecting the traction rolling stock from sparking and fire, reducing the wear of rails and bands, improving track and power contact reliability, etc.;

-- twenty-two overpasses and underpasses and 92 automatic railroad crossing systems were built, the latter with the decisive help of a number of operational and industrial units;

-- intensive work is under way for the creation of the first simulator for training railroad car personnel, on the basis of a development submitted by the IEZhT [Railroad Economics Institute] for testing the professional suitability and skills of operational cadres;

-- an Instruction on Certification for Specific Activities and Work with Control Stubs for Workers and Employees of the BDZh SO, Transstroy SO and VMT was drafted and applied. This document makes it possible substantially to improve the level of control activities and discipline in observing train traffic safety regulations.

With this instruction the work of performing cadres and organs in charge of supervising the observance of train safety and shunting regulations becomes closely tied to wages, in the spirit of the new economic approach and its mechanism. It stipulates strict disciplinary and material penalties for violations and material and moral rewards for accident-free train traffic and for work done by the economic production units.

Many organizational measures were implemented in addition to those included in the program for improving traffic safety.

After the promulgation of the December 1980 BCP Central Committee Politburo Resolution, considerable work was done under the guidance of the party organizations in explaining, studying and applying the stipulations governing the special work system in railroad transportation. The proctored tests helped to master the new strict discipline requirements and statutory rights and obligations of management and performing railroad transportation cadres.

As a result of the increased hauling capacity in a number of railroad sections, improved train traffic schedules, efforts to maintain a normal operational situation and, particularly, the decisive measures stipulated in

Orders No 251 and 252 of the BDZh SO management, compared with 1981 the amount of overtime declined by 13 percent, or an average of 3.64 hours per operational worker, in 1982.

The application of a special work system in operational activities, the continuing renovation of the rolling stock, the enhancement of the technical standards of tracks and other measures created favorable prerequisites for reducing the number of accidents related to train traffic and shunting.

Compared with 1980, in 1981 the number of severe accidents declined by 38 percent, while the overall cost of all damages from accidents dropped by 46 percent. The declining trend toward a drop in the overall number of accidents continued in 1982, making it the lowest ever since the current accident recording system was instituted in 1949.

The decline in the number of accidents compared to previous years is a positive phenomenon. A number of subunits of individual railroad enterprises, such as the SETRD Blagoevgrad, Vidin, Cherven Bryag and Sliven, the Kurdzhali, Plovdiv Marshalling Yard, Gorna Oryakhovitsa Marshalling Yard, Berkovitsa, Bov and Kulata Stations, the Stanke Dimitrov, Sofia-I and Vratsa Railroad Sections, the Mezdra Electrified Section, the Gorna Oryakhovitsa Power Section and others remained accident-free. Their experience is rated most highly and should be disseminated most extensively among other similar subunits.

The more than 2,400 tutors, who have assumed the high social obligation of training more than 6,800 young railroad workers by sharing with them their rich practical experience, are valuable assistants in the struggle for accident-free rail transportation. Thousands of accident-free railroad workers, who have mastered their skill perfectly, are disciplined, display high feelings of duty and responsibility, are exacting toward themselves and their subordinates and enjoy great honor and respect. Here are some of them: Georgi Marinov Getsov, locomotive engineer, Gorna Oryakhovitsa Depot; Georgi Nikolov Kolev, traffic manager, Dve Mogili Railroad Station; Svetoslav Marinov Ivanov, MTEVat Ruse-Iztok Railroad Station; Zhivko Dochev Barakov, Gorna Oryakhovitsa Electrified Section; Ivan Stoyanov Velchev, Popovo Railroad Section; Nikolay Khristov Zlatanov, locomotive engineer, V. Markov Depot, Sofia; Stoyne Angelov Stoev, maneuvering worker, Pernik Marshalling Yard; Engineer Ivan Ganchev Kaykiev, mechanic, Mikhaylovo Railroad Station STsB; Zlati Ivanov, traffic manager, Karnobat Railroad Station, and many others. The following voluntary auditors are a great help to unit managers and the control system: Stefan Iliev Dzhevizov, MTEV, Plovdiv Railroad Station; Vasil Krustev Vasilev, locomotive engineer, Stara Zagora Depot; Nikola Kotsev Marinov, locomotive instructor, N. Kolarov Depot, Sofia; Engineer Zdravko Velinov, electrified section, Stara Zagora and many others, numbering in excess of 4,500 people. The collectives of accident-free units, tutors, accident-free workers and voluntary auditors are an exceptionally valuable capital in our railroad transportation system and the pride of the Bulgarian railroads. The administrative economic managers and party, trade union and Komsomol organizations are helping and will continue to help them in the future, so that their ranks may swell and the accident-free situation in our railroad transportation system.

Studies indicate that in 1982 42 percent of the severe accidents were caused by purely subjective reasons directly related to train traffic, such as running a closed signal, hitting cars between stations, improper loading of the freight, etc. The rest of the severe accidents were the result of so-called technical reasons which, in the final account, are also subjective.

The largest number of and the most severe accidents -- 23 percent in terms of number and 63 percent in terms of damages -- were caused by locomotive engine workers; 16 percent were caused by railroad car workers and 13 percent by traffic personnel.

Some 42 percent of all breakdowns were caused by traffic workers. This includes the worst breakdown at the Ruse Marshalling Yard, caused by a crash of railroad cars in a shunting train, which set themselves in motion. About 23 percent of all breakdowns are caused by railroad car workers and 13 percent each by locomotive engine and track personnel. All of them were the result of derailments of rolling stock.

A large amount of rejects was allowed to occur in 1982, accounting for 97 percent of all accidents and 70 percent of the total amount of damages caused by the accidents. The fact that in 1982 rejects declined by 12 percent compared with 1981 cannot be accepted as satisfactory. Particularly unsatisfactory is the work of some cadres in three basic operational systems -- railroad cars, locomotive engines and traffic -- which accounted for 87 percent of all rejects, including 31 percent in cars, 29 percent in engines and 26 percent in traffic.

The reasons for rejects may be classified as follows:

Derailment of rolling stock, totalling almost 38 percent of the total, occurring exclusively during shunting and caused by faulty actions on the part of operational workers, breakdowns of the rolling stock and the tracks, particularly in running switches, etc. About 36 percent of all derailments in railroad stations were caused by improperly readied, split or reversed switches under the rolling stock; some 11 percent were the result of faulty work with brake shoes and 24 percent were caused by severe hits of railroad cars in shunting in restricted spaces and derailment of cars on ballast pivots or wagon trippers.

Among the causes of train divisions rejects accounted for 26 percent, 76 percent of which caused by railroad car workers. Compared with 1981 the number of divided trains increased in 1982, averaging one or even sometimes two per 24 hours. This is a matter for concern.

What is the cause of train divisions? Frequent violations of precise, clear and categorical instructions related to quality technical examinations of trains by mechanics in charge of the technical operation of railroad cars before departures and after arrivals at various stations, regulations regarding the proper tightening of turn buckles, and proper quality repairs and maintenance of car traction systems in car depots and railroad plants. The result is that, particularly in cases of heavier trains and the twisting nature of some track sections, trains become divided, with all the bad

consequences in terms of train safety and traffic schedules this entails. These are gross violations of technological discipline committed by some mechanics in charge of the technical handling of the cars. They should be handled with much greater strictness and entail more severe punishments. Train divisions are also largely caused by some locomotive engine brigades which have not mastered the safe running of trains, particularly when pulled by two or more engines. The partial studies conducted by the IEZhT of reasons for train divisions and the resulting recommendations should be taken into consideration by the Railroad Car and Locomotive and the Traffic Directorates and put to practical use. This would substantially reduce the number of train divisions. The IEZhT must continue its study of this exceptionally important problem by taking also into consideration the increased average gross weight of freight trained in the years to come.

Compared with 1981, in 1982 the number of trains left behind as a result of locomotive engine failures declined by 30 percent. However, the share of this type of defects remains high, accounting for 16 percent of the total. A train is left behind almost every day because of a defective locomotive engine. Since a train must be pulled only by an engine in perfect condition, which will take it to its destination as scheduled, this figure is quite alarming. The task is to eliminate entirely such failures over the next 2 to 3 years. This requires the faster installation of diagnostic panels for electric and diesel engines at all larger locomotive engine depots, and quality pre-travel technical check of the engines. The implementation of this task is within the possibilities of the Locomotive Fleet Directorate and the IEZhT and it must be carried out without further delay. Furthermore, we must substantially improve the quality of planned engine repairs in depots and repair plants.

In 1982 a damaged railroad car has had to be uncoupled in intermediary stations every second day. Such breakdowns account for nearly 10 percent of all failures during the year. Bearing in mind that our freight car fleet has been almost entirely renovated, any uncoupling of a damaged car should be considered a grave accident and a subject of concern, and the Railroad Cars Directorate whould see to it that such cases are not repeated.

Shunting trains to occupied tracks at railroad stations, and allowing trains at intermediary stations to proceed without the permission of the next station along the track is particularly dangerous in terms of train traffic safety. Although less frequently, compared with the preceding year, a substantial number of such cases took place in 1982. This is a most gross violation committed by some station personnel, such as traffic managers, switchmen, station chiefs, etc. The likelyhood of severe crashes in such cases is quite high, and accidents are not excluded. This makes it necessary to stress that the traffic safety work performed by station personnel is exceptionally important and demands total concentration and the strictest possible observance of all regulations. Any violation of the rules results in severe and irreparable losses.

Trains running through closed entry and exit signals is a most severe violation of traffic safety rules. Compared with 1981, in 1982 the number of such violations increased by 53 percent. It is self-evident that any such violation is a prerequisite for severe accidents, as was the case with the

most severe accident of 1982 at the Druzhba Railroad Station. Running through closed entry and exit signals is mainly the result of the dulled vigilance of some locomotive engine brigades, locomotive engineers in particular. The main way of avoiding such occurrences is having rested engine crews before taking off and mandatory testing of their readiness to service the train. Severe accidents at track crossings, including guarded ones, occurred last year as a result of the inattention of some drivers and railroad workers. Road and rail traffic will be significantly increased because of increased agricultural work and tourism during the summer and autumn. For this reason great attention must be paid at crossings.

Breakdowns in the power grid increased by some 30 percent in 1982, as a result of which there were power failures along electrified sections. This proves that the technical condition of the power equipment is not meeting current requirements. Bearing in mind that during the next two five-year plans our railroad system will become entirely electrified, the power system must be updated in order to improve their operational reliability and ensure regular power supplies to the electrified sections.

The lesser number of accidents in 1981 and 1982 does not indicate in the least that satisfactory results have been obtained in terms of accident-free operations in our railroad transportation system. The achievements during the first 2 years of the 8th Five-Year Plan are rather modest compared to the significant increase in material and technical facilities and the use of modern equipment and progressive technologies in rail transportation. There are no grounds for relief because:

-- the number of accidents is high, their consequences in operational work are severe and physical damages are substantial;

-- the reliability of technical facilities, particularly of locomotive engines, cars, tracks and STsB and power supply installations does not meet strict requirements, particularly considering the increased load, speed and weight of the trains;

-- the share of accidents due to subjective reasons remains rather high -- 53 percent -- and is the result of low labor and technological discipline and violations of regulations, instructions, ordinances, orders and technologies which regulate safe train traffic and shunting;

-- some of the primary, middle and senior managerial personnel and the control system in rail transportation display tolerance and liberalism in cases of violations of legal regulations on safe train traffic;

-- the skills of some cadres in transportation and repairs is inadequate, for which reason, particularly in critical situations, they are unable to provide optimal solutions for the prevention of accidents;

-- the plans and programs for measures for ensuring traffic safety are not implemented in full, for which reason the expected end results are not achieved;

-- political education and the work to enhance the skill of cadres, performing personnel in particular, is not on the necessary level and is behind requirements, as a result of which some performing cadres lack strong production habits and allow violations which result in accidents.

The struggle for accident-free railroad transportation is of prime importance to the entire collective of railroad workers and its individual members. This is the greatest assignment which our party has issued to the railroad workers and one which we must meet honorably.

This requires the following:

-- every manager and operational worker must consider train traffic safety his prime task and must contribute to its successful implementation through the means and possibilities at his disposal;

-- every railroad worker must wage an energetic struggle to surmount the difficulties and ensure the timely and full implementation of all measures included in the program for upgrading train traffic safety during the 8th Five-Year Plan;

-- the specialists in charge must take into consideration the requirements of safe train traffic in the installation of new equipment and use of new technologies;

-- the managers of the individual facilities and units and the specialists must take systematic steps to upgrade the quality of railroad equipment repairs, strengthen technical control and increase their exigency, so that operational work can be carried out only with properly conditioned rolling stock and other railroad equipment;

-- the managerial and supervisory organs on all levels must increase their supervision and exigency toward cadres for the strict observance of PTE [Technical Operations Regulations], IDV [Train Traffic Instructions], IS [Instruction on Train compositions], orders ordinances, regulations and other legal documents pertaining to train traffic safety requirements and shunting operations;

-- the leading and supervisory organs on all levels, assisted by the party and other social organizations, must improve their political education work with cadres in order to strengthen labor and technological discipline and decisively to increase the number of accident-free collectives and individual workers;

-- the wages earned by collectives, brigades and individual workers must be mandatorily tied to the question of accident-free work; use must be made of material and moral incentives for accident-free work and penalties for violations;

-- the directors of the individual facilities and the senior personnel in charge of cadre training must assess the means and methods used (publications, simulators, practical training, etc.) for training, upgrading the skills and retraining of cadres and apply modern training methods, taking into

consideration cadre requirements based on the use of new equipment and technologies to be applied in the near future;

-- a system for the study and summing up of leading production experience must be introduced and pamphlets for the popularization of some experiences must be published.

During the first 2 years of the 8th Five-Year Plan the railroad transportation workers took a major step toward improving overall operational activities, including traffic safety and shunting. Good prerequisites have been created in terms of material and technical facilities and training and mobilizing cadres so that 1983 may become a turning point in decisively improving train traffic safety. To us, railroad workers, the implementation of this major task is a matter of honor and duty to our party and people.

Problems of 'Train Division'

Sofia ZHELEZOPUTEN TRANSPORT in Bulgarian No 5, 1983 pp 6-10

[Article by Senior Scientific Associate Candidate of Technical Sciences Ilarion Atanasov and Senior Scientific Associate Engineer Nikolay Vamporov, IEZhT]

[Text] The number of traction equipment failures in railroad cars has increased sharply over the past few years. Such troubles usually lead to "train division," i.e., to the separation of the train into parts. Most frequently, such divisions close traffic along the line, i.e., lower the handling capacity, run repair costs up and reduce locomotive engine productivity.

Studies (1) and collected statistical data on breakdowns in 1980-1981 lead to the following preliminary conclusions:

-- the frequency of divisions of double traction trains (two engines in the lead) is on an average higher by a factor of 3.5 compared with one-engine trains;

-- the frequency of division of 2,000-2,500 ton trains is higher by a factor of 4.5 compared with trains weighing 1,000-1,200 tons;

-- in more than 55 percent of all cases, divided trains have a length in excess of 100 axles;

-- the highest number of train divisions occurs in traffic between stations (over 85 percent); some 9-12 percent occur at station stops, and less than 4 percent during take-offs; more than 50 percent of all train divisions in motion occur at speeds of under 50 km/h;

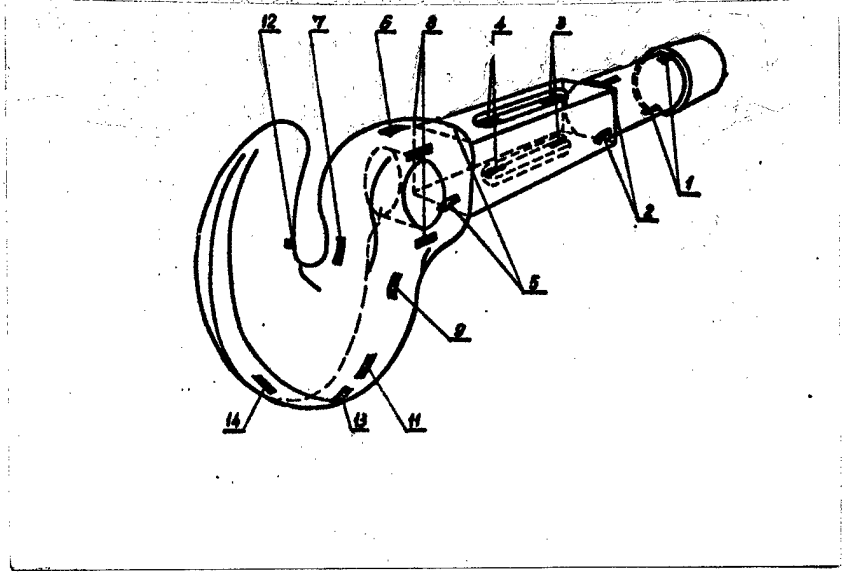

Fig. 1

Divisions in humid weather, fog, snowfall and sleet are higher by a factor of more than 5 compared with dry weather;

The highest frequency of train divisions affects the first five cars in winter and from the fifth to the 10th cars in the summer months. No divisions have taken place at the tail end of the train (the last 10 percent of its length;

The most frequent cause of divisions is a tear along the rectangular cross-section of the drawhook or drawbar (over 85 percent).

The study of the statistical data was followed by comprehensive analytical and experimental studies to determine the basic factors causing the division of drawing equipment. A part is torn when it is subjected to stress above the of permissible limit. Since the study revealed that the most frequent tears occur in drawhooks, an initial effort was made in our country to plot a static resistance diagram of a drawhook. After connecting it to 14 gauges (fig. 1), the drawhook was subjected to a tensile force along the direct axis of its rectangular cross-section. Forces of up to 600-700 kN (60-70 tons) were applied. The tests were conducted on the press of the G. Dimitrov ZhPZ [Railroad Plant] in Sofia. Table 1 shows the dependence between the amount of tension at various points of the hook and the size of the tensile force.

These data indicate that the highest tensions in the drawhook develop at the point of transition from the rectangular to the round cross-section (gauges 1 and 2), where the tensions concentrate with a coefficient of more than 2. The same amounts of tensions develop in the areas of gauges 11, 9 and 5.

Table 1

(1) Опънова сила (kN)	(2) Напрежение в датчиците, MN/m²(10⁻¹ kg/cm²)						
	(3) Датчик №						
	1;2	3; 14;	4	5 и 9	6; 13	7	11
50	39	16	17	34	14	21	37
100	80	32	33	68	28	42	74
150	117	48	51	102	42	63	111
200	159	64	66	136	56	84	148
250	197	80	83	170	70	105	185
300	237	96	99	204	84	126	222
350	277	112	118	238	98	147	259
400	318	128	132	272	112	168	296
500	394	160	165	340	140	210	370
600	490	192	198	415	168	252	450
700	580	224	236	485	196	294	535
800	650	256	264	560	224	336	600

Key: 1. Stress force (kN); 2. Gauge tension; 3. Gauge No.

According to Bulgarian State Standard 3989-76, the drawhooks must be made of ST60 steel, with breaking point σ_b =650 MN/m^2 (6,500 kg per cm^2) and yield-point σ_s =350 MN/m^2 (3,500 kg/cm^2). We know that in the course of using the parts in the yield area (with constant material stress in excess of σ_s) material fatigue develops faster. Consequently, the following conclusions may be drawn from press testing, after determining the distribution of tensions (fig. 2 shows the tensions with a stress of 800kN): drawing systems work normally at a stress lesser than 450 kN (45 tons), in which maximal stresses are below the yield-point (less than 350 MN/m^2 -- 3,500 kg/cm^2). Stresses in excess of 800 kN create conditions for a tear in the drawhooks. This reduces the task of identifying the basic criteria for train division to the search for factors the effect of which will result in the creation of stress forces in the drawing equipment in excess of 450 kN, which will cause accelerated material fatigue, or in excess of 800 kN, which will create prerequisites for a division.

Analytical studies have indicated that the size of the stress which arises in the drawing equipment depends on the following:

-- the size of the drawing power used by the locomotive engine;

-- the clearance size in the drawing installations, resulting from loose couplings, misshapen elastic packs and squeezed bumpers (tight train);

-- the location of the drawing system along the length of the train;

-- the interaction between the brake and the traction wage along the length of the train.

A consistent elastic deformation appears in the drawing equipment whenever a traction force develops, and a shock transmission of forces occurs if there is a slack in the couplings. Naturally, in the elastic transmission of the drawing force oscillation processes develop along the train. The differential equation for longitudinal oscillations will give us the following dependence for the minimal stress forces which appear in the drawing equipment (2):

$$F_{max} = F_k \left[\cos\varphi - \sqrt{\frac{2.\delta.k}{F_k}} . \sin\varphi \right]$$
$$\varphi = f(k, Q, Q_1) \qquad (1)$$

In which:

F_{max} is the maximal stress forces;

F_k is the traction force of the engine's drawhook;

δ is the clearance in the drawing system (the coupling) between two cars;

Q_1 is the train weight between the engine and the drawing equipment between two cars (head portion of the train);

Q is the train's total weight;

K is the elasticity coefficient of the drawing equipment.

Fuction (1) can be plotted graphically if the hardness of the elastic elements in the drawing equipment is presented as dependent on the stress force. Figure 3 shows resolutions of the function (1) with drawing forces of 100, 150, 250 and 500 kN.

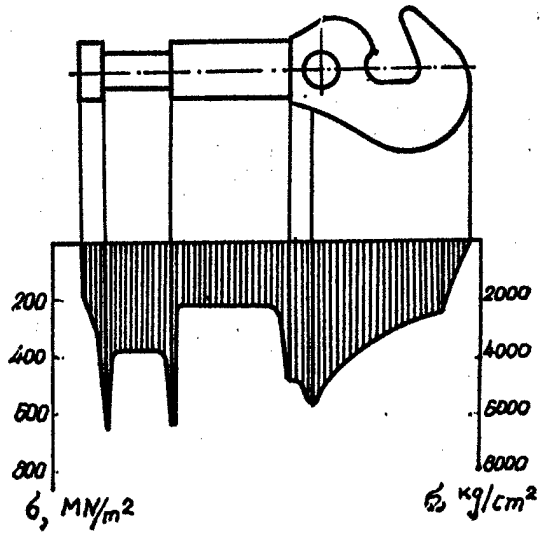

Fig. 2

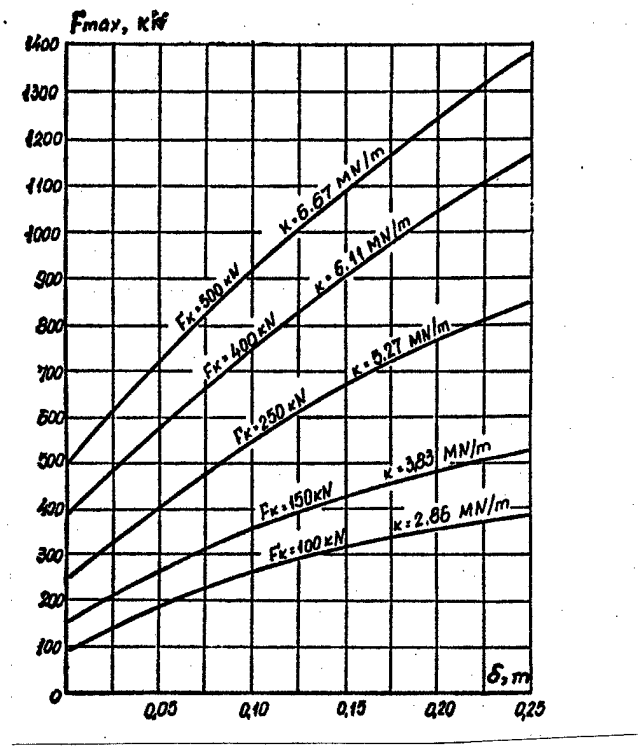

Figure 3

Figure 3 helps us to establish adverse combinations between the slack in the drawing equipment and the size of the drawing force, on the basis of the conclusion that the drawhooks function normally with stresses not exceeding 450 kN, develop faster fatigue in the 450-800 kN range, and create conditions for their tearing at stresses over 800 kN.

The influence of the operational factors was established by recording the tensions within an experimental drawhook installed on a two-axle covered railroad car pulled by a freight train. Two trains were examined in the Sindel-Tolbukhin sector, as follows:

-- train 29606, weighing 1,566 tons, 30-car long (108 axles, double traction (locomotive engines 0781 and 0788). The test car was in ninth place, with a train weight ahead of it totalling 540 tons;

-- train 29501, weighing 650 tons, 34-car long (88 axles). The test car was in second position.

During the test conditions were created for "rocking" the train by slipping, disengaging the traction of one of the engines, engaging the traction with a partially slack train, hard braking, and developing a slack in the hook's drawing mechanism of up to 5 cm.

The resulting data confirm the configuration of the curves as plotted in Figure 3.

The operational tests yielded the following results:

-- no stress forces higher than the traction force register if it is changed smoothly;

-- the maximal pulling force at the start is no more than 500 kN, and in traffic along the measured slope -- 400-450 kN, at speeds of 20-25 km/h;

-- in a deliberate "rocking" of the train (engaging the traction in a partially slackened train), when the drawing force reaches 260 kN the maximal stress forces reach 380 kN with a slack in the drawing system of up to 3 cm;

-- with a slack of 4-5 cm and a drawing force of 100 kN the maximal stress force reaches 200 kN;

-- with a smooth shifting of the pulling force and without slack, the tension in the drawing equipment changes with a frequency of 0.2-0.4 Hz and an amplitude of 20-40 MN/m^2 (200-400 kg/cm^2.

The conducted analytical and operational studies allow us to classify the reasons for train divisions into two groups: caused by material fatigue and by inadmissible stress forces.

Material Fatigue

As we indicated, in stress forces exceeding 450 kN, the drawing equipment operates in the area of plastic deformations, i.e., conditions are created for accelerated material fatigue.

Stress forces in excess of 450 kN in the drawing systems appear in the following cases:

-- under the effect of pulling forces in excess of 450 kN without slack in the drawing equipment. Such forces may be created by two types of locomotive engines in all BDZh series, as follows: 04 and 06 engine series, at speeds of up to 18 km/h; 07 series, at speeds of up to 22 km/h, and electric locomotive engines at speeds of up to 50 km/h. Consequently, with double traction conditions may develop for the drawing equipment to be working at a faster fatigue rate;

-- in slacks exceeding 50 mm in the pulling equipment and drawing forces in excess of 250 kN. Such forces may be developed by all mainline BDZh locomotive engines which start at speeds of 15-18 km/h and, under good coupling conditions, up to 18-23 km/h for diesel and 40/45 km/h for electric locomotive engines;

-- in slacks exceeding 50 mm in the pulling equipment and over 150 kN drawing forces. Such forces can be attained by all shunting locomotive engines (in shunting the slack in the coupling is usually about 150 mm);

-- in train lengths in excess of 30-35 cars or a weight exceeding 1,200-1,300 tons the braking process creates stress forces in excess of 450 kN.

Inadmissible Stress Forces (Train Division)

The drawhooks tear off under stress forces in excess of 800 kN. Such forces can be created under the following conditions:

-- with drawing forces in excess of 500 kN and slack in the drawing equipment in excess of 50 mm. They appear in cases of double traction and starting speeds of 15-18 km/h and, with good coupling conditions, 18-23 km/h for diesel locomotives and 40-45 km/h for electric powered locomotive engines. A 50-60 mm slack in the drawing equipment is normal in BDZh freight trains;

-- with drawing forces in excess of 500 kN and a rocking train; slipping, sharp changes in the power tension, sudden disengagement of traction (activating the GPV of pulling electric locomotives), and engaging the traction in a partially slack train;

-- pulling forces in excess of 250 kN and slack in the drawing equipment in excess of 200 mm;

-- with pulling forces in excess of 400 kN and slack in excess of 100 mm. Such forces are developed by all BDZh trains pulled by two locomotives: diesel engines at speeds of up to 20-28 km/h and electric locomotives -- 55-60 km/h, and with good coupling conditions, up to 60-70 km/h;

-- in braking and a train weight exceeding 1,700-1,800 tons (an average load of 50 tons per car) or in trains pulling more than 45 cars, particularly if the load is improperly distributed.

The following conclusions may be drawn on the basis of this analysis:

-- with a single pull (tightened and properly functioning drawing equipment) the likelyhood of train division caused exclusively by changes in the traction force applied by the engineer (manipulating the controller), even if the engine slips, is insignificant;

-- with double traction at the head of the train (tightened and properly functioning drawing equipment) a train division may occur as a result of fast changes in the drawing power (slipping, sharp changes in the power tension, disengaging one of the engines, or simultaneously braking and pulling;

-- in the case of slack drawing equipment in excess of 200 mm a division is likely in trains pulled by a single engine and with proper pulling;

-- in the case of slack in the drawing equipment exceeding 100 mm, division is likely with a double traction at the head of the train and proper handling or with a single engine and slipping conditions;

-- in the case of slacks in excess of 50 mm in the drawing equipment a train division is likely in cases of double traction and engine slipping at speeds of up to 30-40 km/h;

-- in the case of trains weighing more than 1,800 tons or pulling more than 45 cars conditions for train division develop during braking;

-- drawing equipment may tear in the case of stress forces lesser than 800 kN as a result of material fatigue;

-- in the course of a normal handling of pulling equipment in freight trains and shunting operations with trains weighing in excess of 300-400 tons repeated conditions for accelerated material fatigue develop as a result of high pulling forces or slacks. That is why the service life of drawing systems should be controlled (lasting roughly 3-7 years).

The most likely reasons for train divisions for the various positions of the torn equipment are the following:

-- to the 5th-7th car from the head of the train: slipping of the locomotive engine with inadmissible slackness in the couplings, or fatigue;

-- down two-fifths of the length of the train: considerable slackness in the drawing equipment or fatigue;

-- at the end of the fist third or beginning of the second: high traction force and great slackness, train "rocking" while braking, or fatigue;

-- in the final third of the train: material fatigue or great slackness and faulty load distribution.

Consequently, in terms of likelyhood, the reasons for the tearing of a drawing system are the following: material fatigue, great slackness, high traction force, and engineer handling.

Therefore, the following is recommended:

-- accelerating the installation of the new drawing systems (with a main bolt), as recommended by the UIC;

-- avoiding double pull at the head of the train. Should such pull be required, the following restrictions related to the traction power of the various engine series must apply: 06: no more than 800 A; 07: no more than 600 A; 41: no more than 1,030 A; 42: no more than 1,060 A; and 43: no more than 1,200 A. Section norms must be consistent with the power restrictions;

-- eliminating quadruple traction with two locomotive engines at the head and two at the tail end of the train;

-- studying and determining the admissible length of service life of drawing equipment on the basis of material fatigue and normal usage;

-- applying suitable norms in PTE and IDV related to train load distribution and permissible slack in drawing equipment. Permissible slack between bumpers in a train waiting at a station should not exceed 25-30 mm for admissible traffic speeds of up to 80 km/h;

-- introducing a method for upgrading the skills of engineers and railroad car technicians. All areas where tearing may occur (humps, saddles, etc.) to have instructions for the engineer (disengage the traction, interrupt pushing, etc.);

-- studying the problem and using diagnostic defectoscopy of drawhooks under operational conditions (without dismantling) and diagnosing the slack of the metal-rubber packet of the drawing equipmetn without disassembling;

-- conducting extensive and intensive testing of the drawing equipment in order to determine the optimal weight and length of trains in relation to admissible traffic speeds;

-- developing a technology for the installation of drawing units in the center of the train;

-- keeping close statistics of train divisions, classifying the reasons after proper studies and conclusions drawn by a metallurgical specialist.

Bearing in mind that the weight of freight and fast BDZh trains is increasing steadily, the question of ensuring the reliable work of the drawing equipment becomes particularly important. That is why these recommendations must be strictly observed if train divisions are to be prevented.

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APRIL 1983 ECONOMIC DEVELOPMENT SUMMARY PUBLISHED

Prague HOSPODARSKE NOVINY in Czech 27 May 83 p 2

[Report by Dr Engineer Vaclav Cap, science candidate, Federal Statistical Office]

[Text] The results of economic development in April were linked to the trends during the first three months of this year. They are characterized by a relative acceleration of the growth rate in comparison with last year in the formation of resources and their deliveries from industrial plants, by the gradual balancing of the levels of export and import in trade with the socialist countries, by a continuing decline of export to nonsocialist countries and of import from such countries, by the stabilization of the domestic market, and by the continuing acceleration of the rise of personal incomes. The financial plan was fulfilled at state economic organizations. In general it can be established that smooth operation of the economy was ensured.

However, the favorable results achieved in economic development this year must be judged soberly, and at all organizations it is necessary to eliminate the shortcomings and to solve the problems that primarily limit the possibilities of attaining higher efficiency and intensification.

In April there was one workday fewer than during the same month last year (the number of workdays from the beginning of the year was the same both years), and therefore the growth of the volume indicators slowed down. The level of industrial production in April was 0.6 percent higher, and the average daily output 4.3 percent higher, than in April of last year. Industrial production during the first four months increased by 3.6 percent over January-April of last year. Thus the industrial enterprises exceeded their economic production plans by 1.2 percent. Organizations in centrally administered industries exceeded their adjusted value added plans by 2.9 percent. Fulfillment of the plan of industry as a whole, however, conceals considerable differentiation of the individual enterprises' approach. With the exception of some power plants where nonfulfillment of the plan was influenced by lower consumption of electric power, nonfulfillment of the planned tasks in terms of production volume at 198 enterprises, which is nearly one-fourth of the total number of industrial enterprises, is being keenly felt by the economy.

The main reserve in the work of the enterprises, especially of their preproduction departments, and of the appropriate research institutes, lies in the inadequate application of research and development. Innovation and product

Basic Indicators of National Economic Development in April 1983.

Increases over same period in 1982 (in percent)	Apr	Jan-Apr	State plan[1]
Deliveries of Centrally Administered Industries for:			
- investments at wholesale prices	-	1.4	-4.1
- domestic market			
at wholesale prices	-	1.8	0.5
at retail prices	-	0.7	2.0
- export to socialist countries			
at wholesale prices	-	3.3	-0.3
at FOB prices	-	5.8	0.7
- export to nonsocialist countries			
at wholesale prices	-	4.0	-2.0
at FOB prices	-	-2.6	0.3
- other sales for industrial production and operations at wholesale prices	-	2.3	-
volume of industrial production	0.6	3.6	1.7
average number of employees	0.8	0.8	0.7
labor productivty based on industrial production	-0.1	2.8	1.0
Construction			
construction work performed with own manpower	1.0	5.5	-0.2
average number of employees	0.4	0.2	0.6
labor productivity based on construction work	0.6	5.3	-0.7
housing units delivered by contracting enterprises	16.9	-17.2	-6.1
Procurement of			
slaughter animals (including poultry)	-1.4	-0.6	-1.2
milk	13.5	13.1	1.1
eggs	5.2	5.3	2.2
Retail Turnover			
of the main trade systems	-1.0	2.2	2.2[2]
Foreign Trade[3]			
export to socialist countries	-11.8	7.3	3.9
export to nonsocialist countries	-0.3	-8.0	1.6
import from socialist countries	0.8	12.7	10.1
import from nonsocialist countries	-9.8	-13.0	6.4
Personal Incomes	2.3	4.3	1.6
of which income from wages	1.9	3.7	1.2
Actual Cash Expenditures	0.5	3.2	2.5

1) Increases over actual results in 1982.

2) All trade systems.

3) Data on actual results refer to actual transactions, and the state plan (in contrast with overall actual results) does not include unplanned actions within the framework of cooperation, unplanned reexport, exchanges, tie-in sales, etc.

quality continue to lag behind the needs of the Czechoslovak economy. The technical level of the products did not increase on average during the first quarter in comparison with the same period last year, which means that the value added to raw materials, energy and supplies, and also to fixed assets and human labor, did not increase.

Within the total output of industrial products the proportion of products of a high technical and economic level reached 10.7 percent, including 8.9 percent of products in quality grade I, and 1.8 percent of high-technology products (as compared with 1.5 percent last year). The situation in product innovation is the same. In the same way as last year, the proportion of new products within the total output of goods was not quite 16 percent. A comparison with the world's industrially developed countries is not very favorable for the corresponding departments of our enterprises and research institutes.

The supply of fuel and power remained continuous. Although the electric energy intensity of industrial production declined by 1.1 percent during the first quarter, in April it again rose slightly. For the time being the effects of the social audits of fuel and power consumption are beginning to manifest themselves only partially. According to preliminary reports, the industrial enterprises have begun these audits very responsibly and are implementing specific measures. They anticipate that these drives will reduce fuel and power consumption this year by 0.7 percent over 1982, while the planned tasks are fulfilled. This would mean that the planned tasks to save fuel and energy are exceeded by 0.8 percent this year.

The growth rates of deliveries during the first four months as a whole roughly correspond to the planned annual growth rates. In terms of the assortment of the deliveries, and of the technical level of the products, however, the enterprises themselves and also their superior organs must be more demanding. In a number of instances the necessary foreign exchange has been and is being earned by increasing the export volume, instead of concentrating attention on improving the utility characteristics of the products, and thereby attaining more favorable sales prices. On the domestic market, too, we need more innovated products, a wider assortment, and goods of better quality.

Changes in the branch structure during April continued the trends of the first quarter. In the course of this, and in agreement with the plan, output in the metallurgical industry slowed down more. In the fuel-, power- and import-intensive branches, however, the growth rates during the first four months have been higher than what the annual plan calls for. The April results have been unsatisfactory in the wood-processing industry. The level of production during the first four months increased over the same period of last year as follows: in ferrous metallurgy, by 2.3 percent; in heavy engineering, by 2.6 percent; in general engineering, by 5.7 percent; in the electrotechnical industry, by 7.7 percent; in the chemical industry, by 3.5 percent; in the wood-processing industry, by 3.8 percent; in light industry, by 0.5 percent; in the food industry, by 5.8 percent; and in the building materials industry, by 2.0 percent.

In construction the volume of work performed by the construction organizations' own manpower increased by 1.0 percent in April, and by 5.5 percent during the first four months, over the same periods last year. However, the contracting

enterprises were slow in adapting their capacities to the needs of completing capital construction, especially in the case of certain projects that have been designated as obligatory tasks.

Freight transport is fulfilling and overfulfilling its tasks. The volume of freight transported by public carriers during January-April increased by 4.1 percent. Considering also the growth of the enterprises' private carriage, however, this also means that the transportation intensity of the national economy has increased. Average consumption of fuel and electricity in transportation during the first quarter was lower than what the plan sets for the entire year, but the resulting savings are partially offset specifically by the growing transportation intensity.

Procurement of livestock products continued in agreement with the planned trends. The procurement of meat, milk and eggs exceeded the plan. The crop situation and the progress in field chores provide favorable conditions for this year's harvest. All necessary preparations for the harvest must be made already now.

Cost reduction is proceeding satisfactorily, in the same way as last year. In the first quarter the proportion of total cost, without the effect of foreign trade, was 89.58 percent of total output, 0.58 point lower than the annual plan; within this the proportion of material costs (without depreciation) was 64.04 percent, which again was 0.19 percentage point lower than the annual plan. Thus profit and profitability were higher than planned. However, the state budget absorbs the effect of foreign trade, which in a number of instances would have significantly reduced these results of economic activity. Although total inventories dropped during the first quarter, this was due primarily to the seasonal decline in agriculture and foreign trade.

Development of foreign trade holds promise for the fulfillment of the targets in relations with the socialist countries: export during the first four months was higher by 7.3 percent than during the same period last year, and import was higher by 13 percent. This was influenced only partially by falling prices on capitalist markets. At the same time, however, the terms of trade worsened during the first quarter.

The living standard was characterized by the continued rapid development of personal incomes, which essentially offset in the first quarter the effect of last year's price increases. Due to the shifting of the Easter holidays, the retail turnover even declined in April, but from the beginning of the year its plan has been fulfilled. The population's savings deposits reached 184.8 billion korunas by the end of April and were 13.5 billion korunas higher than a year ago. The currency in circulation increased by 4.5 billion korunas, reaching 51 billion by the end of April.

1014
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KHOZRASCHET TEAM WORK AS BASIC MANAGEMENT FORM VIEWED

Bratislava PRAVDA in Slovak 10, 11 May

[Article by Ladislav Jasik, Bratislava: "Khozraschet-Oriented Work Team--the Basic Form of Management; Initial Experiences and Lessons from Verification of the Work Team Form in Povazska Bystrica District"; passages enclosed in slantlines printed in boldface]

[10 May 83 p 3]

[Excerpts] The Federal Ministry of Labor and Social Affairs and the Secretariat of the URO [Central Council of Trade Unions] issued in July 1983 Principles of Experimental Verification of the Work Team Form of Organization of Labor and Remuneration. This outstanding Soviet experience, which was also pointed out by the secretary general of the CPSU Central Committee, Yuriy Andropov, in his article at the occasion of the 100th anniversary of K. Marx's death when he wrote that "there is no denying the existence of such a basic form of production management as a khozraschet [cost-accounting system] work team [quality-control circle]," and it is direly needed in Czechoslovakia, too. This does not involve copying or mere taking over of a Soviet experience that would not suit our conditions. It involves a generally valid principle at the given stage of building socialism which is also starting to find application in the CSSR, mainly for the following reasons:

First: /It is relevant to building an advanced socialist society. From both Soviet and our own experience we know--as was also stated at the 26th CPSU Congress and the 16th CPCZ Congress--that in the course of the stage of building developed socialism there also occurs a deepening reorganization of social relations based on the principles of the collectivism which is inherent to socialism./

Second: /Introduction of the work team form of organization of labor and of remuneration is an accompanying phenomenon of promoting the research and development [R&D] revolution under socialist conditions./

Third: /Application of the work team form of organization of labor and of remuneration is a significant prerequisite for extending the Set of Measures down to workplaces./ Its key purpose is, as was emphasized by the 16th

CPCZ Congress, to promote intensification of the national economy, to make more determined use of the results of the R&D revolution, to provide more effective inspiration toward efficient and quality labor, to create as favorable conditions as possible for all-round creative efforts of the people.

Putting the Socialist Merit Principle Into the Foreground

Experience shows that improvement of management of the national economy cannot be narrowed down to the area of planning, organization, logistics, selection and application of economic instruments. /Of decisive importance is improved work with people./

/This work with people cannot be developed under new conditions by the old methods of "activation." Very effective is becoming herein the method of khozraschet-oriented work teams in which, as is borne out by tens of thousands of such work teams in the Soviet Union, individual interests become attuned with societal interests, people share material and moral incentives and are responsible for the results of their efforts. It represents an extraordinarily effective form of struggle for high efficiency and quality of production./

A high commendation should be accorded to the initiative and meritorious efforts of the OV [Regional Committee] of the CPSL in Povazska Bystrica which from these positions implement the leading role of the party in verifying the work team form in selected enterprises.

/The CPSL District Committee together with the OOR [District Trade Union Council], the CPSL ZO [Plant Organization], the ZV [Plant Council] of the ROH [Revolutionary Trade Union Movement] and economic managerial personnel assessed the initial results and lessons from their implementation and at a recent district conference of the CPSL of Povazska Bystrica District they knowingly discussed the future course of action in experimental verification of the khozraschet-oriented work team form of organization of labor and of remuneration as well./

Scope and Progress of Preparatory Efforts

The work team form is already undergoing verification in the district, or preparatory efforts are underway in 22 selected teams, particularly in the BSP [Brigade of Socialist Labor] in Povazska Machine Building Plant in Povazska Bystrica, in ZTS [Heavy Machinery Plants] in Dubnica on the Vah River, in the Makyta Enterprise in Puchov, the Rubber Plant of 1st May in Puchov, the Povazske Cement Mills in Ladce, the United Glassworks in Lednicke Rovne, the ZVS [General Engineering Plants] in Dubnica, the KOVO plant in Belusa, the ACZ [Asbestos Cement Enterprise] in Puchov. The work team form is also gradually finding application in the agricultural sector, particularly in animal production, such, e.g., in the JRD [united agricultural cooperative] in Horovce.

The CPSL OV and ZO councils require even during the preparatory stage a systematic approach to familiarization, explanation and implementation of the principles of khozraschet-oriented work teams as an inseparable part of implementing the Set of Measures. The CPSL OV is currently concentrating its attention on a /uniform approach/ by economic management, party, trade union and youth organs and organizations and the CSVTS [Czechoslovak Scientific and Technological Society]. It stepped up its efforts particularly after some opinions were voiced that introduction of the work team form is primarily a task for the CPCZ and ROH. /These opinions were based on the mistaken concept holding that khozraschet-oriented work teams are but one of the "forms of worker initiative" and not the lowest economic production unit in which the struggle for increasing the productivity of labor, quality and economy, for bringing up socialist awareness in man takes place, that is, the lowest but still significant element of economic management that applies khozraschet principles./

Experience shows the great importance of /having economic managerial personnel and trade union officials explain to the workers from the very beginning/ that the work team form of organization of labor and of remuneration cannot be viewed as the old "work gang" system which we know from the capitalist past, that the work team form does not detract from but, on the contrary, enhances the importance and role of the foreman, that highly qualified workers retain all opportunities for using their talents and will be remunerated according to the work performed, that work team counseling and consultations in no way "duplicate" and replace the relevant ROH organs, production consultations and other forms.

The results of familiarization and explanation of the principles of the work team form of organization of labor and of remuneration in the district are not unequivocal for the time being.

A certain share of guilt in this accrues also to the fact that in many an enterprise the economic management and ROH officials /explained the principles of the work team form just formally and in a single meeting./ Many workers and technoeconomic personnel know nothing about the principles and opportunities for implementing the work team form of organization of labor and of remuneration even in the selected plants. In this respect, it is desirable to substantially increase and improve the quality of economic propaganda and mass-oriented political efforts of ROH.

Irreplaceable Source--Soviet Experience

/It is inadmissible to let introduction of the work team form sink to the level of mere wage policy./

An exemplary effort was developed in the work team of Comrade Frantisek Cibik in Povazska Machinery Plant where even prior to introduction of the work team form they changed around the entire system of arrangement of machines into production lines, simplified interoperational transport, introduced monitoring of daily output, redistributed workers, improved the

quality of work assignment, shortened transportation times, combined some operations, reduced the rate of breakdowns and idle time, saved on manpower etc.

In selected enterprises, /premium systems/ which are systematically oriented toward improving efficiency and quality, toward accelerating technological development, savings of energy, fuels, metals and other materials were worked out.

In enterprises, using, for example, the experience of the Shchekino chemical workers, they are working out and also beginning to implement the /coefficient of work participation/ to better express the relative merit of individual work team members in the final result achieved by the team. Workers are calling for it, because some of them recall some bad experiences with subjective approaches to grading premiums and awards. Nevertheless, there is a need for regular control of systematic implementation of the coefficient of work participation and of wage practices in general in each team and nip in the bud any eventual attempts at circumventing and disregarding of rules that the khozraschet-oriented work team itself approved.

A very important part of preparation of the khozraschet-oriented work team form is substantial /improvement of all forms of worker initiative./ Formalism, e.g., in socialist competition, is incompatible with the work team form of organization of labor and of remuneration. Competition and other forms of work initiative will have to be oriented and mobilized during implementation counterplanning toward achieving certain programmed objectives in increased labor productivity, efficiency and quality of production, in enhancing the sophistication of labor, achieving mastery in a field and becoming proficient in more trades, etc.

CPSL ZO and ROH ZV councils endeavor to combine introduction of the work team form of organization of labor and of remuneration with improved quality of /ideological education in all work teams,/ because under its collective effects is shaped to a great extent the personal moral orientation of man and its values can positively or negatively affect the conduct and thinking of individuals. It is a demanding and topical task, because the findings made by the CPSL OV and the District Trade Union Council in Povazska Bystrica confirm that the level of efforts of party groups, trade union sectors and production consultations still does not fully meet those requirements, not even in teams for implementing the work team form.

/However, findings made in the district's plants and enterprises unequivocally document the fact that people, once they are convinced of the correctness of their efforts, once they are provided with the right set of conditions and are guaranteed a just remuneration, can handle even the most demanding tasks. In this context, teams positively affirm the fact that an organic part of the Statute for Khozraschet-oriented Work Teams is constituted by the legally binding agreement reached between economic management and the work team members. The core of this agreement is formed by the pledge of economic management to provide all the prerequisites for smooth and

continuous implementation of the work team's tasks, to include logistical support, and the work team's pledge of meeting its assigned tasks./

[11 May 83 p 4]

[Excerpts] Each khozraschet-oriented work team operating in a closed production cycle must be not only declaratively, but factually the most basic independent planning, producing and economic unit. For instance, the work team of Comrade Jozef Pacuch in Povazske Machinery Plants--contrary to the past--is provided with specifications of production tasks for the entire year; every month is worked out for them the assortment, number of individual products, the volume of wage funds; they are assigned a standard for rejects, tools, overtime work, etc. /Economic management worked out for assessment of the results achieved by khozraschet-oriented work teams a reliable system of budgets, calculations, operational record keeping statistics; this entire system is today based on verified and technically justified norms of all types, to include performance norms.

/In the work team of Comrade Anton Kockar in ZTS Dubnica prior to implementation of the work team form they had no specific system of budgets, calculations, operational record keeping and statistics, because they were not needed for the given system of evaluation. There is a need for them today, because the team's "final result" to which is tied the system of incentives--turning out hammer forged products--for which the team has a prescribed "volume of profit" that they must reach, otherwise its "work team fund" including the volume of premiums and bonuses would be poor..../

/But how are we to proceed in preproduction stages?/ On their services, on how they prepare production or construction, how they provide logistics, how the planners, technologists, designers, suppliers, marketing specialists and others work, on that depends to a great extent the smooth progress of production, lowering of its demand on energy, and the quality and success of khozraschet-oriented work teams. /The irreplaceable role of party committees and CPCZ ZO as well as of ROH ZV is to clarify in each enterprise which if the other workers outside the level of indicators of volume, quality and economy of labor in the khozraschet-oriented work team or work teams should become its or their members./ However, we must be searching for even other eventual suitable solutions with the objective of reinforcing and promoting relations, discipline, responsibility, motivation of workers and groups or work teams in preproduction stages to create conditions for successful operation of khozraschet-oriented work teams.

Increased Team Responsibility Is Binding

Work teams use initiative in, e.g., the principle of self-management within the framework of economic plans, technoeconomical norms, khozraschet agreement, etc. /They are aware of the resultant high degree of responsibility and, for that reason, they combine self-management with the right for controlling themselves as a higher form of creative initiative of workers, not to mention the fact that each khozraschet-oriented work team has its own implementation counterplan. Closely related to self-management is expansion

of /independence in the productive operations of the work team/ which leads to increased responsibility of workers or, more precisely, work team members, for quality and economy at their place of work. The team will forgive nobody any loafing, poor quality of work and lack of economy.

In the teams of Comrades Kockar, Cibik and Pacuch which have 50 to 60 members this expansion of independence in production becomes manifested primarily by higher demands, improved organization and labor distribution, correct distribution and better utilization of workers and dealing with problems in production, in elimination of some bottlenecks, in offering assistance, objective assessment of the amount of wages, distribution of premiums and bonuses according to the merit prinicple, in more systematic order and discipline.

Management on Collective Principles Multiplies Capacity

According to the findings made so far, management of khozraschet-oriented work teams on collective principles improves their creative initiative and activity. A foreman freed from many tasks that the work team deals with itself can devote his efforts to higher management functions which are precisely defined in the statute. According to the assessment of teams using the work team form, foremen considerably improved creation of conditions for meeting the plan, and devoted more effort to technological development, professional preparation of workers as well as overall management and control.

/Success has been achieved in the practice, wherein the plant management together with CPSL CZV [All-Plant Council], CPSL ZO and ROH CZV seriously discuss with foremen their position and role under conditions of operation through khozraschet-oriented work teams and together seek to further reinforce their authority. And where it is desired by the team, the foreman can also perform the function of work team leader. Only one such case has occurred in the district so far./

It ought to be said that there not only were, but that there still persist, misgivings about finding people with talents and qualities allowing them to perform, in addition to their work, also as work team leaders. However, it is turning out that this problem surfaced because of lack of knowledge, or just superficial knowledge of people, particularly in BSP of which there are approximately 1,504 in the district. Practical experience confirmed that it was possible to find capable work team leaders in the ranks of workers, particularly in BSP.

/A work team leader is today not only the confidant of the team, but for all practical purposes also the first helper of the foreman./ This reinforced and improved the quality of management. For example, Comrade Cibik from the Povazske Machinery Plants is a production aligner who has been working with the given team continuously for 24 years. He is perfectly familiar with production problems. He personally knows his coworkers, knows how to deal with them. He has a natural gift of authority. His jurisdiction is

delineated by the statute and he stays within it and he has no misunderstandings, let alone conflicts, with the foremen.

Each khozraschet-oriented work team has its own internal management organ--/the work team council/--which usually has five to seven members. Elected to it is, as a rule, the head of the party group, the sectorial secretary of the ROH and a representative of the SZM [Union of Socialist Youth]. The council makes decisions within the limits of a precisely delineated jurisdiction, within which, among other things, it decides and submits various proposals to the plant management. The deepening participation of workers in management of production is most evident at /council consultations. There the members in keeping with the Set of Measures nominate and approve the work team leader by open voting and also elect members of the work team council, assess production tasks and responsibility for their implementation, a system of incentives, accept socialist pledges or implementation counterplans, approve the manner of distribution of the collective part of wages, comment on application of the coefficient of work participation and other problems of daily work and life of the khozraschet-oriented work team./

This makes all workers not only objects, but also subjects of everything that goes on. /Under these conditions, they are being increasingly transformed into direct socialist managers. That becomes evident, among others, also in the fact that members of khozraschet-oriented work teams do not wait for instructions from above, but using initiative they routinely deal with occurring situations by themselves. They are able to do so because they are skilled in multiple fields of specialization or trades./

In many a plant there are /tendencies toward "departmentalization," many not only among managerial personnel, but even party members and trade union officials are under the impression that "this does not concern us" and contemplate establishing a "department for introduction of work team khozraschet." Such practices can be compared to a violin player who wants a helper to move the bow over the violin in playing.

Work Results--Key Criterion for Work Teams

/Conspicuously positive changes and results can be documented in a great majority of work teams using the work team form of labor organization. They account for a higher trend in improved productivity of labor and growth of wages, they improve quality and economy, solidify working and technological discipline. Democratic decisionmaking in important problems affecting the life and work of the team creates a favorable microclimate, strengthens collective relations, motivates development of initiative and promotes good moral traits in people. /One yardstick applies within the team/--depending on how you meet your tasks and obligations, that is what the results will be for all. /For example, in the team of Comrade Cibik from the Povazske Machinery Plants during the period of verification of the khozraschet-oriented work team form in 9 months of 1982, the average meeting of performance norms increased from 111.98 to 126.3 percent, primarily due to the fact that average or below-average female workers gradually progressed to

the level of good or best workers. Another factor in increased meeting of output norms was improved work, higher initiative displayed by expediters and maintenance workers incorporated into the work team. Increased meeting of output norms through mobilization of internal unused resources in the work team did not have a negative impact on the quality of delivered production, on the contrary, quality improved, whereby the average earning increased from Kcs 8.82 per hour prior to the verification period to Kcs 9.96, i.e., 12.9 percent. In the case of best workers the average increase amounted to Kcs 350-400 a month./ Work in the team became stabilized and satisfaction with working conditions improved, which became reflected in, among other things, cutting down overtime work from 2,200 hours to 700 hours a month--primarily in night shifts and over weekends. /By stabilization of the team's cadre there also occurred a substantial reduction in fluctuation./ While prior to the verification of the work team form in 1981 the team in the old concept showed a turnover of 16 workers (16 left and came), in 1982 during verification of the team work form fluctuation decreased fourfold (4 workers left and came).

Already the initial results confirm that application of the coefficient of work participation /eliminates egalitarianism/, subjectivism in remuneration and in its stead comes by right the merit principle. For instance, in the khozraschet-oriented work team of Comrade Anton Kockar in ZTS Dubnica, improved work results led in the fourth quarter of 1982 to an average wage increase of Kcs 158, but with substantial diffusion. The highest increment among the individual team members was Kcs 340 and the smallest Kcs 98 a month.

/The current approach and procedures of the CPSL OV in Povazska Bystrica in verification and solidification of the work team form of organization of labor and of remuneration guided by principles of work team khozraschet is most instructive and should inspire the relevant VHT [economic production units] and trade union associations toward adopting the same manner of monitoring, controlling, assessing, but primarily principally helping to implement the principles for verifying the work team form of organization of labor and of remuneration as well as adopting effective measures to that end. This is an urgent topical task that bears no delay, because--as was also pointed out in a recent report of the CSSR Government regarding carrying out of its program proclamation--one of the most serious weak points in the current system of management is constituted by a failure to follow matters through to intraplant units, to intraplant khozraschet, applying the merit principle in remuneration and establishing a base of standards.

8204
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RESULTS OF DIRECTIVE ON WATER USE ANALYZED

East Berlin WASSERWIRTSCHAFT-WASSERTECHNIK in German Vol 33 No 5, May 83 pp 147-148

[Article by Gerhard Voigt, member, Chamber of Technology and director, State Water Survey Office, Ministry for Environmental Protection and Water Management: "Results in the Implementation of the Directive on Efficient Water Use in the 1981-1985 Five-Year Plan"]

[Text] The decisions taken at the 10th SED party congress call on the water management experts in all sectors of the economy to assure a stable, quality supply of drinking water for the population and to provide the necessary water for utility purposes to assure dynamic growth of industrial production and the intensification of agricultural production. The key to long-term fulfillment of the demand for water is progressively more economical use of water resources.

To clarify the mission assigned to water management by the 10th SED party congress still further, the Council of Ministers has adopted the directive for efficient water use in the 1981-1985 five-year plan.

The main point involved in increasing the actual water supply and its comprehensive quality distribution is the implementation of efficient water utilization. It is a temporary task in that it determines the basic purpose and direction of water management as a whole--particularly under the conditions of the eighties. The directive on efficient water utilization provided the water management sector with the economic conception of the party on implementing economic strategy in the field of water management.

This not only calls for the most efficient use of water in terms of water production but also in terms of management, supply, preparation and waste water treatment.

There are two main ways of achieving this. Available supply of ground water must be increased with the aid of geological research. On the basis of new scientific management tools using computers an additional 8 million cubic meters annually will be provided from available storage dams, lakes and other bodies of water.

Another measure to be taken is that annual water use by industry which presently amounts to 5.1 billion cubic meters will be limited to 5.3 billion cubic meters until 1985. This can only be achieved, if specific water use is lowered by an additional 25 percent. The withdrawal of drinking water from the public supply network is to be reduced by at least 15 million cubic meters.

In agricultural areas newly to be equipped with irrigation facilities, water use is to be lowered by 10 to 15 percent per hectare based on present demand. This will become possible, among other things, by optimum water distribution controlled by computers. To meet increased demand for water, multiple use of bodies of water is becoming imperative. This includes reducing the load on these by 5 million population units.

In the interest of economic efficiency, retention or retrieval of useful materials from waste water—as is already being done today in pilot projects in the chemical industry and other sectors of the economy—will grow in importance. Retrieval and re-processing of useful materials not only reclaims water for utility purposes but raw materials as well which the economy was forced to import at high cost in some instances and it simultaneously improves the utilization potential of the water resource concerned.

These are realistic goals. Our starting positions for more efficient water use are good. Between 1976 and 1980, the industrial work force succeeded for the first time in increasing the production of industrial goods by 31.5 percent over the preceding five-year plan while using the same quantity of water. During that preceding plan, water use had increased by 5 percent. Industry not only lowered specific use by 20 percent—as called for in the directive adopted by the 9th SED party congress—but by 26.5 percent. This saved an annual 230 million cubic meters of water and 20 million kWh of electrical energy.

Where do we stand at present with regard to the implementation of the decisions of the 10th SED party congress ?

In 1982, comprehensive political-ideological work was done on efficient water use in all sectors of the economy. Using the Council of Ministers' third seminar on efficient water use as a basis, the necessary programs were discussed and worked out in all sectors of the economy.

In 1982, 119 plans on efficient water use were worked out and defended by the ministries and combines. These provided the main thrust for a program aimed at lowering the use of water for utility purposes; the production of drinking water and the improvement of waste water treatment as well as the retrieval of useful materials to be included in the 1981-1985 five-year plan. Thus, important foundations were laid for the direction and planning of more efficient water use.

Last year, action plans for combines and factories aimed at efficient water use were worked out for the first time on an annual basis. This created the necessary conditions for integrating concrete tasks into the economic plans of the combines and factories.

R & D plans for efficient water use as part of the 1982-1985 science and technology plan are being outlined, coordinated with the ministries and being worked out by the minister for environmental protection and water management in collaboration with the other ministers concerned. This compilation represents still another major set of guidelines designed to accelerate scientific-technological progress in the area of efficient water use. On 15 March 1983, a research task force named "Efficient Water Use" was established and it is working on accelerating scientific-technological progress on the basis of these guidelines. The task force is concerned in particular with developing water-saving technologies, useful material retrieval procedures and improvement of waste water treatment.

The setting of government norms for the use of utility water provided the basis for long-term plans to lower both specific and absolute water use.

Further measures to support the fight of the workers and collectives for the title of "outstanding water management plant" have been introduced. These then are the actual figures on efficient water use up to the end of 1982:

Specific water use in 1981 and 1982 was lowered by a total of 8 percent. Water use in all sectors of the economy did not increase by more then one percent. In industry, water use in absolute terms continued to drop by 100 million cubic meters as it has since 1980—with different results being reported by the different ministries. Good results were reported by the ministry for coal and energy, the ministry for chemical industry, the ministry for glass and ceramics industry and the ministry for ore mining, metallurgy and potash. Increased water use was reported by the ministry for construction of heavy machinery and equipment, by the ministry for construction of general machinery, agricultural machinery and vehicles and the ministry for construction industry. Further progress was achieved in gaining drinking water from industry.

Waste water load decreased by an additional 615,000 population units in 1982. There were good results reported from the area of the Oder-Havel water management directorate. Intensification measures there resulted in a reduction of the waste water load by 31,600 population units. Just under 21,000 units were gained through retrieval of 80 tons of sugar by the Tangermuende chocolate factory in Magdeburg district. These examples are an indication of what can be done to decrease waste water load by the introduction of intensification measures.

The available water supply was increased by 28.5 million cubic meters through improved management of surface water and by 74.2 million cubic meters through geological exploration of ground water resources.

Although many worthwhile initiatives have been undertaken to implement efficient water use programs, major efforts are still needed to fulfill and exceed the goals set down in the directive in all particulars by 1985. The bottom line of the 1982 plan, for instance, tells us that the projected drop in specific water use by 10 percent was not achieved. Nor do the results achieved so far in gaining drinking water from industry correspond to the rates promised for exceeding the goals set by the directive.

The continued implementation of a key element of the water legislation—the efficient water use in all sectors of the economy which also focuses on implementing the decisions regarding the protection of water resources—will call for far greater efforts in 1983 in the administration and planning of all the procedures connected with it. The point is to devote just as much attention to the current hydrological situation as to the major claims imposed on us by the implementation of the economic strategy for the eighties. Our work which is aimed at supporting the primary mission and the dynamic development of industry and agriculture can only succeed, if we manage to open up new resources continuously and to come up with tangible, quantifiable results.

What will we concentrate on in our further efforts ?

One important aspect is the continued implementation of efficient water use programs through the further reduction of water demand. To this end, the necessary budgetary decisions will have to be made.

As the justifications for the factory action programs are evaluated, the appropriate control tasks are to be established and implemented. In preparation for the 1984 action programs, specific attention should be paid to working out process analyses for the purpose of discovering new resources.

In preparing the next five-year plan, it will be very important to lay down government standards on retrieval of useful materials. New examinations by the galvanic industry should be undertaken and the standards should also be based on water management process analyses conducted by the factories themselves. In this connection, the office for efficient water use should exercise a more distinct coordinating function on a professional basis and the efficient water use departments in the water management directorates should be built up further. Further progress will also be achieved by implementing the directive on conducting and evaluating the survey by the water management directorates and district councils of factories responsible for water pollution and of the incidence, utilization and removal of useful materials from waste water. The state enterprise WAB's are to be fully integrated into these efforts.

There is a need for accelerating the elaboration, determination and application of scientific-technological standards to water demand and water use by all sectors of the economy. If the goal of setting water demand standards for 80 percent of the total water demand by industry by 1985 is to be reached, the measures already introduced must be implemented more forcefully and stronger efforts must be made to have industry comply with the standards. The research task force on efficient water use will bear a special responsibility in this regard.

Protection of our water resources calls for greater protection of our resources of drinking water--particularly by increasing controls and security in the drinking water reservoir areas and stricter control of the use of fertilizers and pesticides by agriculture.

In general terms then, efforts in 1983 will have to concentrate on the con practical implementation of the new legislative guidelines and decisions by transforming them into quantifiable results reflected in a further decrease in water demand, water loss and water pollution. The obligations and tasks imposed by the new water legislation calling for efficient water use by all water users must be laid down and must be made subject to control.

9478
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SEJM SOCIOECONOMIC COUNCIL ISSUES CRITIQUE ON ECONOMIC REFORM

Report on Deliberations

Warsaw RZECZPOSPOLITA in Polish 24 May 83 pp 1, 2

[Article by (kami): "There Is More to the Reform Than Regulations:" From the Meeting of the Socioeconomic Council"]

[Text] The course of the implementation of the economic reform was the subject of discussions on the first day of the session of the Sejm Socioeconomic Council, which opened on 23 May 1983. The meeting was chaired by Professor Jan Szczepanski, and was attended by government minister in charge of economic reform, Wladyslaw Baka.

"The economic reform, viewed in a human focus," said Professor Jan Szczepanski, opening the debate, "does not boil down to changing the legal statutes. First of all, people, who bring into life and actually create the economic mechanisms, must change. Each reform," continued Professor Szczepanski, "places new requirements on managerial personnel and calls for a showdown of one's skills. This creates subconscious fears and the feeling of a threat to one's personal life and sometimes a group's life. Most resentments come not from rational opposition to the reform but from these irrational fears."

Professor Teodor Kramer presented the draft of a government opinion assessing the course of implementation of the economic reform, which was commented upon by minister Wladyslaw Baka. Among other things, the speaker said that never before had the surveillance of the economic operation been so broad based as it is now. This aims at putting a barrier before voluntarism and arbitrariness in forming the economic life. Results so far confirm that proper decisions have been made in this area and that the economy has already obtained tangible benefits, especially by creating the opportunity for more efficient management.

"The government has no intention," affirmed minister Baka, "of perpetuating temporary decisions dictated by such things as shortages of materials and import capabilities. We must, however, respect today's realities, which as yet do not allow introducing the model that we aspire to. Realism and the need for producing necessities were responsible, in fact, for current operative programs and future government contracts.

"The reform continues on all government and administrative levels. Sejm is reviewing a draft statute on people's councils and regional self-government. Changes at the central level are also going on. Work has started on a statute of the Council of Ministers. Regulation of principles that would govern matters of environmental protection are nearing completion. In this connection, the possibility of creating a centralized board for water management and environmental protection is under consideration.

"A great many enterprises," continued minister Baka, "complain about high taxes. This was, however, a necessary step because of price manipulation by enterprises that were seeking profits sometimes as high as 300 percent. Regulating the system of prices in this way to make price gouging impossible is a condition for introducing a linear tax, the so-called constant percentage independent of the absolute profits.

"The government also believes it necessary to put into order the system of legislation regulating the economy. The minister of justice is working on a proper register of the pertinent acts. Only those regulations will remain binding that would be recognized as complying with the principles of the economic reform and included in the new register. Others will be abolished."

Council's members asked many questions during the course of the discussion that were answered by the minister for economic reform. Here are some of the questions and answers.

[Question] The fight against inflation and strengthening of the currency are basic issues. Have sufficient steps been taken by the government on this count?

[Answer] Curbing inflation, whatever the government programs, is also a social question. We must be aware of the fact that increased pressure to raise wages and benefits is not the proper way out of the crisis. In plain terms, requirements should always be trimmed to the real possibilities of the economy.

[Question] Wouldn't it be right to introduce principles to establish government prices for farm produce the way it is done for industrial products?

[Answer] Defining the income and production parities is important here. A system should be introduced in which the profitability of agricultural production would depend not only on the procurement price but primarily on the production output.

[Question] Uniontex Enterprises stepped out of the voluntary association and then the ministry established a supervisory board. The workers interpreted it as a punishment for leaving the association ...

[Answer] It is wrong to interpret the supervisory board's actions as a penalty. The board was set up to provide an overall view of the enterprise's operation, and the public factor is predominant in its composition --members of NOT and PTE. This is thus no threat to enterprise self-management but rather a remedy for revival of vertical administrative structures in ministries.

[Question] Can a workers' council decide to leave an obligatory association?

[Answer] No. These associations are created centrally for a period of five years. After this time, they will be reviewed in terms of whether their continued functioning is justified or not. On the other hand, workers' councils, by taking part in the governing body of the association, can control its activity and make sure that it does not overstep its statutory powers.

Summary of Position Paper

Warsaw RZECZPOSPOLITA in Polish 25 May 83 pp 1, 2

[Article by (kami): "Implementation and Results of the Reform: Public Labor Inspection. Position Papers of the Socioeconomic Council"]

[Excerpts] On May 24, 1983, the Socioeconomic Council of the Sejm, after a two-day meeting, adopted two position papers: one on the government report on implementation and results of the economic reform and the other on the draft statute on public labor inspection.

The basic thesis of the position paper on the implementation of the reform are these:

- Despite unfavorable initial conditions, thoroughgoing institutional and systemic changes have become a vital need of the nation, and the first results confirm that the decisions on reforms in the economy and state were correct.

- The reforms have not yet spread to all levels of administration, but are concentrated at the level of enterprises and their surroundings. The functions of the regional administrative level have not yet been outlined, although it is decisive for effectiveness and use of public initiative, local methods and, largely, the population's living conditions, including the environment. Rapid completion of the reconstruction of central government levels initiated in 1981 and never finished is also essential.

- "Institutionalized" creation of excess demand from the population and from the units of the socialized economy is still continuing, due to a failure to maintain proper product-labor-wage proportions.

- The council believes that insufficient efforts were made by economic policy to attain market balances in 1982. It sees a lack of comprehensive approaches to the market based on combined assessment of supply, demand and prices.

- The widespread public sentiment is that there should be a simple taxation system understandable to all. The council believes it appropriate to introduce proportional income taxes.

- Society expects, above all, a stability of structures, surcease of continuing expensive reorganizations and elimination of wasteful intermediate units absorbing values created by enterprises. Yet, the enterprises are still receiving from branch ministries through associations diverse assignments, directives and schedules, as illustrated by methods applied to implement the savings program. Sometimes executive regulations originating from the ministries go contrary to the legislators' intentions concerning the economic reform.

- The council believes that developing public consciousness around the reform in favor of it is extremely important.

Commentary on Position Paper

Warsaw ZYCIE GOSPODARCZE in Polish No 23, 5 Jun 83 p 2

[Article by Irena Dryll: "What the Council Advises Regarding the Reform: Strong But Positive Criticism"]

[Text] Sejm's Socioeconomic Council, after hours of discussions during its two-day (23 and 24 May 1983) session, formulated the position paper on "Implementation and Results of Economic Reform in 1982." The discussion was interesting, and the position paper--although strongly critical --is positive for the reform "as such." The council expressed "... recognition and support for the effort and will of all those political and public forces in our country which seem to lead to consistent reforms in the system of economic management to an extent exceeding all previous systemic changes in Poland." According to the council, which now numbers 134 members, profound institutional and systemic changes are mandatory, but initial results confirm that decisions to start reforming the economy and administration were correct.

Discussions emphasized the public perception of the reform and considered how steps taken during the past year under the aegis of the economic reform met the "Guidelines of Economic Reform" adopted originally by Sejm and whether they lead to the desirable structure of reformed economy in Poland. In view of these criteria, the council set forth in its position paper a series of reservations as to the implementation of the reform thus far, three of which seem most important.

The first is concerned with the reform's scope. "After a year of implementation endeavors," reads the position paper, "it is clear that the economic reform as a complex undertaking has failed thus far to encompass the entirety of economic management processes, leaving intact many of the so-called temporary decisions. These concern important areas of the economy and are seen particularly in increased powers of branch ministries (in the form of various 'delegations of power' contained in government statutes and resolutions), in the system of distribution and obligatory middleman's role in supplies, assets evaluation, etc."

Members of the council believe that the reform is yet to encompass all administrative levels, and so far is concentrated at enterprises and their surroundings. The functions of the regional level, for instance, have not been outlined, although they are vital to efficiency of the use of public initiative, local methods and--to a large extent--the living conditions of the people, especially the natural environment. In general, the reform thus far has failed to activate mechanisms forcing proper management, high product quality and stopping the degradation of the environment.

Another important reservation concerns economic balance and the derivative market balance. The council holds that 1982 saw insufficient efforts made to implement an econimic policy that would attain market equilibrium. It believes that there was no comprehensive approach to markets, issues that would deal simultaneously with supply, demand and prices. "Regretably," notes the paper, "usually these market elements were treated separately, disregarding their correlations."

The third reservation concerns the "rules of the game." "Society expects, above all, stability of rules, stable structures, a halt to continuing expensive reorganization, elimination of wasteful intermediate agencies absorbing the value of products produced by enterprises. Currently," reads the paper, "enterprises are still receiving from branch ministries through associations diverse assignments, directives and schedules, as illustrated by the methods used to implement the savings program. It happens also that executive acts originating from ministries work contrary to the intent of the legisators concerning the implementation of the principles of the economic reform."

So much for the assessment of steps of the reform during the past year. As regards its future destinies, I believe that the following suggestions by the council are most interesting:

"For the future of the reform, the earliest completion of reconstruction of the central government level, started in 1981 and then interrupted, would be most important, as it still continues to perform administrative and distribution functions."

The council believes that this particular fact was responsible for the lack of coherence between economic policies and the principles of the

reform. A graphic example of this lack of coherence was the failure to develop a system of incentives to "support" reform--namely, one that would stimulate production growth, material savings and lower costs, and proper utilization of labor. The so-called "systematic creation of currency excess" is still going on because of the failure to observe the proper proportions of production results and wages. "The government," the paper reads, "has given in to pressure from various interest groups and quite often resorted to improper management methods (...)"

The council's other position paper discusses taxation. The taxation system, through intense progressive taxation principles, is believed to reduce the efficacy of incentives. This concerns primarily development of well-run enterprises. "For instance, the high progressive tax," states the paper, "in calculating the income tax for 1982, made it impossible for certain enterprises to accumulate their own means for the enterprise's development fund, even for the purpose of simple reproduction." The system of taxation of the population and nonsocialized economy and the taxation principles that put up a barrier to products for export have also been blamed by participants in the discussion. It is true that statute 182 approved last year gave a positive assessment to export preferences, but the rates of foreign exchange still makes export a nonpaying proposition in most areas of the processing industry. According to the council, "The unprofitability of export of end-products of the processing industry aggravates the systematic difficulties in 'price creation' areas, in conjunction with the imposition in the final phases of processing of a high income tax, which, under the current system of export profitability estimation, has a deleterious effect on the final results of end-product manufacture."

The council believes it necessary to reconstruct the taxation system, switching to proportional income taxes and collection of sales taxes in the market system. It should be noted that the taxes and suggested drafts of tax laws already submitted to Sejm will be discussed at the next meeting of the council.

The third proverbial "Council's counsel" is to improve the presentation of the principles of the reform (which thus far are assessed as difficult to understand and mainly addressed to professional readers), and to meet the need for promulgating the modern management and government techniques and--which is very important--solving personnel problems in keeping with the spririt of the reform.

As stressed by the council chairman, Professor Jan Szczepanski, a director who has no skills or qualifications to operate differently than until now cannot implement the reform.

It may seem from the foregoing that the council has really made the reform "take a beating." This is not so. Both in the position paper prepared by a committee selected from the membership of the council and working under the guidance of Teodor Kramer from the Economic Academy at

Katowice, and in the course of the discussion it was stressed that the reservations and critical comments that were aired did not detract from the positive results attained thanks to the reform. These were defined as everything that increased the enterprise's self-sufficiency--namely, for instance, lifting of directives and some limitations, introduction of currency allocations and granting of certain financial freedom, leaving annual planning under the authority of factory's personnel, freedom in forming the levels of employment structure, and creation of partial possibilities for forming internal wage structures, as well as the possibility for creating internal organizational structures and voluntary associations in many branches and workers' self-management.

On the first day of the discussions, answering the questions and doubts of the council members, the government minister for the reform, Professor Wladyslaw Baka, pointed out that the reform was originally conceived as and still remains the self-management reform. The workers' self-management has never had this kind of competence and legal authority as it does today, he stressed. The self-management aspect of the reform provides for its being open to the working class. "The matter is for the working class to take it into its own hands," underscored minister Baka. On the second day, Jozef Uszko, a worker from the Gydnia shipyards, noted, however, that at many enterprises there is still no self-management, and its absence has negative effects on implementation of the reform. Speaking on this issue, other council members held that the situation with self-management is highly diverse and by no means uniform.

The question of associations was the next item on the agenda. Mieczyslaw Kapuscinski, metal fitter from the Victoria Mine in Walbrzych, asked if obligatory associations really serve their purpose.

"In our area, mining," he said, "they grow like mushrooms. Can self-management and the council do something here?" The minister explained that obligatory associations are convened for a period of five years and that the subject will be reviewed after that time. An enterprise is not allowed to step out of such an association, but nothing prevents self-management and the association's council from controlling the activities of higher agencies. As to voluntary associations, it was clear from the minister's explanations that the level of employment in them is 45 percent, as compared to former unions (until recently the number being just 30 percent). There have been suggestions that the cost of their activities be not borne by enterprises but covered from membership dues.

Another interesting issue raised in the discussions was the relationship between the law and the reform, and the law of the reform in regard to ... stability of "rules of the game." The past year was peculiar: twenty laws and about 100 executive orders were issued. In the meantime, earlier orders were still in effect. The minister and members of the council believe that there is an urgent need to review and eliminate all those legal acts which are at variance with principles of the reform. For three months, the ministry of justice has to work on that and clean its

"Augias stables," leaving only what is needed and justified. As to the "rules of the game" and their stability throughout the reform, the period of continuing modification is supposed to be completed in the coming year, since the government is also of the opinion that changes should be restricted.

Each item in position paper of the Socioeconomic Council of the Sejm was not only the subject of ardent discussions but also put up for a vote. The entire position paper was adopted unanimously, but by a majority of 60 votes one item was deleted. Characteristically, it dealt with the price operation which "(...) was accompanied by both high compensations, excessive growth of social experiments compared to real possibilities of the economy, wage regulation and subsequent high monetary payments to workers of some enterprises, which, in its totality, resulted in leveling of the effects of February regulations." One of the speakers said that definition of compensations as "high" would be taken as a joke. Another speaker noted that such statements support those who try to find ways of pulling money out of the public's pockets rather than to be better managers, because this was not required. The council decided to remove this assessment from its position paper.

I am citing this fact as a demonstration of the difficulty of evaluating the public boundaries of the reform. It is possible that for the good cause and "purity" of the reform, the remuneration system should not have been introduced, or that the level of bread line pensions should not have been raised. I am afraid, however, that in that case the group of reform supporters would dwindle to a couple of thousand of the best-paid and important persons who, with or without the reform, have little to complain about. No reform operates in a social void and can be implemented beyond the limits of public endurance.

This does not mean to say that all decisions on social areas from last year concerning the regulations and privileges of branches were justified. There is truth to the statement by one of the participants, Stanislaw Becel, a farmer from Zamosc Province:

"All social strata want to be better and not worse off. Each of us represents a social group and wants to 'wrench' something for this group, so that people don't blame you for being a poor representative."

It seems that the debate over the public boundaries of the reform--started at the council's session--will continue in other groups and consultative committees and--supposedly--will arrive at the plenary sessions of the Sejm, which, even during its present assembly, is to evaluate the reform and its results.

During the course of the discussion, one of the members of the council, Professor Szczepan Pieniazek, noted that reform is seeking to put the economy back on its feet. He and other speakers, however, gave examples suggesting that in many cases it is still standing on its head. The

causes are various--mainly "at the top," but also "in the middle," and "at the bottom." I believe that it would be proper to conclude with the opinion voiced by council chairman, Professor Jan Szczepanski: "The economic reform should be undertaken at all levels of its functioning (...)." Among other things, this is expressed in the council's position paper discussed above. From a model of the reform to the model of economic life matching its spirit there is still a long way to go.

9922
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PROSPECTS OF ZIROVSKI VRH URANIUM MINE SKETCHED

History of Deposits

Zagreb START in Serbo-Croatian No 372, 23 Apr 83 pp 26-28

[Article by Stanko Stojiljkovic: "Zirovski Vrh: Enough Uranium for Three Nuclear Power Plants"]

[Text] Some 20 km from Skofja Loka, in the Zirovski Vrh massif, which is not striking from slightly more than 1,000 meters among the high Slovenian mountains, the richest Yugoslav uranium deposit is located. In the world classification it is among deposits of moderate size, though in comparison with copper mines, for example, it is more important and larger than Bor.

With its first uranium mine, not counting Kalna in eastern Serbia, which opened in 1965 and closed the very next year, our country has secured a place in the "nuclear club" for which the entry requirement is proven reserves of uranium.

The explorations (measuring radioactivity from the air and observations on the ground) which a team of geologists from the Geoinstitut in Belgrade began in the spring of 1960 revealed radioactivity very quickly. The next year ore was found at once from a drill hole 430 meters deep. Even the greatest optimist could not have wished a better beginning.

Dr Veljko Omaljev of the Geoinstitut (he defended the first doctoral dissertation on Zirovski Vrh and wrote the first of our specialized books on it: "Metalogenetske karakteristike uranskog rudista Zirovski Vrh" [Metallogenetic Characteristics of the Zirovski Vrh Uranium Ore Deposit]) said that the finding of ore was abundant from the first day in the field. Tests of the ore for quality proved that exploitation would pay off.

Pilot production should have begun in 10 or 15 years, in keeping with the world average, but delays cropped up. Alojz Pavel Florjancic, the engineer who is deputy director and supervisor of the geology division, says that the first quantities of uranium concentrate from Zirovski Vrh would be forthcoming in the middle of the following year. There were two reasons behind the delay: the lack of money because geological prospecting activities were transferred from the federal to the republic level, and relinquishment of the prospecting

to the Geozavod of Ljubljana, which did not have enough trained specialists for a challenge of this kind.

A reverse was announced in 1974, when Croatia and Slovenia agreed on joint construction of two nuclear power plants, at Krsko and Prevlaka. There was a 3-year wait for the investment program, and it was adopted only in 1978. Construction began immediately. The customary order of things in a nuclear program, first to obtain the ore, and only to build the nuclear power plant, was departed from. Underground explorations at Zirovski Vrh continued at the bottom of the first drill hole, 150 meters below the surface. An abundant accumulation of ore was found in it (it was called B1), and now there are 80 such drill holes. That is why exploratory digging was done at the lowest level (430 meters above sea level). First a large tunnel 1,850 meters long was dug, with smaller tunnels 100 meters or so long branching off left and right at every 50 meters. Drill holes 150 meters deep were made into each of them from the surface, that is, from 580 to 430 meters above sea level. The excavation did not go deeper because of subsurface water. Later, when all the uranium had been extracted from the lowest and higher levels, the miners would also go to a greater depth.

The accumulation of ore was bracketed at two levels, the lowest (430) and the highest (580 meters above sea level). Since the ore bodies were of small size and surrounded by earth and rock, so-called percussive holes were made at every 5 meters between the two levels in order to precisely determine the layers of uranium. That is why the northwest flank of the future mine, from which uranium would be mined in the first phase, is reminiscent of a huge Swiss cheese.

An ore accumulation about 2 km long, 250 meters wide, and 150 meters deep was prospected. It contains enough uranium to fuel "Krsko" for more than 15 years. And this is the first phase of construction in the capital investment project. Every year 120 tons of uranium concentrate ("yellow cake") will be sent every year from Zirovski Vrh to the United States for processing into fuel elements and then returned to the first Yugoslav nuclear power plant. The production plan will be achieved only in 1986, though the needs of "Krsko" will be met a year earlier with ore which will be mined at that time and the concentrate accumulated from the explorations to date, which will be kept in a special storage dump.

Encouraging news has come from Zirovski Vrh in recent years: there is considerably more uranium in the bowels of the mountain than was supposed. It is estimated that there are more than 30,000 tons of uranium over a stretch of 15 km, which is sufficient for three nuclear power plants of the Krsko type to operate for an entire century. Nor is it precluded that future exploration will discover even larger reserves. That is why a long-range program for development of the mine was drawn up in 1981: ore will be mined and processed for three nuclear power plants. It is uncertain at present when realization of the program will commence, since it is not known how many and at what pace nuclear power plants will be built in our country up to the end of the century. The only thing that is certain is that the next one will be at Prevlaka near Zagreb.

Mining specialists feel that "Zirovski Vrh" is the most up-to-date mine we have: the locomotives and ore cars, conventional drills and loading shovels on rails have been replaced by nonrail machinery. The miners have been completely protected against cave-ins and dust. They sit at control panels 5 or 6 meters away from where the digging is being done, and they operate single-carriage and double-carriage drills by remote control. After blasting the excavated material is loaded into 12-ton mine trucks by self-propelled loaders.

The underground tunnels are large, with a span from 9 to 25 meters (though their maximum height is 13 meters), which allows the vehicles to move rapidly. By and large all the equipment bears the emblems of three very well-known world firms: the Swedish "Atlas Copco," the Finnish "Tamroka" and the German GHH. The shortcoming of this kind of mechanized digging is that considerably more gangue is extracted, since the ore bodies are smaller in size than the dimensions of the machines, that economic efficiency is achieved with the much larger excavation.

So far 20 tons of ore have been extracted and are being kept in the special storage dump. To be transformed into the "yellow cake" which is sent for processing to the United States it must go through treatment at "Zirovski Vrh" itself. First it is crushed in a mill, and then a conveyor bridge carries it to the silos of the hydrometallurgical plant. Here it is ground into particles 1 mm in size, that is, to dust, in the presence of water. Sulfuric acid is added along with other components, and this dissolves the uranium. The solution is precipitated, then leached by means of ion exchangers, dried to a concentrate and loaded into 200-liter drums. Then the "yellow cake" is sent in containers over the ocean for enrichment and fabrication into fuel elements. The natural uranium has only a 0.7-percent content of uranium-235, the isotope which takes part in fission. Enrichment yields a 2.5- to 3.5-percent concentrate.

At uranium mines in uninhabited regions (most of them in the desert) no one has been concerned about where and how the tailings are piled and where the process water goes. Since "Zirovski Vrh" is surrounded by settlements, the question of environmental protection imposed itself from the very outset of the mine's construction. The technology offered by foreigners would have threatened the beautiful Poljana Valley not only as an area for farming and recreation, but the drinking water would have been polluted forever. Staff members of the "Jozef Stefan" Institute in Ljubljana, led by the late Professor Joze Slivnik, familiarized themselves with the conditions and proposed a solution which would minimize pollution of the environment. The main difficulty, as in all uranium mines, was depositing the solid waste and discharging the water in which the ore is rinsed, which is why the processing of uranium is included among the "dirty technologies."

The Americans proposed that the solid and liquid waste be deposited together in a wet tailings dump. Under the conditions of "Zirovski Vrh" this would have created a large pond (several million cubic meters), and a 70-meter concrete dam would have had to be built to prevent the water from running off. Aside from that, about 4,000 cubic meters of wastewater would still have been discharged into the Sora River, and the entire undertaking would have cost as much as processing the uranium.

The Ljubljana scientists offered a solution which minimizes the amount of water which runs off and thereby the liquid waste as well. The solid waste would be deposited separately. Since the tailings are hazardous for a very long time because of the radium which requires several thousand years to decay, it was proposed that grass and trees be planted on the tailings pile. This would prevent the radium and other chemical pollutants from being carried off, and there would not be any great amount of direct radiation. The entire area would be fenced off.

The Ljubljana people added to the standard uranium processing procedure treatment of the waste solution with a special neutralization. In the conventional process the acid solution is neutralized with lime. In the solution offered by "Jozef Stefan" the solid tailings are separated by means of a filter, the solution is treated with lime, and the water is neutralized and used again for rinsing. The water cycle is entirely closed, it is not discharged. Everything was checked in a half-scale installation at "Zirovski Vrh," and the results exceeded expectations.

The tailings dump will be 1 km away from the processing plant, as on a kind of plateau, but surrounded by hills, and enclosed by an earth bank on the front side. A ditch has been dug around it to take up everything that still drains off, but also to protect the dry tailings from natural water.

Since it involved an innovation, the solution of staff members of the "Jozef Stefan" Institute aroused interest among the world's specialists. Only what we do not manufacture was imported, and domestic equipment represented 65 percent of the entire installation. The International Atomic Agency in Vienna, as a mark of recognition, entrusted to the Ljubljana scientists to conduct an international competition on uranium processing for 16 developing countries.

The measures for protection against cave-in and harmful gases are exceptionally rigorous. Unfortunately, this was one of the things that made the work of opening the mine more expensive. Alojz Pavel Florjancic says that the primary goal was to protect the miners and the environment. Aside from the conventional supports and reinforcement, in sections of the shaft where there are faults concrete injection was used and a combination of anchors, mesh and injected concrete.

Yet the greatest hazard for people is still the gas radon, especially its short-lived daughter products, which have a half-life of a few minutes or hours, but they are extremely dangerous to internal organs (for example, they cause lung cancer). The only way of eliminating radon is faultless ventilation. The miners go through special checks every day, and once a year they have strict and regular medical examinations. Not a single illness has been reported since 1960, although there are miners who have worked there from the first day.

Somewhat more than 4.1 billion dinars will be spent on the first phase of construction of "Zirovski Vrh" (so far more than half of the job has been done). The delay and very difficult conditions for exploitation (underground excavation and hard rock) and the strict safety measures because the mine is in a

settled area have brought about cost overruns. According to the first estimate, a pound of uranium ought to cost $100. In the meantime, because certain costs dropped, the price fell to $80, and if exploitation for the three nuclear power plants were envisaged from the first day, it would be about $60.

"Zirovski Vrh" is at present the only deposit in Yugoslavia which has been studied. Very little is known about the others, except for Kalna in eastern Serbia and Zletovska Reka in Macedonia. That is, the geological explorations have been very modest, although it is known that we do have potential uranium-bearing geological formations. These are above all Permian sandstone, granitoids, vulcanites and Tertiary sediments. Irregularities in the radioactivity of the earth, a sign of the presence of uranium, have been recorded in Slovenia, Serbia (Bukulja, Belanovica and Cer Iverak) and Macedonia (Zletovska Reka). Intensive study might reveal anomalies in other areas as well. Specialists regard phosphates, which we mainly import, as a possible source of uranium. They do contain a fair amount of uranium, so much that exploitation would be worthwhile.

Even on a world scale uranium has not been adequately explored, although the distribution of the known deposits is considerably less favorable than that of petroleum (it exists in only six or seven advanced countries). In the opinion of Dr Stanimir Putnik, former director of the Geoinstitut, and now an adviser in the Community of the Electric Power Industry in Belgrade, that is why the question of how much there is will be posed for the next decade, rather than the question of how high its price is.

As nuclear power plants have been built, uranium has come onto the world commodity exchange. Up to now explorations have been marked "strictly confidential" because of strategic military use. In the search for this rare and important metal, which will have a decisive role in the fuel and power industry up to the end of this century and at the beginning of the next century, the previous custom of prospecting all deposits has been abandoned, and now only those which are potential profitable are studied.

With the discovery of the technical and technological possibilities of using nuclear energy (for military purposes at the beginning) in 1942, the interest in exploring uranium deposits has grown by the day, and this trend is continuing. No similar example can be found in recent geological history. At first data on deposits and reserves were not accessible to the public because of military considerations, and then a change of direction was taken at Geneva conferences (1955 and 1958) concerning peaceful use of nuclear energy. The leading countries made their advances public, and uranium exploration became an elite branch of geology.

The most popular period of the search for uranium was before the beginning of the seventies, when cheap petroleum had the result of explorations died out somewhat. We are now witnesses of a new surge in the search for the yellow powder. The world has realized that uranium is the only serious alternative to fossil fuels, petroleum, coal, and natural gas, which are being exhausted more and more rapidly. That is why a new spurt in construction of nuclear power plants is also announced after a certain lag.

Imports of Equipment Needed

Zagreb START in Serbo-Croatian No 372, 23 Apr 83 p 28

[Article by Boris Kutin: "How To Find Two Million Dollars"]

[Text] There has been talk for a very long time in our country about obtaining uranium, but still our sole mine of this kind is still under construction. The first geological explorations in the region of the uranium deposit at Zirovski Vrh, a hamlet some 20 km southwest of Skofja Loka, were conducted back in 1960. Since that time the uranium mine has moved closer and closer into the foreground of interest and serious plans. Nevertheless, 10 years had to pass before anything really serious began to be done. Then Slovenia and Croatia agreed to build two nuclear power plants, and the project was given the green light. The Geology Bureau in Ljubljana did an economic feasibility study in 1976 on the opening of a mine and building an ore-processing plant. This document was the project's ticket for being included in the medium-term plan of the Slovenian electric power industry, which is also establishing the mine.

The social plan of Slovenia called for the mine to go into full production in 1984, when it would produce 120 tons of uranium concentrate. The estimated cost of the investment would have been slightly over 4 billion dinars. Even though at present we are importing all the necessary uranium--Krsko is paying about $7 million a year for that--there is a serious squeeze to obtain funds for the mine. The inflow of dinars is too small, and that of foreign exchange even worse. At this point everything is hanging fire for $2 million absolutely necessary to import equipment. There is a great deal of goodwill and solicitude for unraveling this foreign exchange tangle in which at present there is no place for the imports of those who do not export.

Even now the delays are so great that the plan can be fulfilled at the very best half a year behind schedule. If there are no unforeseen delays, 50 tons of uranium ore would be produced this year, and an additional 10 tons more next year. Last year 60 percent of all the work was done, and more than 2 billion dinars were spent on this. Slightly more than 200 workers have been working to open the shafts in the mine, and alongside them there have been many others at "Zirovski Vrh" building surface structures and the processing plant.

According to the plan, the percentage of work done must rise this year to 80. Another 100 or so workers should be employed; by and large they would be trained to work in regular operation in 1984. That plan calls for the mine to begin pilot production of uranium concentrate in the first quarter of 1984. It would meet half of the needs of NE [nuclear power plant] Krsko.

The preparatory work began toward the end of 1979, and it took place on a truly huge area of 76 hectares and encompassed a difference of 105 meters in altitude above sea level. A few other figures: the construction plan called for moving 350,000 cubic meters of earth and building that material into various level areas, fills and roads. The other materials installed would weigh

about 10,000 tons, including 1,000 tons of equipment. The mine consists of some 90 structures, which can be classified by purpose into three groups: first the structures of the mine itself, then the processing, and in the third group the dumps for the tailings and ore. In the breakdown of the entire construction project construction work accounts for 55 percent of the cost and equipment and installation 45 percent. The share of domestic equipment is very high: all of 70 percent.

The reserves of ore are sufficient for the NE Krsko to operate for 20 years, and the first explorations have shown that "Zirovski Vrh" could supply as many as three nuclear power plants, that is, all those envisaged to be built in our country up to the end of the century. If this assertion is to be proven, and if larger quantities of raw materials from "Zirovski Vrh" are to begin to be utilized in good time, thorough prospecting should begin immediately and it certainly must have strong financial support. In other words, if we want to secure domestic uranium for our second nuclear power plant, which is scheduled to go on line in 1990, the work ought to begin right now. Since much has already been done, the initial investments would be cheaper. The calculation for the fuel to operate NE Krsko (660 MW and 120 tons of U308) is 4.2 billion dinars of investments. For the second nuclear power plant, whose capacity will be 1,000 MW and which would require 155 tons of concentrate, the cost of the investment project would not be different. The investment projects would increase by less than 10 percent only for the third nuclear power plant, which would have the same capacity as the second one.

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