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**ORGANIZATION OF ACTIVITIES TO SECURE  
THE UNITY OF MEASURES AND MEASUREMENTS  
IN THE ECONOMY OF THE UZBEK REPUBLIC**

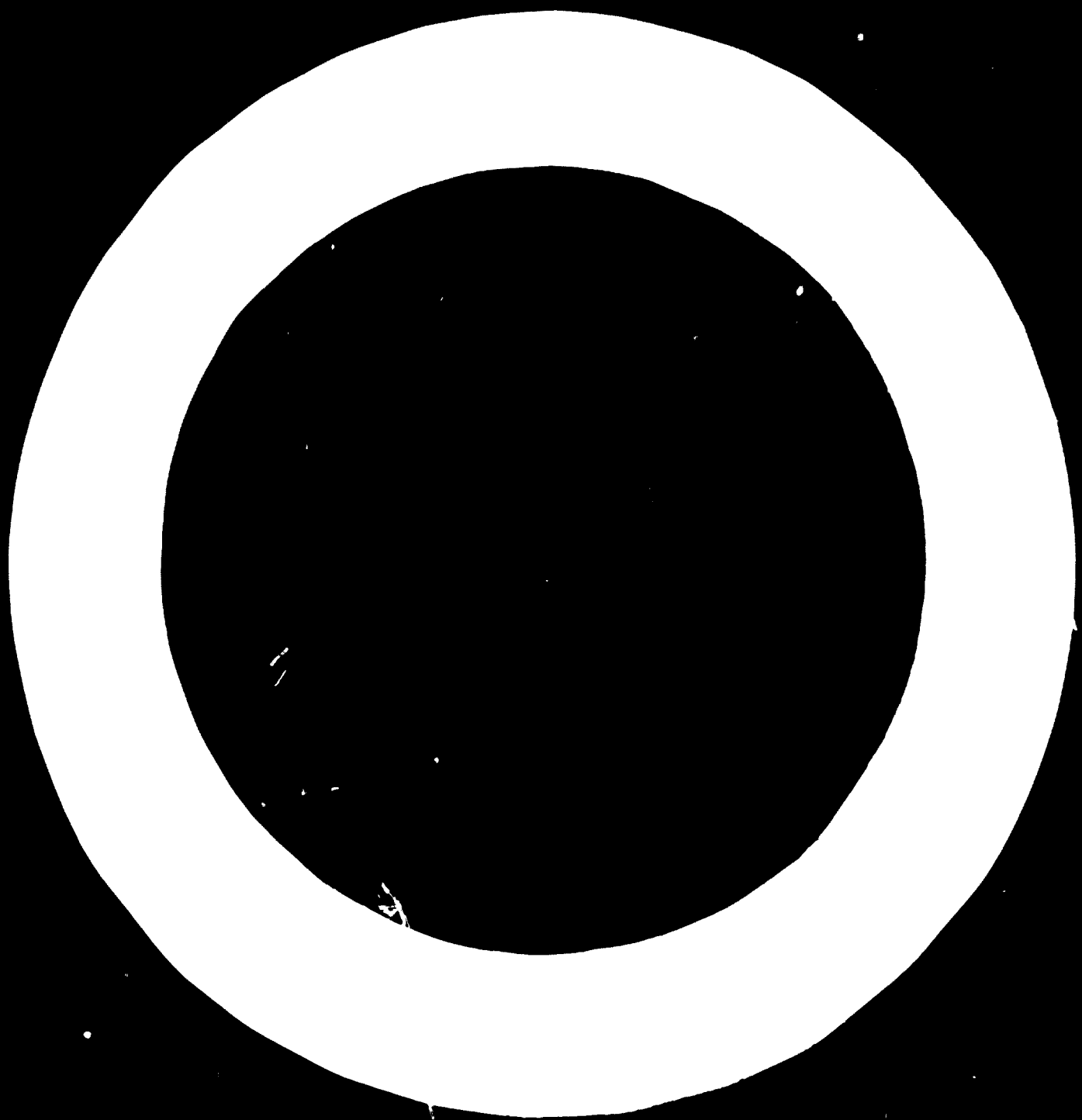
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MEASURES ENSURING THE INTRODUCTION  
OF UNIFIED WEIGHTS AND MEASURES IN THE NATIONAL  
ECONOMY OF THE UZBEK  
REPUBLIC

The metrological services in Uzbekistan have always been in the centre of attention during all the years of economic upbuilding. In 1923 the Government of the Turkestan Republic (which then encompassed the territory of Soviet Central Asia) adopted the first decrees on the introduction of state control over weights and measures and a system of inspection. Special rules were adopted on weights and measures and a central Bureau for weights and measures was set up under the Committee for Domestic Trade. The government also adopted a decision on the introduction of the metric system in weights and measures.

The Central Bureau for Weights and Measures performed extensive work in introducing the metric system and settling various problems relating to weights and measures. All the workshops manufacturing and repairing scales were inspected and registered and all the scales and instruments in Tashkent and Samarkand were checked.

In 1924, after the Central Executive Committee and the Council of People's Commissars adopted special laws on weights and measures and introduced a single state service of weights and measures throughout the country the Central Bureau for Weights and Measures of Uzbekistan was reorganized into the Chamber of Weights and Measures under the National Economy Council of the Uzbek Republic and it operated under the auspices of the Main Chamber of Weights and Measures -- the central body ensuring standard weights and measures throughout the USSR.

The organization of the Central Asian Chamber of Weights and Measures (later renamed into the Uzbek Chamber) set the beginning for inspection activities on the territory of all the Soviet Central Asian Republics. The Uzbek Chamber of Weights and Measures serviced the Turkmen, Kirghiz, Tajik and part of the Kazakh Republics which had no inspection centres. The chamber opened branch departments in Ashkhabad (1926) and Stalinabad (1928) which later became independent establishments.

The metric commission under the Central Asian National Economy Council and the metric commissions under the economy councils of the republics were the instruments through which the metric system was introduced in this part of the country. After 1930 the introduction of the metric system was completed by the Committees for Standardization in each republic. In 1930 the metrological services were merged with the USSR Committee for Standardization under the Labour and Defence Council. In Uzbekistan, as in the other Central Asian republics, the chamber of weights and measures became a department of the Committee for Standards. Thus, for the first time, metrology and standardization were brought together as the basis for rational production and technical progress.

At present standardization and the weights and measures service in Uzbekistan are within the competence of the Commissioner of the Committee for Standards, measures and measuring instruments under the Council of Ministers of the Uzbek Republic. The Committee for Standards which enforces state inspection over standardization and performance of measuring instruments has a system of state inspection laboratories which operate at all the industrial centres of the republic and also in the regional, district and other administrative units.

The state inspection laboratories have developed from small establishments with limited resources and tasks into modern organizational and engineering centres of standardization and metrology on the territory of the republic which they are called upon to service.

The number of state inspection laboratories in Uzbekistan has increased from 3 in 1925 to 12 and their staff has grown during the last 33 years almost twelvefold. The cost of their technical equipment has gone up 46 times. The range of instruments which the laboratories inspect has grown from 24 units in 1936 to 439 units in 1969.

The precision level achieved in various fields of measurements is an indication of the metrological potentials of the laboratories in Uzbekistan. The Central Laboratory for state supervision over standards and measuring instruments is the organizational, methods guidance and scientific-technical centre in Uzbekistan for standardization and the enforcement of unified and correct measurements. The central laboratory has eight sub-divisions. All testing and checking of measuring instruments is performed by the checking and testing sub-division which comprises 7 laboratories each specializing in a certain type of measurement : electrical and magnetic, thermal engineering, linear and angular, mechanical, radio engineering, physical and chemical, radiometric and dosage measurements.

Besides standardization the Central Laboratory of State Supervision over standards and measuring instruments has the following functions :

- organization and development of the state metrological service in the republic ;
- enforcement of unified and correct measurements ; preser-

vation of referable standard gauges and transfer of unit values from standard gauges to measuring instruments ;metrological testing of measuring instruments and certification of samples.

- execution of state supervision over unity of measures and correctness of measurements.

With the aim of achieving its basic tasks the central laboratory does the following :

- it offers methods guidance to industrial enterprises and other establishments and helps them set up and develop a metrological service, supervises their work, analyses the activities of these services and works out recommendations to improve performance ;

- the central laboratory organizes pooling of experience by the various metrological services ;

- the central laboratory conducts state testing of measuring and checking devices ;

- collects data on the state and performance of these devices and works out recommendations to raise the quality of measuring instruments ;

- ensures metrological certification and checking of basic measuring instruments of state and departmental metrological services ;

- inspects measuring devices (requiring state inspection) at their manufacture, repairs and in operation;

- preserves and maintains the precision level of referable standard gauges and basic measuring instruments ;

- develops normative documentation concerning the checking of measuring devices ;

- registers all the enterprises manufacturing, repair-



and checking measuring devices, issues permits for the performance of this work and executes state supervision over the manufacture, repairs and performance of measuring and testing devices :

- studies the supply of measuring and checking devices at industrial enterprises and other establishments, works out recommendations and renders technical assistance in the introduction of new and progressive methods and means of measurements and checking ;

- exercises methods and technical guidance of all state supervision laboratories in the republic and coordinates their activities ; works out long-range plans for their development in accordance with the long-range plans for the development of the national economy ;

- develops measuring engineering personnel ;

- creates a reference and information centre on measuring engineering and provides information to all requesting it .

The basic task pursued by the laboratory of state supervision under the Commissioner for Standards in the field of measuring instruments is to ensure unified measurements in the republic. This task is achieved through the joint efforts of the state supervision laboratories and the enterprises within the system of departmental supervision.

State supervision over unity of measures and measurements in Uzbekistan is exercised in the following forms :

- performance of state tests with newly-developed measuring devices and instruments and also samples from the first batches of quantity production ;

- performance of periodic state tests of serial mea-

measuring devices:

- performance of periodic checking of measuring devices used in the national economy;

- inspection control of enterprises and establishments manufacturing, repairing and operating measuring devices including those which have departmental bodies of metrological services.

State tests of newly-developed types of measuring devices and also tests of models intended for quantity production are an effective means of ensuring unity of measurements and raising the quality of the measuring instruments.

There is a nomenclature list approved by the Committee for Standards, Measures and Measuring Instruments under the USSR Council of Ministers for state tests of measuring instruments intended for quantity production. The office of the Commissioner for Standards draws up annual plans of state tests which are brought before the Committee for Standards and approved as part of the plan for state standardization in the country. The Committee for Standards also appoints organizations responsible for state tests -- institutes or laboratories of state supervision. The tests are conducted in accordance with a programme drawn up by the organization responsible for the tests. Results of tests are examined by the institute and recommendations are presented to the Committee for Standards. The Committee approves the given type of measuring device and issues a permit for its serial production. It also issues a certificate to the manufacturing plant. Before issuing a registration certificate and permit the state supervision laboratory for standards and measuring devices inspects the preparedness of the

enterprise to produce the given instrument and checks on the performance of measuring and testing devices at the plant itself which would enable it to test the manufactured devices in accordance with the existing standards and technical provisions.

The laboratory conducts periodic tests of serial production of instruments under a special programme and also studies the performance indices of these instruments. If any production faults are revealed, if the quality is below the required level and if the instruments fail to correspond to existing standards and technical provisions the laboratory issues recommendations to the enterprise and gives a time limit for eliminating all the faults or imposes a ban on production until these faults are eliminated.

When it is necessary to improve a design or turn over to a new model the enterprise manufacturing the instrument is instructed to work out a schedule which is then brought to the attention of the Committee for Standards and the department to which that enterprise is subordinated. If the recommendations of the laboratory are not fulfilled the Committee imposes a ban on production.

Measuring devices requiring state checking are taken up by the laboratory of state supervision in accordance with lists drawn up by the Committee for Standards. Other instruments and devices are checked by the metrological services of the given department.

In the Czech Republic all measuring devices are subjected to periodical checking with the aim of removing from operation all instruments with erroneous metrological characteristics.

All measuring devices -- manufactured, repaired or in operation are entitled to state or departmental checking. The referable standard gauges and measuring instruments used for checking operational measuring devices and also weighing and measuring devices used in accounting, trade and medicine are subjected to checking under a schedule set up by the State metrological service of the republic. Two months before the beginning of the new year the enterprises and establishments present to the state supervision laboratory a schedule of checking referable standard gauges and a description of the instruments. This schedule is then approved by the management of the given enterprise. The laboratory and its affiliated bodies maintain a register of the referable standard gauges and supervises adherence to the checking schedule.

The other measuring devices are checked either by the laboratories of state supervision or departmental metrological services provided they have permits issued by the Central laboratory of state supervision for standards and measuring devices.

The periodicity of checking is determined by the enterprises themselves and depends on the operational conditions and the requirements of reliable operation.

State inspection of measuring devices is conducted simultaneously throughout all the enterprises and establishments of a given department which ensures better organization and complete data on the state of the measuring devices.

If it is found that the state of the measuring devices is not up to required standards measures are taken by the superior body to remedy the situation, to improve departmental supervision. The schedules for inspecting the measuring

devices at enterprises and establishments of individual departments and ministries are approved by the Commissioner for the Committee of Standards under the Council of Ministers of the Uzbek Republic for a period of several years.

The schedule envisages the checking of measuring devices at enterprises and establishments within one department during three months. When arranging the schedule it is taken into consideration the number of measuring devices in operation, the intensity of their operation and the specific features of operation at the enterprise ( stoppage for capital or maintenance repairs, etc. ). This ensures an even delivery of measuring devices for checking throughout the year.

In the rural areas state inspection of measuring devices is conducted under special decisions taken by the regional and district bodies on the basis of recommendations of the state inspection laboratories. These decisions outline the schedules for checking all measuring devices and their repair on the territory of the given district and these schedules are based on seasonal work. In Uzbekistan priority is given to enterprises and establishments connected with the growing, procurement and processing of vegetables, then comes the turn of enterprises dealing with silk-worm cocoons, grain, cotton and finally all the other establishments. State supervision and checking is conducted by stationary checking centres in the given district or by mobile checking laboratories.

After the time limit had expired for presenting measuring devices for checking, inspectors are sent out to the enterprises which had failed to present their measuring devices. If any measuring devices are found that had not been checked or are faulty these are immediately removed from operation.

These measuring devices which are used in trade and medicine are sealed and those responsible for their state are reprimanded by their superiors on recommendations of the state supervision laboratory.

If any abuse of confidence is found based on the use of erroneous measuring devices, those responsible for the situation are charged by the prosecution.

The results of state inspection both in the towns and in the rural areas are analysed, summarised and along with recommendations of state inspection are brought to the attention of heads of departments, to the regional and district bodies and in some cases to they are brought to the attention of the Government of the Republic.

The laboratories of state supervision conduct periodical selective inspection of the state of measuring devices, the quality of checking and repairs and the organization of departmental supervision. This control is conducted under a schedule approved by the management of the state supervision laboratory and performed by specialists.

Control of instrument building enterprises is enforced at state tests of their measuring devices. Quite often control over the introduction of new instruments, adherence to standards and the inspection over the state of measuring and checking devices are combined.

Special control of measuring devices is also practised. It is aimed at checking the conformity of means of testing and the quality of products to the requirements of standards and other normative technical documents in various branches of industry. Inspection control at the industrial enterprises is conducted once or twice per annum. At the agricultural

and trade organizations it is conducted once a year while at all other enterprises and establishments it is conducted at least once in two years. This control concerns the registration, existence and adherence to checking schedules of all measuring devices, conformity of means of checking to the existing nomenclature in the country and also the correctness of operation of measuring devices.

The enterprises having permits for departmental checking, inspect conformity of working conditions and nomenclature of work to the registration certificate, the quality of departmental checking by selective control of measuring devices and other operations of the metrological services.

In inspecting industrial enterprises special attention is devoted to the existence and conformity of means and methods of measurements and testing to standards and also automation in measurements and testing.

At enterprises and establishments repairing measuring devices control is conducted to ensure that the list of instruments taken up for repair corresponds to the permit issued by the state supervision laboratory and that there are adequate storage facilities.

At trade centres, ware houses and depots the control is aimed at ensuring adequate storage facilities and the preservation of checking seals and certificates for measuring devices.

The results of inspection control are summarised and brought to the attention of ministries and departments and when necessary to the attention of the government of the republic. The data is discussed at the collegiums of the

ministries and departments with the participation of representatives of the central state supervision laboratory.

The departmental metrological services play an important part in ensuring unity of measurements and correct measures in Uzbekistan. These services are arranged as follows. The given ministry or department has a special metrological division headed by a senior engineer on measuring devices or chief metrologist. Here in Uzbekistan 11 ministries have such departments (ministry for power and electrification, the health ministry, the trade ministry, the ministry for consumer cooperatives, etc.).

A number of ministries and departments have metrological sub-divisions at their leading enterprises or research centres. In some cases these sub-divisions have branch departments in the regional centres of the republic.

Those enterprises and establishments which have a depot of measuring devices for various measurements the metrological service comprises offices of chief metrologists or central laboratories of measuring devices which consist of laboratories and control-checking stations for individual types of measurements.

Those enterprises where one or only a few types of measurements are required, the laboratories are subordinated to the manager of the enterprise or the chief engineer.

The organization, structure, functions and tasks of the departmental metrological services are outlined in a special status developed by the ministries in co-ordination with the Commissioner for the Committee of Standards.

It is the duty of the central metrological services at



the ministries and departments to set up departmental metrological services directly at the enterprises under plans approved by the ministry or department in accordance with the regulations on metrological services of ministries and departments.

The enterprises and establishments are given permission to check and repair measuring devices after the state supervision laboratory checks on the existence of necessary conditions providing quality checking (referable standard gauges, instruments, qualified specialists, premises, etc).

The Central laboratory of state supervision trains and commissions departmental inspectors for these services through the training and consultation centre of the USSR Standardization and Metrology Institute in Tashkent.

The departmental metrological services in Uzbekistan have been developing over the past three decades. Initially the departmental metrological bodies conducted periodical checking during the period from one state inspection to another. Their functions were limited to checking and the absence of instruments allowed them to deal with only a small range of measuring devices.

Since 1954 the departmental services at enterprises have been allowed to conduct checking of measuring devices under periodical control by the state metrological services of the republic. At present the departmental bodies check almost one third of all the measuring devices, totaling 96 types. The departmental services have at their disposal modern instruments and devices.

The measuring and testing devices under departmental supervision are constantly improved and the supervision is

all the better at those enterprises which have centralized metrological services.

The work of the departmental metrological services has changed considerably, and they perform the following functions which are aimed at ensuring unity and correctness of measurements at all stages -- from designing to quality control :

- ensuring faultless and reliable performance of measuring and testing devices ; not all services conduct supervision of testing devices, but the laboratory of state supervision is about to introduce this at various enterprises ;

- studying the performance of measuring devices and establishing the periodicity of their checking ;

- organization of checking laboratories and performance of checking and repairs of measuring devices used at the enterprise ;

- control over the correct choice of measuring devices and supervision over adherence to state standards of measuring methods ;

- development of plans and introduction of progressive measuring devices ;

- supervision over correct utilization and conformity of measuring devices and methods to normative-technical documentation ;

- elaboration of methods and means of measuring.

In trade, consumer cooperatives, machine supply to agriculture and other branches of the national economy, departmental supervision is enforced through the regional bodies of supervision over repairs of measuring devices which are subordinated to the chief metrologist of the given department. These bodies have at their disposal stationary units in the

regional centres and mobile laboratories and workshops.

In order to speed up services these regional supervision bodies have an exchange fund of measuring instruments.

The efficiency of the departmental metrological service is seen not only in improvements in the level of measurements but also in the economic effect. In 1969 the departmental services at 28 industrial enterprises in Uzbekistan saved a total of 2 million roubles.

It is also practised to conduct engineering supervision on a contract basis with the establishments concerned. The bodies responsible for this work ensure maintenance of measuring devices and guarantee their timely checking by state supervision laboratories.

A hire service of high precision instruments was opened in Tashkent under the office of the Commissioner for the Committee of Standards in 1969 with the aim of ensuring maximum utilization of available measuring instruments. This hire centre provides the industrial enterprises, establishments and research institutes of Uzbekistan with high-precision instruments at a certain charge, plans the hire service, conducts small repairs of instruments, provides metrological services to enterprises and research centres and performs complicated measurements directly at the hire centre.

It is planned to develop the hire service in other cities of Uzbekistan as well. This system is very profitable because it ensures maximum use of expensive high precision instruments. The enterprises and research centres no longer need purchase these instruments which they actually need for a short period.

The Central laboratory of state supervision for standards and measuring devices and other laboratories in Uzbekistan have highly-trained metrology specialists capable of performing high precision measurements.

There are also special enterprises for the repair of measuring devices -- the "Uzrempribor" plant under the USSR "Soyuzglavpriborremont" Trust of the Committee for Standards is one of them. Besides a number of major enterprises repair their measuring instruments themselves. However, after each repair the instruments must be certified by the laboratory of state supervision.

All these activities in the field of standardization and metrology are conducted under the direct methods and technical guidance of the Office of the Commissioner for the Committee of Standards, which in its turn is subordinated to the Council of Ministers of the Uzbek Republic and the Committee for Standards, Measures and Measuring Instruments under the USSR Council of Ministers.

The further growth of industry, agriculture, science and engineering in Uzbekistan calls for a radical improvement in the metrological services of Uzbekistan and their development on a scientific basis. This task will be coped with by the Uzbek Standardization and Metrology Research Institute soon to be opened in the republic.

The Uzbek Republic has highly trained specialists, a well developed industry and science and the material resources to further develop metrology. It is hoped that the experience accumulated by Soviet Uzbekistan in organizing metrological services and ensuring unity of measures will be useful to the developing countries



**14. 3. 72**