NIKIFOROV, G. D.

USSR/Miscellaneous---machine construction

Card 1/1

Authors : Alov, A. A., Dr. in Tech. Sciences, Prof.; and Nikiforov, G. D., Cand. in Tech. Sciences

Title : Automatic arc-welding of aluminum alloys

Periodical : Vest. mash. 34/3, 60-63, Mar/1954

Abstract : For joining aluminum alloy parts the acetylene-oxygen-flame method of welding has been widely used. Recently the argon-arc method of welding has been introduced. The former method is handwork and is slower and requires great heat near the seams, inhibiting its use on parts sensitive to heat. The latter method does not require a special flux but the high cost of argon is an obstacle. Petrov's arc is adequate for producing the great heat required to melt aluminum. Researches in 1951 brought out a method of automatic welding with a flux layer, which is simple and not costly.

Institution : ......

Submitted : ......

135-58-8-2/20

AUTHOR: Nikiforov, G.D., Candidate of Technical Sciences

TITLE: Automatic Arc Welding of "AMg6T"-Alloy Sheets by a Melting Electrode Over a Flux Layer (Avtomaticheskaya dugovaya svarka plavyashchimsya elektrodom po sloyu flyusa listov iz splava AMg6T)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 8, pp 7-10 (USSR)

ABSTRACT: A new alloy ("Amg6T") of good weldability and a comparatively high strength, containing 6.5% magnesium, up to 0.7% manganese and up to 0.3% titanium, was recently developed. Fist tests to weld this alloy over a layer of "MATI-1" and "MATI-5" fluxes (composition given in table 1), carried out with the participation of Yu. S. Dolgov, Senior Teacher and A.G. Makhortova, Assistant, Engineer, revealed abundant gas liberation caused by magnesium evaporation. Welding "AMg6T"-alloy plates of 6 - 9 mm thickness of a MATI-10 flux layer gives weld joints of a strength similar to that of the base metal. As magnesium losses reduce the strength of the seam metal, measures must be taken to increase magnesium content in the seam metal. In welding

Card 1/2 "AMg6T"-alloys, the use of flux which contains a consider-

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Automatic Arc Welding of "AMg6T"-Alloy Sheets by a Melting Electrode Over a Flux Layer

able amount of sodium fluoride must be avoided. Metallographic investigations did not reveal any considerable grain growth in zones adjacent to seams. There are 6 tables, 3 photos, 1 graph, 1 drawing and 2 Soviet references.

ASSOCIATION: MATI

1. Arc welding--Automatic 2. Arc welding--Electrodes
3. Metal alloys--Applications

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NIKIFOROV G.D.

25 (1) SOV/135-59-4-15/16

AUTHOR: Maslov, G. A., Docent, Scientific Secretary of the Welding Section

TITLE: A Summary of Work Done by the Welding Sections of NTO MAShPROM in 1958 (Itogi raboty sektsiy svarki NTO MAShPROM za 1958 g)

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 4, pp 42 - 44 (USSR)

ABSTRACT: Conferences organized by the central (TsP) and the 21 existing oblast' Welding Sections of NTO MAShPROM are listed, starting with 3 All-Union conferences held in 1958. The Sections activities included the organization of conferences, courses (seminars), excursions to plants within the USSR and reports of members after journeys abroad, lectures and competitions. Annual sessions on scientific and practical welding work have become traditional with the Moscow and Leningrad Sections. Contacts with foreign welding organizations have been extended, and the TsP was represented at the Vienna congress of the International Welding Institute by Professors K. V. Lyubavskiy and

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SOV/135-59-4-15/18

A Summary of Work Done by the Welding Sections of NTO MAShPROM in 1958

N. O. Okerblom. It has been accepted as member of the Institute and is preparing for the next international congress, at which there will be a competition for the best work on repair welding. Candidate of Technical Sciences G. D. Nikiforov (Moscow), Engineer V. G. Radchenko (Barnaul), and Candidate of Technical Sciences I. R. Patskevich (Chelyabinsk), took part in the conference in Hungary, where G. D. Nikiforov read a report "Automatic Arc Welding Aluminum Alloys", and V. G. Radchenko "Electric Slag Welding in Building Boilers". Professor K. V. Lyubavskiy and Engineer Ye. P. L'vova were at the conference in Czechoslovakia. The following salient facts are also mentioned: 1) The Rostov Section directed work on the use of natural gas for welding and the method is being employed at the plants "Rostsel'mash", "Krasnyy Aksay", "Prodmash", "Neftemash", "Krasnyy Kotel'shchik" and others; 2) the Rostov Sovnarkhoz started construction of an electrode factory at Krasnyy Sulin on the recommendation of the Rostov Section; 3) there is a competition in progress for the best work on development and practical introduction of advanced welding

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A Summary of Work Done by the Welding Sections of NTO MAShPROM in 1958

technique, with 116 NTO members participating and 29 projects submitted (the results will be published in the following issue, Nr 5, of this periodical). The TsP has been designated to coordinate work in the field of welding in the country and addressed all NTOs on this matter. The first result was an All-Union conference on the prospective development of welding, organized by the Gosplan of the USSR, VNIIESO, GNTK and NTO MAShPROM.

ASSOCIATION: TsP NTO MAShPROM.

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AUTHORS: Nikiforov, G. D., Candidate of Technical Sciences, Makhortova, A. G., Engineer

TITLE: A Method of Determining Hydrogen Content in Seam Metal and the Equipment Used

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 10, pp. 13-16

TEXT: At the department "Technology of the Welding Practice" of MATI a method was developed an an equipment devised for determining the hydrogen content in Al welds. Two 7 mm thick pure aluminum plates with an initial H content of 0.08 cm^3/100 g, were welded on a copper backing in argon atmosphere with consumable electrodes of 1.3 mm diameter and 0.62 cm^3/100 H content. Specimens were turned from the central portion of the weld joint and stored in tetrachloride carbon. The determination of H was made by the method of vacuum extraction on an installation developed with the assistance of A. P. Gudchenko, using a palladium capillary instead of an oxidizer. The method is based on the heating of the specimen to a temperature at which a sufficiently effective H liberation takes place. Heating is performed in a vacuum and the amount of gas liberated is determined from changes in the pressure at a given volume of the

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A Method of Determining Hydrogen Content in Seam Metal and the Equipment Used

system. The installation (Fig. 1, 2) includes both an extracting and analyzing system. The extracting system consists of a preheating furnace with a quartz tube, a charge device, diffusion pumps and mercury seals. The analyzing system includes a compression manometer for the measurement of the gas pressure, a gas-collecting balloon and a palladium capillary placed in a heater. Evacuation is performed by a forevacuum oil pump and two mercury vapor diffusion pumps. The installation ensures high hermeticity and accuracy of measurement of the changes in the volume. The total H content in the metal is found by summing up the hydrogen in the pores and in the solution. The H content in the solution is determined by vacuum extraction; H in the pores is found by the weight method. Special experiments were made to set up optimum conditions of H analysis at an initial H content in the ingot as high as 0.69 cm^3/100 g, which are: preliminary evacuation time: 2.5 hours; time of extraction from the specimen: 1 hour; time of H diffusion through the capillary: 10 min. The method and equipment may be used to determine hydrogen in the seam when welding various metals, to study kinetics of H and metal interaction during welding process; to determine the effect of H on the properties of the seam metal and to reveal various defects arising in the weld joints. There are 4 tables, 7 figures, and 2 Soviet references.

ASSOCIATION: MATI

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18(7) SOV/135-59-6-8/20

AUTHOR: Nikiforov, G. D., Candidate of Technical Sciences

TITLE: **Comparison of Methods of Estimating Weld Metals Porosity**

PERIODICAL: Svarochnoye Proizvodstvo, 1959, Nr 6, pp 26-29 (USSR)

ABSTRACT: The author **compares methods of evaluating the porosity of weld metal. A new method** has been developed by MATI. The metal is evaluated, and the seam porosity is found by fixing the loss of weight of the metal. Engineer A. G. Makhortova participated in the experimental part of the investigation. A model for the evaluation comparison method of determining the porosity of seam welds is given in Figure 2. An evaluation instrument is shown in Figure 3. Figure 4 shows the exterior of the seams of the model. The investigation was done on 4 seams of a MATI-31 plate (8 mm) which had been produced by welding conditions of the model. Table 2 represents the results of the evaluation comparison method of determining weld metal porosity. In Figure 4 there are the photographs of the

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Comparison of Methods of Estimating Weld Metals Porosity

exterior of the seams, the radiographs, the macro- and micro- sections, and the fractions of the model. The author states that the evaluation comparison method is a more objective way of determining the degree of porosity of weld metals. Even the smallest degree of porosity is stated. The application of this method in connection with the method of roentgenizing and the investigation of the macro- and micro-sections and fractions of the seams proves the possibility of determining the smallest degrees of porosity and of the distribution of the pores in the seam welds. There are 8 diagrams and 3 Soviet references.

ASSOCIATION: Kafedra "Tekhnologiya svarochnogo proizvodstva" MATI (Chair of Technology of Welding Production MATI)

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A006/A001

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AUTHORS: Nikiforov, G. D., Candidate of Technical Sciences, Makhortova, A. G., Engineer

TITLE: Conditions of Pore Formation When Welding Aluminum and its Alloys

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 3, pp. 5-8

TEXT: Numerous investigations have shown that the basic cause for the appearance of pores in the metal during casting and welding of aluminum and its alloys, is the liberation of dissolved hydrogen out of the liquid metal during cooling. The origination of a hydrogen bubble in the liquid metal depends on the following basic conditions: the hydrogen pressure in the bubble must be higher than the external pressure; microcavities with a final magnitude of radius ($r \rightarrow P_{H_2} \rightarrow \infty$) must be present in the metal; the pressure of molecular hydrogen must be sufficiently high. The authors calculated changes in hydrogen pressure depending on its concentration in the metal at 660, 700, 750 and 800°C, and determined minimum values of the radii of microcavities, necessary for the formation of bubbles at the same temperatures and at different concentrations of hydrogen dissolved in the pool. The results obtained are given in Figure 2 and show that

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Conditions of Pore Formation When Welding Aluminum and its Alloys

the formation of bubbles at 600°C occurs at hydrogen concentrations of 0.7, 0.8 and 0.9 cm^3/100 g in the presence of microcavities with a minimum radius of 0.357; 0.03105, and 0.0192 mm respectively. At higher temperatures the hydrogen concentration in the pool must be higher. To confirm the aforementioned calculational data the authors carried out experimental welding and building-up of aluminum plates containing 0.08 cm^3/100 g hydrogen, using 1.3 mm wire with 0.08 and 0.62 cm^3/100 g hydrogen. Welding of plates and building up of beads was made with 240 amps current; 17 v arc voltage; 18 m/hr welding speed. Argon with a dew point minus 35 - 45°C was used. The different hydrogen content in the welds was assured by different treatment of the plates and the wires. The hydrogen content in the weld was determined with the aid of methods and equipment developed by MATI (Ref. 1). Results obtained are given in Table 1 and Figure 3. The data obtained show that the formation of pores in the weld metal is observed only at a hydrogen concentration of over 0.7 cm^3/100 g. At a lesser content of dissolved hydrogen, pores were not revealed; this confirms the aforementioned concepts. At a hydrogen content within 0.7 - 1.3 cm^3/100 g, the amount of hydrogen in the solution and the pores increases proportionally to the total content of hydrogen in the weld. At a

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higher hydrogen concentration in the metal its content in the solution remains practically constant attaining 1.5 - 1.7 cm^3/100 g. All the hydrogen above this limit is separated out in the form of pores. The authors based their concepts on the assumption that the liquid metal suffers an 1-atm pressure from the surrounding atmosphere. This is applicable for pure aluminum. When welding aluminum alloys, a portion of the liquid enclosed between the crystals, which were already formed, is not subjected to external pressure. In this case bubble formation can be expected at an internal pressure below 1 atm, and, consequently, at a lower hydrogen concentration in the pool. The possibility is investigated of eliminating hydrogen bubbles floating up in the pool. It can be assumed that degassing of the metal as a result of the floating up of bubbles is only possible at a hydrogen concentration in the pool exceeding 0.69 cm^3/100 g. The conclusion is drawn that the elimination of bubbles depends on the initial hydrogen concentration in the pool. Under conditions of metal cooling, as in welding, the elimination of bubbles from the pool is only possible when welding gasified metal and is hardly probable in the case of a metal with a relatively low content of dissolved hydrogen. To check these conclusions the authors determined the hydrogen content of beads welded on aluminum plates with a different hydrogen content, using 1.3 mm

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Conditions of Pore Formation When Welding Aluminum and its Alloys

aluminum wire with different degrees of gasification. Data obtained (Table 2) confirm the aforementioned concepts, insofar as the total hydrogen content in the weld and the pores decreases at a higher initial hydrogen concentration in the pool. The distribution of pores in the weld metal is also in a satisfactory agreement with the theories presented.

Figure 2:

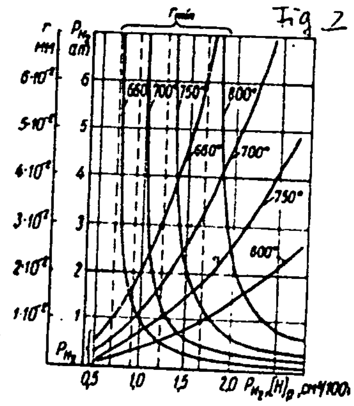

Figure 2:
Changes in the hydrogen pressure P_{H_2} and minimum values of the radius r_{min} of nucleation micro-cavities depending on the concentration of $[H]_S$ dissolved in the metal for 660, 700, 750, and 800°C.

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Conditions of Pore Formation When Welding Aluminum and its Alloys

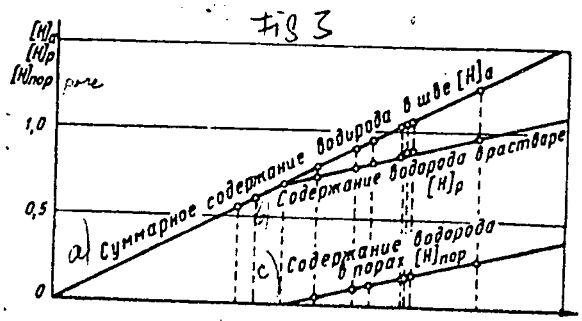
Figure 3:

Hydrogen distribution in the weld metal between the pores and the solution

a) Total hydrogen content in the weld $[H]_a$

b) Hydrogen content in the solution $[H]_S$

c) Hydrogen content in the pores $[H]_{pore}$



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Conditions of Pore Formation When Welding Aluminum and its Alloys

Table 1:

Hydrogen concentration in $cm^3/100$ g			Hydrogen concentration in the weld metal in $cm^3/100$ g		
In the plates	in the wire	in the welding pool (initial)	in the solution $[H]_S$	in the pores [H] pore	total $[H]_a$
0.08	0.62	0.3582	0.684	-	0.685
0.08	0.62	0.2906	0.884	0.17	1.064
0.08	0.08	0.08	0.54	-	0.54
0.08	0.08	0.08	0.59	-	0.59
0.08	0.62	0.737	0.72	0.064	0.784
0.08	0.62	0.2582	0.687	-	0.687
0.08	0.62	0.2582	0.789	0.108	0.897
0.08	0.62	0.2906	0.872	0.17	0.042
0.08	0.62	0.3338	0.98	0.28	1.26
0.08	0.62	0.2744	0.819	0.13	0.949
0.08	0.62	0.2582	0.89	0.16	1.050

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Conditions of Pore Formation When Welding Aluminum and its Alloys

Table 2:

Hydrogen concentration in $cm^3/100$ g			Hydrogen content in the weld metal in $cm^3/100$ g		
In the plates	in the wire	in the welding pool	in the solution $[H]_S$	in the $[H]$ pore	total $[H]_a$
0.08	0.08	0.08	1.03	0.45	1.48
0.945	0.08	0.6941	1.14	0.3	1.44
0.945	0.62	0.8442	1.16	0.15	1.31

There are 5 figures, 2 tables and 3 Soviet references.

ASSOCIATION: MATI

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20226

S/135/61/000/004/012/012
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AUTHORS: Nikiforov, G. D., Candidate of Technical Sciences, Makarova, ... Engineer

TITLE: Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 4, pp. 6 - 10

TEXT: In spite of a great number of publications on the ... of pore formation in welding of aluminum and its alloys, many basic problems in this field have not been solved. In particular, it is as yet not known which ... the most dangerous hydrogen sources from the point of view of its ... centration in the welding pool. The authors carried out investigations ... more precise data on this problem, which predetermines the selection of ... means against pore formation. Aluminum plates, 7 mm thick, were welded ... up under the following conditions: 240 amp current, 18 v arc voltage, welding speed 18 m/hr; argon consumption 10 - 15 l/min; diameter of filler wire ... mm, temperature of heating the backing plate 50 - 60°C; controlled moisture of argon and the surrounding atmosphere. The plates and wire were made from ingots ...

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ed at MATI by semi-continuous casting. Hydrogen content in the ingots was [illegible] by vacuum extraction. Plates rolled from the ingots were treated prior to welding by various variants given in Table 1. After welding, the hydrogen in the weld metal was determined using methods and equipment described in Ref. 1. The results obtained show that in all the experimental welds an increase in the hydrogen content was observed as compared to its initial concentration in the [illegible]. The total volume of pores in the weld metal depends on their hydrogen content, whereby the formation of the first pores was observed at hydrogen concentrations [illegible] per 100 g of metal. It was found that the basic source of hydrogen was the moisture absorbed on the surface of the wire and the base metal. Additional experiments were carried out to determine the amount of hydrogen liberated during heating up to 650°C from the wire and plate surface, treated differently and after different storage time (Fig. 2, 3). As a result of the experimental investigation the following recommendations are given to prevent pore formation in the weld metal during welding of Al and its alloys: 1. Etching of the wire and the parts should be performed in a solution of orthophosphoric acid by variant 1 (Table 1). In some cases the wire should be electropolished. It is not recommended to clean the edges with an iron brush. 2. Storage of the wire and the parts prior to welding for more than 5 - 6 days should be avoided. Gloves should be used when [illegible] the wire into the container. 3. It is recommended to use large-diameter wire [illegible]

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Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

that its specific surface and consequently the amount of hydrogen additionally dissolved in the weld metal might be reduced. 4. The part of the base metal in the formation of the weld should be increased. Therefore welding should not be performed on intensively cooled copper plates having on their surface a higher content of adsorbed moisture. The latter may participate in the reaction with the metal and cause additional hydrogen dissolving in the pool. 5. Wire and parts brought from a cold into a warm room should not be welded to prevent condensation of moisture on their surfaces, which is equivalent to artificial wetting. Further investigations should be directed on the development of efficient methods of preparing the surfaces of parts, and on efficient storage conditions. Means should be found of binding the hydrogen in the gaseous phase into compounds which are not soluble in the metal and are stable at high temperatures. There are 2 tables and 5 figures, and 5 Soviet references.

ASSOCIATION: MATI

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Sources of Hydrogen Solutle in the Weld Metal During Welding of Aluminum

Table 1.

Number of prescription	Composition of etching bath	Technology of etching and subsequent treatment
1	Orthophosphoric acid 25 cm^3, potassium bichromate 0.01 - 0.03 g; water 1,000 cm^3	Bath temperature 30°C, etching time 15 min; washing in warm water, rubbing with a cloth. Washing in cold running water Drying at 60°C.
2	Caustic soda 50 g; water 1,000 cm^3	Bath temperature 60°C. Etching time 20 min. Washing in cold running water. Claryfying in 15 % HNO_3 solution at 60-65°C. Washing in warm water. Washing in cold water. Drying at 60°C.
		Electrolytical polishing

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Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

Figure 2:

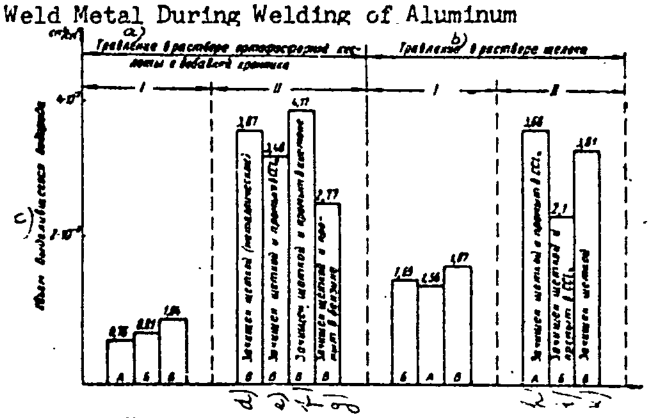

Рис. 2. Изменение количества водорода, выделяющегося с 1 $см^2$ поверхности пластин, прошедших различную обработку: А — хранение 1 сутки; Б — хранение 2 суток; В — хранение 10 суток: I — без дополнительной обработки; II — с дополнительной обработкой перед анализом

Changes in the hydrogen content, liberated from 1 cm^2 of plate surfaces differently treated: A - storage for 24 h; B - storage for 10 days; I - without additional treatment; II - with additional treatment prior to analysis a) etching in a solution of orthophosphoric acid with addition of potassium bichromate; b) Etching in alkaline solution; c) Volume of hydrogen liberated; d) cleaned with metallic brush; e) cleaned with brush and washed in CCl_4; f) Cleaned with brush and washed in acetone; g) Cleaned with brush and washed in benzine; h) cleaned with brush and washed in CCl_4 i) Cleaned with brush and washed in CCl_4; k) cleaned with brush

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Sources of Hydrogen Soluble in the Weld Metal During Welding of Aluminum

Figure 3:

Changes in the hydrogen content liberated from 1 cm^2 of wire surface differently treated: I - the wire was etched in a solution of orthophosphoric acid with addition of potassium bichromate; II - wire after electropolishing
a) Volume of hydrogen liberated
b) Washed in CCl_4; etched in a solution of orthophosphoric acid with addition of potassium bichromate
c) Washed in CCl_4 and roasted at 400°C for 1 h.

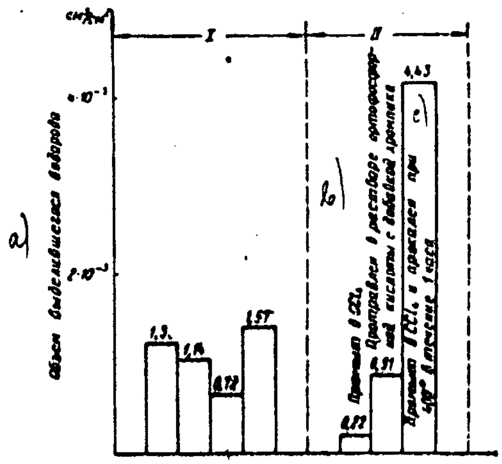

Рис. 3. Изменение количества водорода, выделяющегося с 1 см² поверхности проволоки, прошедшей различную обработку: I — проволока протравлена в растворе ортофосфорной кислоты с добавкой хромпика; II — проволока после электрополировки.

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1 2380

AUTHORS: Nikiforov, G. D., Candidate of Technical Sciences, Silant'yeva, S. A., Engineer

TITLE: Nucleation and development of pores in welding AMr6 (AMg6) alloy

PERIODICAL: Svarochnoye proizvodstvo, no. 12, 1962, 1 - 5

TEXT: Information is given on results of investigating pore formation in welding beads onto AMg6 alloy plates with a wire of the same material and of pure aluminum. It was found that pores are formed in welding the AMg6 alloy, as a result of a developed interaction between the liquid metal and the moisture, contained in the particles of the oxide film; these particles are present in the welding pool when the base and filler metal have melted. At a greater thickness of the oxide film, the effect of moisture may be inhibited until completed crystallization stages. Then, besides pores of regular shape, which have partially floated up to the surface, cavities of irregular, branched shape are formed as a result of displacement of eutectic by liberated hydrogen. Bulging of the metal in weld adjacent zones and the appearance of cracks in the joints,

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Nucleation and development of...

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which have been previously produced by multi-pass welding, are connected with diffusion of hydrogen dissolved into microcavities and with the increasing pressure inside same. The basic measure to prevent pore formation in welding the AMg6 alloy is a reduction of the oxide film thickness on the surface of the wire and the parts to be welded. For this purpose it is recommended to conduct the welding process with a wire, plated with pure aluminum or having a polished surface. There are 8 figures and 3 tables.

ASSOCIATION: MATI

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NIKIFOROV, G.D., kand.tekhn.nauk; SILANT'YEVA, S.A., inzh.; KAINOVA, G.Ye., inzh.

Measures to control porosities in welding the AMg6 alloy. Svar. proizv. no.1:26-29 Ja '63. (MIRA 16:2)

1. Moskovskiy aviatsionnyy tekhnologicheskiy institut.
(Aluminum-manganese alloys—Welding)

BR

ACCESSION NR: AT4012724 S/2981/63/000/002/0135/0140

AUTHOR: Nikiforov, G. D.; Zhiznyakov, S. N.; Matveyev, B. I.; Bazurina, Ye. Ya.

TITLE: SAP fusion welding

SOURCE: Alyuminiyevy*ye splavy*. Sbornik statey, no. 2. Spechenny*ye splavy*. Moscow, 1963, 135-140

TOPIC TAGS: aluminum, sintered aluminum, aluminum powder, sintered aluminum powder, SAP, aluminum welding, SAP welding, fusion welding, arc welding

ABSTRACT: The low susceptibility of SAP to welding interferes with its wider use as a light, heat-resistant material. A variety of welding tests (submerged arc welding with an AMg6 aluminum alloy filler rod, argon submerged arc welding with a tungsten electrode) were conducted. It was concluded that SAP produced by the common process is unfit for fusion welding but that modified SAP, developed by the authors, compares well with other aluminum alloys in both argon- and submerged arc fusion welding. The ultimate strength of the welds obtained amounts to 24-28 kg/mm^2 at room temperature and to 5-6 kg/mm^2 at 500C. A better manufacturing technology and welding procedure may bring the former figure up to 30-35 kg/mm^2. Prolonged treatment of the welds at 400-500C has no effect on their ultimate strength at room temperature. Orig. art. has: 7 figures and 2 tables.

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ACCESSION NR: AT4012724

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 13Feb64

ENCL: 00

SUB CODE: ML

NO REF SOV: 000

OTHER: 000

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ACCESSION NR: AP4040693 S/0135/64/000/006/0001/0004

AUTHOR: Nikiforov, G. D. (Candidate of technical sciences); Zhiznyakov, S. N. (Engineer)

TITLE: Weldability of heat-resistant SAP material in fusion welding

SOURCE: Svarochnoye proizvodstvo, no. 6 (630), 1964, 1-4

TOPIC TAGS: sintered aluminum powder, SAP, SAP weldability, SAP fusion welding, SAP weld, weld property, TIG weld, MIG weld

ABSTRACT: The unsatisfactory weldability of SAP parts noted in fusion welding is caused chiefly by the presence of oxide films enveloping each metal particle. The weldability can be greatly improved by vacuum annealing of SAP billets at 650—680C prior to rolling. Weldable SAP sheets are obtained in this way. They have higher ductility and almost the same tensile and yield strength as those of conventionally processed SAP sheets. Weldable SAP sheets can be successfully welded with an argon shielded arc, with or without flux. It is advisable to weld 1.0-mm-thick sheets without any

ACCESSION NR: AP4040693

gap, using the TIG process. Sheets 1.5 mm thick can be welded with or without a gap, but in the latter case, the MIG process is recommended. The strength of SAP welds made with AMg-6 filler or electrode wire is equal to 81—100% of the strength of the base metal at room temperature and 96% at 500C. Weldable SAP can be welded successfully to other aluminum alloys. Orig. art. has: 8 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00 ATD PRESS: 3061 ENCL: 00

SUB CODE: MM NO REF SOV: 002 OTHER: 008

Card 2/2

NIKIFOROV, G.D.; BOBROV, G.V.

Improving the qualification of welding engineers. Avtom. svar. 17 no.7:96 Jl '64. (MIRA 17:8)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001136920007-2"

L 21418-66 EWT(l)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/EWP(k) IJP(c) JD/HM

ACC NR: AP6008811 SOURCE CODE: UR/0135/66/000/003/0002/0006

AUTHOR: Nikiforov, G. D. (Doctor of technical sciences); Boldyrev, A.M. (Engineer); Bukurov, V. I. (Engineer)

ORG: MATI

TITLE: The mechanism of porosity formation and the effect of some welding conditions on the porosity in AMg6 alloy welds

SOURCE: Svarochnoye proizvodstvo, no. 3, 1966, 2-6

TOPIC TAGS: aluminum alloy, magnesium containing alloy, alloy welding, TIG welding, MIG welding, alloy weld, weld porosity, porosity formation

ABSTRACT: A series of experiments has been conducted with TIG and MIG welding of AMg6 aluminum alloy sheets and plates 2—10 mm thick in order to determine the effect of some variables of the welding process on weld porosity. It was found that in welding sections up to 4—5 mm thick, most of the hydrogen originates from the surface of the base metal. In welding heavier sections, the surface of the filler material becomes the main source of hydrogen. Alkaline pickling followed by mechanical cleaning (with a scraper or wire brush) shortly before welding ensure satisfactory cleanliness of the base-metal surface. The filler (electrode) wire is best cleaned by electrolytic polishing, after which the

Card 1/2 UDC: 621.791.753.93.019:669.715

L 21418-66

ACC NR: AP6008811

wire can be stored for a long time. Alkaline pickling is satisfactory only if the wire is used immediately after pickling. Otherwise, the wire rapidly absorbs moisture. Vacuum annealing after alkaline pickling brings about only slight improvement. It appears that hydrogen absorbed (as moisture) on the surface of electropolished wire first dissolves in molten metal and evolves in the form of small bubbles during cooling. In the case of wire pickled in alkali, molecular hydrogen does not dissolve, but forms bubbles immediately. Decreasing the specific heat input (by increasing welding speed) reduces the total volume of pores by delaying the evolution of dissolved hydrogen and the coagulation of the small bubbles into big ones. In multilayer welds, however, the bubbles [illegible] coagulate during the deposition of the next layers, which would cause the tear and microcrack formation. Orig. art. has: 10 figures and 5 tables. [BV]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 002/ ATD PRESS: 4/221

Card 2/2

GREYM, I.A., kandidat tekhnicheskikh nauk; NIKIFOROV, G.G.; KORNEYEV, B.N.

DD-2 differential range finder. Geod. i kart. no.4:24-31 Je '56.
(Range finding) (MLRA 9:10)

NIKIFOROV, G.G.

Accuracy of the vernier of rods used with the DD3 range finder. Geod. i kart. no.12:22-23 D '61. (MIRA 15:1)
(Surveying--Instruments)

NIKIFOROV, G. I.

NIKIFOROV, G. I.--"Procedure of Training for Marathon Running." *(Dissertations for Degrees in Science and Engineering Defended at USSR Higher Educational Institutions.) State Order of Lenin and Order of Red Banner Inst of Physical Culture imeni P. F. Lesgaft, Leningrad 1955

SO: Knizhnaya Letopis', No. 25, 18 Jun 1955

* For Degree of Candidate in Pedagogical Sciences

SOKOLOVSKIY, M.B.; NIKIFOROV, G.I.

Urgent problems in connection with the improvement of the quality of raw leather. Kozh.-obuv.prom. 3 no.1:3-6 Ja '61. (MIRA 14:5)
(Leather)

SOKOLOVSKIY, M.B.; NIKIFOROV, G.I.

Improve the primary processing of raw leather. Kozh.-obuv.prom. 3 no.9:11-14 S '61. (MIRA 14:11)
(Leather industry)

NIKIFOROV, G.M.

RYNKOVOY, V.K., podpolkovnik med.sluzhby, NIKIFOROV, G.M., starshiy leytenant med.sluzhby

Photographic device for marking lines on the tape of an electrocardiograph. Voen.med.zhur. no.12:75-76 D'57 (MIRA 11:5)
(ELECTROCARDIOGRAPHY)

AGRANONIK, Ye.Z., kand.tekhn.nauk; BELOV, A.N., dotsent; GLADKOV, A.M., inzh.; GLUSKIN, S.A., inzh.; IVANOV, L.V., dotsent, kand.tekhn. nauk; LIPKIN, Ye.V., kand.tekhn.nauk; NIKIFOROV, G.N., dotsent, kand.tekhn.nauk; PESHENSON, I.B., inzh.; PREGER, Ye.A., dotsent, kand.tekhn.nauk; PYATOV, Ya.N., inzh.; ROKHCHIN, Ye.Z., inzh.; FEDOROV, N.F., prof., doktor tekhn.nauk; SHVARTS, M.B., inzh.; SHIGORIN, G.G., dotsent, kand.tekhn.nauk; SHIFRIN, S.M., prof., doktor tekhn.nauk; POPRUGIN, I.V., inzh., retsenzent; KATS, K.F., inzh., retsenzent; ROTENBERG, A.S., red.izd-va; VORONETSKAYA, L.V., tekhn.red.

[Manual of water-supply engineering and sewerage] Spravochnik po vodosnabzheniiu i kanalizatsii. Pod red. N.F.Fedorova. Leningrad, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 410 p. (MIRA 13:3)

1. Moscow. Gosudarstvennyy proyektnyy institut Vodokanalproyekt. Leningradskoye otdeleniye.
(Water-supply engineering) (Sewerage)

AGRANONIK, Ye.Z., kand.tekhn.nauk; BELOV, A.N., dotsent; GLADKOV, A.M., inzh.; GLUSKIN, S.A., inzh.; IVANOV, L.V., dotsent, kand.tekhn. nauk; LIPKIN, Ye.V., kand.tekhn.nauk; NIKIFOROV, G.N., dotsent, kand.tekhn.nauk; PESENSON, I.B., inzh.; PREGER, Ye.A., dotsent, kand.tekhn.nauk; PYATOV, Ya.N., inzh.; ROKHCHIN, Ye.Z., inzh.; FEDOROV, N.F., prof., doktor tekhn.nauk; SHVARTS, R.B., inzh.; SHIGORIN, G.G., dotsent, kand.tekhn.nauk; SHIFRIN, S.M., prof., doktor tekhn.nauk; ROTENBERG, A.S., red.izd-va; VORONETSKAYA, L.V., tekhn.red.

[Water-supply and sewerage manual] Spravochnik po vodosnabzheniiu i kanalizatsii. Pod red. N.F.Fedorova. Izd.2., ispr. i dop. Leningrad, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 420 p. (MIRA 13:12)

1. Moscow. Vodokanalproyekt. Leningradskoye otdeleniye. (Water-supply engineering) (Sewerage)

KASTAL'SKIY, Aleksandr Aleksandrovich, doktor tekhn. nauk, prof.; MINTS, Daniil Maksimovich, doktor tekhn.nauk, prof. Prinimali uchastiye: MIKHAYLOV, V.A., kand. tekhn. nauk; NOVAKOVSKIY, N.S.; ABRAMOV, N.N., doktor tekhn. nauk, prof., retsenzent; NIKIFOROV, G.N., kand. tekhn. nauk, dots., retsenzent; PREGER, Ye.A., retsenzent; BULYGIN, A.K., retsenzent; LIPKIN, Ye.V., retsenzent; VOZNAYA, N.F., kand. khim. nauk, retsenzent; BELOV, A.N., dots., retsenzent; AGRANONIK, Ye.Z., kand. tekhn. nauk, retsenzent; NOVIKOV, P.V., inzh., retsenzent; SHVARTS, R.B., inzh., retsenzent; KONYUSHKOV, A.M., kand. tekhn.nauk, nauchnyy red.; NIKOLAYEVA, T.D., red. izd-va; GOROKHOVA, S.S., tekhn. red.

[Water treatments for drinking and for industrial uses]Podgotovka vody dlia pit'evogo i promyshlennogo vodosnabzheniia. Moskva, Gos.izd-vo "Vysshaia shkola," 1962. 557 p.

(MIRA 16:1)

1. Kafedra vodosnabzheniya Leningradskogo inzhenerno-stroitel'nogo instituta (for Nikiforov, Preger, Bulygin, Lipkin, Voznaya, Belov, Agranonik).

(Water--Purification)

NIKIFOROV, G., inzh. khimik

Softening of water for industrial, drinking, and other purposes. Biol i khim 4 no.4:18-22 '62.

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001136920007-2"

NIKIFOROV, G., inzh.-khimik

Bentonite. Priroda Bulg 11 no.5:53-58 S-O '62.

NIKIFOROV, G. N., I A. A. MINKH, and Vyshitkov, M. A.

"The Influence of Ionized Air on the Working Capacity and Vitamin Metabolism."

report to be presented by Prof. A. A. Minkh at the First Intl. Conf. on Ionization of the Air, Phila, Pa. 16-17 Oct. 1961

NIKIFOROV, G.V., inzh.; KAMENSKIY, Yu.A., inzh.

Remote control of marine steam engines. Izobr.v SSSR 2 no.10:21-22
O '57. (MIRA 10:11)

(Marine engines) (Remote control)

STORCHAK, I.M., nauchnyy rabotnik; SKOROKHOD, I.I., nauchnyy rabotnik, NIKIFOROV, G.V., mekhanik

Attachment for sharpening cutter bar knives of the SK-2,6 combine. Mekh.sil'.hosp. 10 no.7:10-12 Jl '59. (MIRA 12:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.
(Combines(Agricultural machinery))

NIKIFOROV, G.V., tekhnik-mekhanik,; BELIY, A.V.[Bielyi, A.V.], tekhnik-mekhanik,; SHABEL'NIK, B.P.[Shabel'nyk, B.P.]

How to improve the operation of the SK-2,6 combine. Mekh. sil'. hosp. 9 no. 8:10-11 Ag '58. (MIRA 11:8)

1. Khar'kivs'ke oblasne upravlinnya sil's'kogo gospodarstva(for Shabel'nik).
(Combines(Agricultural machinery))

NIKIFOROV, G.V. [Nikiforov, H.V.], mekhanik

Table-mounted hydraulic press with 5,000 ton capacity. Mekh. sil'.hosp. 9 no.12:18 D '58. (MIRA 12:1)

1. Laboratoriya remonta Ukrainskogo nauchno-issledovatel'skogo instituta mekhanizatsii i elektrifikatsii sel'skogo khozyaystva. (Hydraulic presses)

LISOVSKIY, G.A. [Lisovs'kyi, H.A.], tekhnik-mekhanik; NIKIFOROV, G.V. [Nikiforov, H.V.], tekhnik-mekhanik

Coupling for connecting damaged hose. Mekh.sil'.hosp. 10 no.12:26 D '59. (MIRA 13:3)
(Hose couplings)

NIKIFOROV, G.; LISOVSKIY, G.

Sharpening knoves of the cutter cylinder of SK-2,6 combines.
Tekh. v sel'khoz. 20 no.7:45-47 Jl '60. (MIRA 13:9)
(Combines (Agricultural machinery)--Maintenance and repair)

NIKIFOROV, I.

Advanced methods for loading lumber. Sel'.stroi. 15 no.7:17-18 Jl '60. (MIRA 13:8)

1. Glavnyy mekhanik upravleniya lesozagotovok Glavnogo upravleniya stroitel'stva Ministerstva sel'skogo khozyaystva RSFSR.
(Loading and unloading) (Lumber--Transportation)

NIKIFOROV, I.

Mechanization of industrial processes in a lumbering establishment. Sel'. stroi. no.6:26-27 Je '62. (MIRA 15:7)

1. Glavnyy mekhanik Upravleniya lesozagotovok i stroitel'nykh materialov Ministerstva proizvodstva i zagotovok sel'skokhozyaystvennykh produktov RSFSR.

(Sverdlovsk Province—Lumbering—Machinery)

NIKIFOROV, I.; MAKAROV, A.; SMOLYAKOV, N.; SIPER, E.; MOGILA, V.; LARIN, M.; FILIPPOV, K.; TOKMAKOV, V.; BARANOVSKIY, V.; CHETVERIKOV, K.; POZNANSKIY, A.; SHUTOV, M.; ROZENFEL'D, L.; RUD', A.

Mechanization of waterproofing operations. Stroitel' 8 no.11: 15-20 N '62. (MIRA 16:1)

(Waterproofing--Equipment and supplies)

NIKIFOROV, Ivan

Two problems. Grazhd.av. 18 no.4:10-11 '61. (MIRA 14:4)

1. Rukovoditel' poletov Irkutskogo aeroporta.
(Meteorology in aeronautics) (Airports—Traffic control)

AUTHOR: Nikiforov, I.A. (Engineer) SOV/129-59-5-15/17

TITLE: Shortening the Heat Treatment Regime of Components Made of the Alloy AL9 (Sokrashcheniye rezhima termicheskoy obrabotki detaley iz splava AL9)

PERIODICAL: Metallovedeniye i termicheskaya Obrabotka Metallov, 1959, Nr 5, pp 58-59 (USSR)

ABSTRACT: Strain hardening of the alloy AL9 (6-8% Si and 0.2-0.4% Mg) during heat treatment is due to the chemical compound Mg_2Si. At 595°C the solubility of the Mg_2Si compound is 1.85% whilst at 20°C its solubility in the aluminium solution is practically nil. Cast AL9 alloy components are usually quenched from 535°C in water and artificially aged at 170°C for 5 hours. In order to establish the possibility of reducing the heating time during ageing, special investigations were carried out. Specimens were cut from components of AL9 alloy material cast into the ground. The specimens were quenched from 535°C in water at 60-80°C. The ageing temperatures were 175, 185, 200 and 215°C and the ageing durations were 30, 60, 90, 120 and 180 min respectively. The obtained results were utilised for plotting the changes in the

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SOV/129-59-5-15/17

Shortening of the Heat Treatment Regime of Components Made of the Alloy AL9

mechanical characteristics as a function of the ageing time and ageing temperature (Fig 1 shows the dependence of the mechanical properties on the ageing temperature and ageing duration). Analysis of the experimental data revealed that ageing at 200°C for 120 min yields the best mechanical properties. Dilatometric investigations of the alloy were effected by means of a differential dilatometer. The comparison standard was made of annealed, commercially pure aluminium. The results of the dilatometric tests on specimens heated to 170, 180 and 190 °C during the isothermal ageing (Fig 2) indicate that with increasing temperature the speed of internal transformations increases sharply. The dilation graph obtained during heating to 220°C with subsequent isothermal holding at that temperature indicates that important internal changes take place in the alloy during the first hour. It was established that ageing at temperatures above 220°C is inadmissible since it does not permit obtaining the necessary strength. Corrosion tests of the alloy carried out in a 3% solution of NaCl for a period of 53 hours have shown that specimens which

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SOV/129-59-5-15/17

Shortening the Heat Treatment Regime of Components Made of the Alloy AL9

have been treated according to various regimes do not show great differences in their resistance. Shop tests of batches of components made of the alloy AL9, after ageing at 190°C for 120 min revealed that the entire batch of 2000 components was satisfactory from the point of view of hardness. A reduction of the ageing time from 300 to 120 min will result in a considerable increase in productivity.

There are 2 figures.

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ASSOCIATION: Stalingradskiy traktornyy zavod (Stalingrad Tractor Works)

L 12695-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD

ACCESSION NR: AP3003449 S/0129/63/000/007/0032/0032

AUTHOR: Nikiforov, I. A.

TITLE: Hardening of AK4 alloy

53

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 7, 1963, 32

TOPIC TAGS: AK4 alloy, Si, Mg, Mn, Fe, Zn, Ni, Al

ABSTRACT: AK4 alloy, used for piston forging, is composed of Si, Mg, Mn, Fe, Zn, Ni, and Al. It was heated in an OKB-276 furnace at 470-510C (1st and 2nd zones) and at 510C (3rd, 4th, and 5th zones). Heating time was 280-350 minutes. Water cooling was at a temperature not exceeding 25C and aging was for 20 to 22 hours at + or - 175C in the OKB-276 electric furnace. Three groups of tractor pistons, 10 pieces in each group, were heated at 510 and 525C (water cooling at 25C) and at 535C (water cooling at 60-80C). Analyses of results were based on dilatometric method, and tensile and hardness tests (the latter at temperatures 50, 100, 150, 200, 250, 300, 350C and at room temperature). The hardness of the pistons which

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ALEKSEYEV, G.P.; ANDON'YEV, V.S.; ARNGOL'D, A.V.; BASKIN, S.M.; BASHMAKOV, N.A.; BEREZIN, V.D.; BERMAN, V.A.; BIYANOV, T.F.; GORBACHEV, V.N.; GRECHKO, I.A.; GRINBUKH, G.S.; GROMOV, M.F.; GUSEV, A.I.; DEMENT'YEV, N.S.; DMITRIYEV, V.P.; DUL'KIN, V.Ya.; ZVANSKIY, M.I.; ZENKEVICH, D.K.; IVANOV, B.V.; INYAKIN, A.Ya.; ISAYENKO, P.I.; KIPRIYANOV, I.A.; KITASHOV, I.S.; KOZHEVNIKOV, N.N.; KORMYAGIN, B.V.; KROKHIN, S.A.; KUDOYAROV, L.I.; KUDRYAVTSEV, G.N.; LARIN, S.G.; LEBEDEV , V.P.; LEVCHENKOV, P.N.; LEMZIKOV, A.K.; LIPGART, B.K.; LOPAREV, A.T.; MALYGIN, G.F.; MILOVIDOVA, S.A.; MIRONOV, P.I.; MIKHAYLOV, B.V., kand. tekhn. nauk; MUSTAFIN, Kh.Sh., kand. tekhn. nauk; NAZIMOV, A.D.; NEFEDOV, D.Ye.; NIKIFOROV, I.V.; NIKULIN, I.A.; OKOROCHKOV, V.P.; PAVLENKO, I.M.; PODROBINNIK, G.M.; POLYAKOV, G.Ya.; PUTILIN, V.S.; RUDNIK, A.G.; RUMYANTSEV, Yu.S.; SAZONOV, N.N.; SAZONOV, N.F.; SAULIDI, I.P.; SDOBNIKOV, D.V.; SEMENOV, N.A.; SKRIPCHINSKIY, I.I.; SOKOLOV, N.F.; STEPANOV, P.P.; TARAKANOV, V.S.; TREGUBOV, A.I.; TRIGER, N.L.; TROITSKIY, A.D.; FOKIN, F.F.; TSAREV, B.F.; TSETSULIN, N.A.; CHUBOV, V.Ye., kand. tekhn. nauk; ENGEL', F.F.; YUROVSKIY, Ya.G.; YAKUBOVSKIY, B.Ya., prof.; YASTREBOV, M.P.; KAMZIN, I.V., prof., glav. red.; MALYSHEV, N.A., zam. glav. red.; MEL'NIKOV, A.M., zam. glav. red.; RAZIN, N.V., zam. glav. red. i red. toma; VARPAKHOVICH, A.F., red.; PETROV, G.D., red.; SARKISOV, M.A., prof., red.; SARUKHANOV, G.L., red.; SEVAST'YANOV, V.I., red.; SMIRNOV, K.I., red.; GOTMAN, T.P., red.; BUL'DYAYEV, N.A., tekhn. red.

(Continued on next card)

ALEKSEYEV, G.P.---(continued). Card 2.

[Volga Hydroelectric Power Station; a technical report on the design and construction of the Volga Hydroelectric Power Station (Lenin), 1950-1958] Volzhskaia gidroelektrostantsiia; tekhnicheskii otchet o proektirovanii i stroitel'stve Volzhskoi GES imeni V.I.Lenina, 1950-1958 gg. V dvukh tomakh. Moskva, Gosenergoizdat. Vol.2.[Organization and execution of constrution and assembly work] Organizatsiia i proizvodstvo stroitel'no-montazhnykh rabot. Red. toma: N.V.Razin, A.V.Arngol'd, N.L. Triger. 1962. 591 p. (MIRA 16:2)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Razin).
(Volga Hydroelectric Power Station (Lenin)--Design and construction)

KHOLODOK, Ye.D.; NIKIFOROV, I.V.; MAYSURADZE, L.I.; ALEKSANDROV, N.I.; BALASHOV, V.I.

New methods for gravity surveying under the conditions of a dense forest. Sbor.luch.rats.predl. pt. 2:4-5 '63. (MIRA 17:5)

1. Ukhtinskoye geologicheskoye upravleniye.

N.

AUTHOR: Nikiforov, I.Ya. 48-10-5/20

TITLE: On the Problem of Determining the Density of Electron States According to Energies From X-Ray Spectra (K voprosu o nakhozhdenii po rentgenovskim spektram raspredeleniya plotnosti elektronnykh sostoyaniy po energiyam)

PERIODICAL: Izvestiya Akad.Nauk SSSR, Ser.Fiz. 1957, Vol.21, Nr 10, pp.1362-1366 (USSR)

ABSTRACT: The task of determining the density of electron states in the case of an emission spectrum consists in the solution of an integral equation. The existing methods developed by Vaynshteyn, van Cittert, and others are very faulty. Here a new method, which is free from these faults, is described. The curve diagram is decomposed into a number of horizontal rectangles, and each rectangle is a difference of two steps of which one has a ledge on the right and the other on the left branch of the curve. The method offers the advantage that no computation is necessary for the determination of the step parameters as is the case with other methods. The disadvantages of this method are:

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On the Problem of Determining the Density of Electron States According to Energies From X-Ray Spectra 48-1C-5/20

It is limited by the case of the distortion of dispersion, and, with an increase of the ratio between the extension and the half-width of the line to be corrected, the accuracy of the method decreases. There are 1 table, 5 illustrations, and 6 references, 4 of which are Slavic.

ASSOCIATION: Rostov Agricultural Machine Building Institute (Rostovskiy institut sel'skokhozyaystvennogo mashinostroyeniya)

AVAILABLE: Library of Congress

Card 2/2

NIKIFOROV, I. Ya.

Shape of conductivity bands in iron. Fiz. met.i metalloved. 11 no.6:927-934 Je '61. (MIRA 14:6)

1. Rostovskiy-na-Donu universitet.
(Iron--Electric properties)
(Free electron theory of metals)

NIKIFOROV, I.Ya.

Form of the $K\beta_5$ emission band of iron. Izv. AN SSSR. Ser. fiz. 25 no.8:1043-1047 Ag '61. (MIRA 14:8)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.
(Iron--Spectra)
(X-ray spectroscopy)

NIKIFOROV, I.Ya.; SACHENKO, V.P.; BLOKHIN, M.A.

Comparison of different methods for improving the form of spectra. Izv. AN SSSR. Ser. fiz. 25 no.8:1054-1059 Ag '61.
(MIRA 14:8)

1. Rostovskiy-na-Donu gosudarstvennyy universitet.
(X-ray spectroscopy)

SACHENKO, V.P.; NIKIFOROV, I.Ya.

Correction of X-ray spectra for symmetric distortion.
Opt. i spektr. 13 no.3:447-450 S '62. (MIRA 15:9)
(X-ray spectroscopy)

S/048/62/026/003/010/015
B142/B104

AUTHORS: Blokhin, M. A., Gil'varg, A. B., Nikiforov, I. Ya., and Sachenko, V. P.

TITLE: Two-crystal X-ray spectrometer

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 3, 1962, 397 - 404

TEXT: The adjustment of the new spectrometer is comparatively simple and takes only a few hours. The crystals can be taken out of the apparatus without disturbing the adjustment. The distance between the rotating axes of the crystals is 100 mm. The focus of the X-ray tube is 300 mm distant from the rotating axis of the first crystal. The distance of the rotating axis of the second crystal from the window of the Geiger counter is 100 mm. The second crystal can be rotated by $\pm$ 1.5° from the middle position reading accuracy 0.01°). The spectrometer is not adjusted by means of the crystals but by glass plates. After adjustment, the crystals are inserted to determine the $CuK\alpha_1$ - line and the angle between crystal surface and lattice planes. Eight horizontal plates were built into the collimator to reduce

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APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001136920007-2"

Two-crystal X-ray spectrometer

S/048/62/026/003/010/015
B142/B104

the vertical scattering of the beam to a minimum and yet to obtain high radiation intensities. A beryllium plate inserted between the collimator and the first crystal is to eliminate the focus drift and the effect of feeding-voltage fluctuations. It was difficult to choose the suitable crystals since extreme optical uniformity is required, and the angle between crystal surface and lattice planes shall be as small as possible. Its maximum was 105". Plates parallel to $(10\bar{1}0)$ and $(11\bar{2}0)$ were cut from various quartz crystals and investigated after etching. The purity of the two crystals is determined by the width of the reflection curves. The quality of the plates is estimated from the shadows produced by deviations of the refractive indices. A final examination carried out by means of a polarization system indicates optical inequality of the plates by bright spots. There are 6 figures and 6 references: 1 Soviet and 5 non-Soviet. The two English-language references are: L. G. Parrat, Rev. Scient. Instrum. 5, no. 11, 113 (1934); Rev. Scient. Instrum., 6, no. 5, 113 (1935).

Card 2/3

Two-crystal X-ray spectrometer [illegible]

ASSOCIATION: Rostovskiy gos. universitet, Institut [illegible] Akademii nauk SSSR. (Rostov State University, Institute of Crystallography of the Academy of Sciences USSR)

Card 3/3

S/048/63/027/003/001/025
B108/B114

AUTHORS: Nikiforov, I. Ya., and Sachenko, V. P.

TITLE: The energy bands of titanium with cubic lattice

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 3, 1963, 310-313

TEXT: This paper was presented at the 6th Conference on X-ray Spectroscopy, Odessa, July 2 - 10, 1962. The shape of the X-ray spectra of cubic titanium were calculated with the method of the orthogonalized plane waves (C. Herring, Phys. Rev., 57, 1169 (1940)) which represents the orbitals of the crystal as linear combinations of orthogonalized plane waves. For comparison, the energy of Γ and H points in inverse space were calculated with the cell method (B. Schiff, Proc. Phys. Soc., A, 68, 686, 1955). The results are in good agreement. Assuming the Fermi surface to have an energy of the same order as the energy of the H_{12} state (-0.116 Ry), one can conclude that the K_{β_5} band has a width of 5 - 6 ev.

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The energy bands of ...

S/048/63/027/003/001/025
B108/B114

The dispersion curves show that the maximum of K_{β_5} must be at a certain distance (1 - 2 ev) from the cutoff on the Fermi surface. In the L-absorption spectra a sharp rise directly from the Fermi surface should be observed. A sharp rise in the K-absorption spectra may be expected at a distance of 6 - 8 ev from the Fermi surface. There are 2 figures and 3 tables.

ASSOCIATION: Rostovskiy na-Donu gos. universitet (Rostov na-Donu State University)

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S/048/63/027/003/002/025
B108/B114

AUTHORS: Nikiforov, I. Ya., and Blokhin, M. A.

TITLE: About the form of the K_{β_5} emission band of iron. II. The transition probability as a function of energy

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 3, 1963, 314-318

TEXT: This paper was presented at the 6th Conference on X-ray Spectroscopy, Odessa, July 2 - 10, 1962. The transition probability was calculated in the single-electron theory. The method of cells (M. F. Manning, Phys. Rev., 63, 190, 1943) was used to calculate the shape of the K_{β_5} emission band, N(E). For this purpose, the dispersion curves were determined from the coefficients $a_l(E)$ accounting for the spherical harmonics of l-symmetry in the total wave function of the valency electrons. The calculated form of the band agrees well with the experimental results when the Auger effect is taken into consideration. Certain regularities were found in the distribution of the electrons of various symmetries over the band. Obviously, this applies to all transition metals. There are 5 figures.

ASSOCIATION: Rostovskiy-na-Donu gos. universitet (Rostov-na-Donu State University)

S/048/63/027/003/003/025
B108/B114

AUTHORS: Shveytser, I. G., Sachenko, V. P., and Nikiforov, I. Ya.

TITLE: The structure of the energy levels of metallic molybdenum

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 3, 1963, 319-321

TEXT: This paper was presented at the 6th Conference on X-ray Spectroscopy, Odessa, July 2 - 10, 1962. The energy levels of the valency band of molybdenum (cubic, body centered, a = 3.14104 Å) were calculated with the method of the orthogonalized plane waves for the Γ- and H points of the $\vec{k}$-space. The radial wave functions of the inner electrons (from 1s to 4p) were calculated with the self-consistent field method (Ridley, C., Proc. Cambridge Philos. Soc., 51, 702, 1955). The results for molybdenum and zirconium (the latter according to S. L. Altmann. Proc. Roy. Soc. A, 244, 141, 1958) are given in Table 2. There are 1 figure and 2 tables.

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S/048/63/027/003/003/025
B108/B114

The structure of the energy ...

ASSOCIATION: Rostovskiy-na-Donu gos. universitet (Rostov-na-Donu State University)

Table 2

Mo				Zr (2)	
Γ		H		Γ	
Γ_1^0	−1,167	H^0	+2,079	Γ_1^+	−0,835
Γ_1	−1,343				
$\Gamma_{25'}$	−0,142	H_{15}	−0,049	Γ_6^+	−0,761
Γ_{12}	+0,152	$H_{25'}$	+0,900	Γ_6^-	−0,656
Γ_{16}	1,549	H_{12}	+1,685	Γ_6^+	−0,291

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S/0048/64/028/005/0780/0785

ACCESSION NR: AP4038761

AUTHOR: Blokhin, M.A.; Nikiforov, I.Ya.

TITLE: Shape of the $K\alpha_{1,2}$ lines of the iron group elements /Report, Seventh Conference on X-Ray Spectroscopy held in Yerevan 23 Sep-1 Oct 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.5, 1964, 780-785

TOPIC TAGS: x-ray spectrum, chromium, manganese, iron, cobalt, copper, nickel, zinc

ABSTRACT: The $K\alpha$ doublets of the elements of atomic number from 24 (Cr) through 30 (Zn) were recorded with the high resolution two-crystal spectrometer of the Rostov State University. The instrument and the experimental procedure are discussed elsewhere (M.A.Blokhin, A.B.Gil'varg, I.Ya.Nikiforov, V.P.Sachenko, Izv.AN SSSR,Ser.fiz. 26,397,1962). The resolving power was approximately 38 000, the dispersion was 0.01 X per second of arc, and the angle could be measured to ±0.5". The Cr and Ni spectra were obtained with Cu anodes on which Cr or Ni had been electroplated. The other spectra were obtained with Cu anodes into which powders of the corresponding metals had been pressed. The double reflection curves with parallel crystals were quite narrow (0.15 to 0.21 eV). The widths of the $K\alpha_1$ lines were corrected for in-

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strumental broadening by simply subtracting the width of the corresponding parallel crystal double reflection curve. One spectrum (Cu) was corrected by a more rigorous method (V.P.Sachenko and I.Ya.Nikiforov, Optika i spektro.13,447,1962) with practically identical results; the corrections are therefore believed to be adequate. Of the published measurements of the $K\alpha_1$ widths of the iron group metals, the present measurements, those of G.Brogren (Arkiv.fyz.23,219,1963), and those of A.Meisel and W. Nefedow (Z.phys.Chem.(DDR),219,397,1962) were obtained under the most advantageous conditions with regard to instrumental broadening. Although there is considerable agreement among the three groups of data, there is also some disagreement among them. The $K\alpha_1$ asymmetry indices were calculated, and they are compared with data of other workers and with the magnetic moments. Although the correlation between $K\alpha_1$ asymmetry and magnetic moment is strong, it is not perfect. Notable deviants are Cr and Cu, both of which are much too asymmetric for their small (or vanishing) magnetic moments. The copper spectrum was corrected for the width of the K level, and it is concluded from the shape of the corrected curve that the asymmetry of the Cu spectrum is due to complex structure of the L_{III} level. The $K\alpha_1$ line of metallic chromium was found to be complex. This fine structure is much more prominent in the spectrum of the oxide, where it appears also in the $K\alpha_2$ line and has previously been reported by others. In order to make the $K\alpha$ doublet shapes conveniently available for

ACCESSION NR: AP4038761

use in precision x-ray structure analysis, the data are presented not only graphically, but also in tabular form. The accuracy claimed for the tabulated intensities and energy displacements is 1% of the peak value, and 0.05 eV respectively. Orig. art.has: 4 figures and 4 tables.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvenny*y universitet (Rostov-on-the-Don State University)

SUBMITTED: 00 DATE ACQ: 12Jun64 ENCL: 00

SUB CODE: OP NR REF SOV: 006 OTHER: 008

Card 3/3

S/0048/64/028/005/0786/0789

ACCESSION NR: AP4038762

AUTHOR: Nikiforov, I.Ya.; Blokhin, M.A.

TITLE: Concerning the shape of the x-ray emission bands of transition metals of the iron group [Report, Seventh Conference on X-Ray Spectroscopy held in Yerevan 23 Sep-1 Oct 1963]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.5, 1964, 786-789

TOPIC TAGS: x-ray spectrum, band spectrum, line spectrum, iron, nickel, copper, x-ray structure analysis

ABSTRACT: The $K\beta_5$ bands of Fe, Ni and Cu, and the $K\beta_1$ lines of Fe and Cu were recorded with the two-crystal spectrometer (resolution 38 000) of Rostov State University (M.A.Blokhin, A.B.Gil'varg, I.Ya.Nikiforov and V.P.Sachenko,Izv.AN SSSR,Ser. fiz.26,397,1962). Quartz crystals cut parallel to the (11$\bar{2}$0) planes were employed. The Fe and Cu spectra were obtained with anodes of the respective metals. The Ni spectrum was obtained with a Cu anode on which Ni had been electroplated. The x-ray tube was operated at 35 kV and 20 mA. An accuracy of 2% is claimed for the ordinates of the published spectral intensity curves. The shapes of the Cu and Fe $K\beta_1$ lines

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were recorded because of their technical importance for precision x-ray structure analysis. They are presented graphically but are not discussed. It is not possible to obtain reliable widths of the $K\beta_5$ bands without correcting for the width of the K level and removing the $K\beta'''$ satellite. This analysis was not performed. The widths at half maximum increased with increasing atomic number, corresponding to the increasing density of free electrons between the 1s and 3p shells. The principal peak of the Cu band was found to be double. The two peaks are ascribed to the $K\beta_5$ and $K\beta_2$ lines, although the assignment is regarded as arbitrary because of the strong hybridization of the conduction band. The Cu $K\beta'''$ satellite was clearly resolved into two satellites, which are designated by $K\beta'''_{(1)}$ and $K\beta'''_{(2)}$. Weak structure was found on the long wavelength side of the Ni and Fe $K\beta_5$ bands. This could be due to a long wavelength satellite, or to zonal structure of the electron states in the lattice. The fe $K\beta_5$ peak was broad and nearly flat. Previous calculations of the Fe $K\beta_5$ band shape (I.Ya.Nikiforov,and M.A.Blokhin, Izv.AN SSSR,Ser.fiz.27,314,1963) are compared with the present measurements, and considerably better agreement is found than was previously obtained with the measurements of J.A.Bearden and C.H. Shaw (Phys.Rev.48,18,1935). The calculations do not reproduce the structure on the long wavelength side. The paper closes with a short essay on the role of x-ray spectroscopy in the development of solid state physics. Although it is not possible

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to obtain electron densities by simply dividing x-ray band intensities by transition probabilities as envisaged 30 years ago by H.Jones, N.F.Mott and H.W.B.Skinner (Phys. Rev.45,379,1934), one can nevertheless employ different approximate methods for dealing with the many body problem to calculate x-ray band shapes, and by comparing the calculated shapes with experimental data one can select the most promising mathematical methods for further development in connection with solids of particular types. Orig.art.has: 3 formulas and 3 figures.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvenny*y universitet (Rostov-on-the-Don State University)

SUBMITTED: 00 DATE ACQ: 12Jun64 ENCL: 00

SUB CODE: OP NR REF SOV: 009 OTHER: 004

Card 3/3

S/0048/64/028/005/0797/0800

ACCESSION NR: AP4038764

AUTHOR: Shveytser, I.G.; Nikiforov, I.Ya.; Sachenko, V.P.

TITLE: Concerning the energy spectrum of metallic niobium /Report, Seventh Conference on X-Ray Spectroscopy held in Yerevan 23 Sep - 1 Oct 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.5, 1964, 797-800

TOPIC TAGS: x-ray spectrum, x-ray absorption, molybdenum, niobium, energy band structure

ABSTRACT: In continuation of previous theoretical and experimental investigations of transition metals of the palladium group (I.G.Shveytser, V.P.Sachenko and I.Ya. Nikiforov, Izv.AN SSSR,Ser.fiz.27,319,1963) the $L\beta_2$ emission and L_{III} absorption spectra of Mo and Nb are compared, and their differences are interpreted in terms of the energy level distributions in the metals as calculated in the orthogonal plane wave approximation. The Mo spectra and energy level distribution are taken from the earlier paper. The Nb emission spectrum was taken from work of M.I.Korsunskiy and Ya.Ye.Genkin (Izv.AN SSSR,Ser.fiz.25,1028,1961) and the Nb L_{III} absorption spectrum was measured for the occasion. The spectra of the two metals are rather

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ACCESSION NR: AP4038764

similar, but the following differences are noted: the $L\beta_2$ emission band of Mo is both wider and more symmetric than that of Nb, and the first L_{III} absorption line of Nb is wider than that of Mo and its maximum is located farther from the absorption edge. Since no self-consistent wave functions are available for Nb, and since orthogonalized Slater functions proved to be insufficiently accurate, the atomic parameters of Nb required for the orthogonal plane wave calculation, namely the Fourier components of the atomic potential, the orthogonality coefficients, and the energy eigenvalues, were obtained by extrapolation from those of Mo. The extrapolation of the energy eigenvalues was performed with the aid of Moseley's law, that of the orthogonality coefficients by means of Hartree's scale transformation of the wave functions, and the Fourier components of the potential were extrapolated by first calculating their dependence on the atomic number with the Fermi-Thomas model. Thirteen orthogonal plane wave functions were employed in the calculation of the energy levels; the method of calculation is described in more detail in the earlier paper. Considerable differences were found between the level distributions in Mo and Nb. In particular, the maximum density of d levels occurs near or below the Fermi surface in Mo and considerably above it in Nb. The L_{III} spectra of the two metals are discussed in some detail in relation to the level distributions, and all the differences noted above are successfully interpreted - in one case (the width of the

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ACCESSION NR: AP4038764

Nb Lβ_2 band) almost quantitatively. It is concluded that even incomplete calculations of the energy structure of a solid can sometimes make it possible to interpret x-ray spectra semiquantitatively. Orig.art.has: 3 formulas and 3 figures.

ASSOCIATION: Rostovskiy-na-donu gosudarstvenny*y universitet (Rostov-on-the-Don State University)

SUBMITTED: 00 DATE ACQ: 12Jun64 ENCL: 00

SUB CODE: OP NR REF SOV: 002 OTHER: 006

Card 3/3

N.K.FOROV, K.D.

IVANOV, Leonid Ivanovich; NIKIFOROV, Konstantin Dmitriyevich, geroy sotsialisticheskogo truda; BERGAUZ, R.I., red.; GUREVICH, M.M., tekhn.red.

[Production economics and organization on state dairy farms; based on a study of the Severo-Liubin State Farm in Omsk Province] Ekonomika i organizatsiia proizvodstva v molochnom sovkhoze; na primere Severo-Liubinskogo sovkhoza Omskoi oblasti. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1957. 213 p. (MIRA 11:2)

(Dairying)

NIKIFOROV, K. V.

USSR/Geological Prospecting
Academy of Sciences

Jan/Feb 50

"Progress and Problems of Quaternary Geology in the USSR During the Stalin Five-Year Plans," V. I. Gromov, K. V. Nikiforov, 6 pp

"Iz Ak Nauk SSSR, Ser Geol" No 1

The Commission on Study of the Quaternary Period was organized in 1927 to initiate and coordinate studies in this field. Later, divisions were organized in the former Geol Committee in Leningrad and in the Inst of Geol Sci, Acad Sci Ukrainian SSR and some work in this field was done at Acad Sci Belorussian SSR. Commission organized 46 expeditions in European USSR and Caucasus to draw up International Quaternary Map in the 3 years between second and third international Quaternary Conferences.

PA156T35

NIKIFOROV, L. (Moskva)

The invisible universe. Priroda 50 no.8:82-83 Ag '61. (MIRA 14:7)
(Neutrinos)

NIKIFOROV, L.; RAKITSKIY, B.; FEDOROV, A.

Conference on the problems of building a communist economy. Vop. ekon. no.4:140-146 Ap '63. (MIRA 16:4)
(Economics--Congresses)

BELOUSOV, F.; NIKIFOROV, L.

KVN-49 television receiver with twelve channels. Radio no.6:34 Je '63. (MIRA 16:7)

(Television--Recievers and reception)

APPROVED FOR RELEASE: 07/13/2001 CIA-RDP86-00513R001136920007-2"

NIKIFOROV, L.A.; NIKOLAYENKO, Zh.I.; VOLKOV, N.V.; SHVETSOV, N.I.; PLAKSIN, S.V.; POPOV, N.N.; PEKSHEV, Yu.A.; KARSHINOV, L.N.; YAKIMOVA, T.A.; SHALASHOV, V.P.; VASYANIN, Yu.L.; KRASKOV, L.V.; PUSENKOV, N.N.;VASIL'YEVA, G.N.; TSAGURIYA, G.M., tekhn. red.

[Economic development of the people's democracies of Europe and Asia; statistical collection] Razvitie ekonomiki stran narodnoi demokratii Evropy i Azii; statisticheskii sbornik. Moskva, Vneshtorgizdat, 1961. 470 p. (MIRA 15:5)
(Communist countries--Statistics)

NIKIFOROV, L.G.

Mechanical and mineralogical composition of costal alluviums as an indicator of the dynamics of the shore (as exemplified in the southeastern Caspian Sea). Okeanologiia 3 no.2:278-284 '63. (MIRA 16:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Caspian Sea—Alluvium)

NIKIFOROV, L.G.; PRAVOTOROV, I.A.

Using the hydrometeorological method for studying the dynamics of the coasts of reservoirs and seas. Okeanologiia 3 no.4: 739-748 '63. (MIRA 16:11)

1. Geograficheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta.

MYAKOKIN, V.S.; NIKIFOROV, L.G.; SAMSONOV, S.K.

Age and stages of a Post-Khalynian transgression. Okeanologiia 4 no.1:86-97 '64. (MIRA 17:4)

NIKIFOROV, L.G.

Conditions of the formation of coastal bars; based on the example of Ogurchinskiy Island. Okeanologiia 4 no.2:254-259 '64.

(MIRA 17:10)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova, geograficheskiy fakul'tet.

LEONT'YEV, [illegible].K.; NIKIFOROV, [illegible]

Causes of the planetary [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible]
5 [illegible] [illegible] (MIRA [illegible])

1. Moskovskiy gosudarstvennyy universitet [illegible]

LEONT'YEV, O.K., prof.; NIKIFOROV, L.G., kand.geograf.nauk

Modeling of natural processes. Priroda 54 no.10:49-52 '65.
(MIRA 18:10)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.

NIKIFOROV, L.G.

History of the development of the Krasnovodsk Spit. Izv. vys. ucheb. zav.; geol. i razv. 3 no.5:67-76 My '60. (MIRA 13:11)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova. (Krasnovodsk region--Geology, Structural)

NIKIFOROV, L.G.

On the existence of Uzboy runoff through the Adzhaib.
Vest. Mosk. un. Ser.5: Geog. 15 no.3:69-71 My - Je '60.
(MIRA 13:7)
(Uzboy—Runoff)