"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, Boris Georgiyevich, dotsent, kand.tekhn.nauk [deceased]. Prinimali uchastiye SHKVARKINA, T.I., kand.tekhn.nauk; SMOLINA, N.I., kand. tekhn.nauk; FUKS, V.K., red.; SOKOLOVA, I.A., tekhn.red.

[Technology and technochemical control in the baking industry] Tekhnologiia i tekhnokhimicheskii kontrol' khlebopekarnogo proizvodstva. Izd.2., dop. i perer. Moskva, Pishchepromizdat, 1960. 395 p. (MIRA 13:11)

(Bakers and bakeries) (Production control)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.L., Cand Tech Sci—(diss) "Continuous ferro-steam method of ~~obtaining~~ producing hydrogen. Study of the stage of hydrogen ~~extraction~~ production." Mos, 1958. 11 pp (Mos Order of Lenin Chemico-Technological Inst im D.I. Mendeleyev), 100 copies (KL,30-58,128)

-89-

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B. L.

SARYCHEV, B. L. "The Kinetics of High-Temperature Oxidation of Pyrophoric Iron with Water Vapor." Acad Sci USSR. Inst of Mineral Fuels. Moscow, 1956. (Dissertation for the Degree of Candidate in TECHNICAL Sciences)

So: Knizhnava Letopis', No. 17, 1956

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SOV/137-58-9-19478

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 191 (USSR)

AUTHORS: Sarychev, B.L., Gamburg, D.Yu.

TITLE: Kinetics of the Oxidation of Iron With Water Vapor (Kinetika okisleniya zheleza vodyanym parom)

PERIODICAL: Tr. Gos. n.-i. proyektn. in-ta azotn. prom-sti, 1957, Nr 7, pp 121-154

ABSTRACT: Laboratory equipment was developed for the investigation of the kinetics of alternating reduction of oxides and oxidation of metals in a current of gas (H_2 and water vapor) in the 600-900° range. The main part of the installation are the electromagnetic scales which provide an automatic recording of the weight of the specimens. The test sample investigated, in the form of a powder with grain size of 3-5 mm, contained in a perforated quartz basket in the heated area of a cylindrical furnace, was suspended from a quartz thread connected to one of the plates of the analytical balance. Natural Fe ores, Fe catalyst for the NH_3 synthesis, and Armco Fe were taken. The weighed test samples of the powders were subjected to periodic reduction followed by oxidation under specified standard test

Card 1/2

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SOV/137-58-9-19478

Kinetica of the Oxidation of Iron With Water Vapor

conditions with the purpose of studying the variations in the chemical activity of natural Fe ores in the course of a similar treatment, the establishment of a kinetic law of oxidation, and the relationship of the rate of oxidation to the temperature. The greatest chemical activity (capacity for decomposing water vapors) was exhibited by compounds of Fe with additions of Al_2O_3, K_2O, Na_2O, CaO, and MgO, in particular those of the Fe catalyst for the synthesis of NH_3. In the initial stages the oxidation of freshly reduced dispersed Fe compounds proceeded according to a linear law, in the following stage it followed a parabolic relationship to time, the exponent of the equation of the parabola being 1.56-2.50. It is established that for various specimens the exponents vary in relation to the initial composition of the ore and the temperature conditions according to the equation $1/n = 0.0_3$, $12T + 0.524$. The apparent value for the activation energy of oxidation, calculated by the usual method according to data of the temperature dependence of the rate of oxidation, constituted 17,200 and 34,800 cal for large lumps of Nizhne-Angarsk ore and Armco-Fe, respectively.

A.Sh.

1. Iron--Oxidation 2. Water vapor--Metallurgical effects 3. Laboratory equipment--Design 4. Oxidation-reduction reactions--Test results

Card 2/2

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SOV/65-58-10-4/15

AUTHORS: Gamburg, D. Yu. and Sarychev, B. L.

TITLE: Investigations of the Oxidation Kinetics of Reduced Iron Contacts and Ores with Water Vapour During the Manufacture of Hydrogen (Issledovaniye kinetiki okisleniya vosstanovlennykh zheleznykh kontaktov i rud vodyanym parom v tselyakh polucheniya vodoroda)

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr 10, pp 16 - 24 (USSR)

ABSTRACT: Until recently, hydrogen was produced by gasification of solid and liquid fuels and by the conversion of gaseous hydrocarbons. The continuous manufacture of hydrogen according to the iron-vapour method was investigated in the USSR by IGI AN SSSR, VNII NP, and Institut nefti AN SSSR (the Institute of Petroleum AS USSR). The authors carried out experiments on the kinetics of the oxidation of reduced iron ore at high temperatures. Stages during the formation of hydrogen were observed in two plants (Ref.4); in the first, the rate of reduction and oxidation occurring in the solid phase, and in the second by analysing the reaction products of the gaseous phase. Hydrogen was used as reducing agent and water vapour as oxidising agent for the iron ores. The

Card 1/5

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SOV/65-58-10-4/15

Investigations of the Oxidation Kinetics of Reduced Iron Contacts and Ores with Water Vapour During the Manufacture of Hydrogen

porous structure of the iron ores was defined by the methods described by N. M. Kamakin (Ref.13) and T. G. Plachenov (Ref.14), and photometric measurements were carried out on a Koch microphotometer. Samples of siderite, Magnetogorsk and Krivoy Rog reduced ores and hematite, magnetite etc. (synthesised iron samples) were tested. In all samples, when the order of porosity equalled 10 to 20%, the specific surface varied between 0.15 to 3.5 m^2. During long period reduction and oxidation the samples, after 20 to 30 cycles processing, gradually lose their activity which is obviously connected with the recrystallisation of the iron; the specific surface decreases approximately to one third. Most satisfactory results were obtained when the porosity of the ores varied between 20 to 40%, the size of the pores 0.1 to 0.2 cm^3/g and the specific surface 2 to 3 m^2/g. Synthesised samples of reduced iron, such as those used as high temperature catalysts during the synthesis of ammonia, possess a high degree of porosity and specific surface during reduction. These samples contain Al_2O_3 and K_2O additives which prevent sintering

Card 2/5

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SOV/65-58-10-4/15

Investigations of the Oxidation Kinetics of Reduced Iron Contacts and Ores with Water Vapour During the Manufacture of Hydrogen

of the surface. The equilibrium of the system Fe - H - O was determined according to S. Emmet and I. Schulz (Ref.19): Table 1. Lowering of the temperature leads to decreased consumption of water vapour; the latter is smaller during the oxidation of metallic iron than during the oxidation of ferrous oxide. This discrepancy is reduced when increasing the temperature (Table 2). The degree of decomposition of water vapour can be increased by 1.5 to 2 times if oxidation is carried out in the presence of solid-phase FeO. Previous investigations of the oxidation kinetics of iron with water vapour are reviewed briefly (Refs.20 to 28). Experiments carried out on high porosity iron samples at 800°C showed that in the first stages of the oxidation the rate of growth of the oxide layer is directly proportional to the contact time of the iron with the vapour; this is a first order reaction. Kinetic curves showing the oxidation of iron are shown in Fig.1, and changes in the weight of the iron samples in Table 3. The influence of temperature on the rate of oxidation was investigated at temperatures between 600 and 900°C at 100 grade inter-

Card 3/5

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SOV/65-58-10-4/15

Investigations of the Oxidation Kinetics of Reduced Iron Contacts and Ores with Water Vapour During the Manufacture of Hydrogen

vals (Fig.3), and temperature coefficients were calculated. The activation energies varied between 4,000 to 10,000 cal; for Armco iron the value wasconsiderably higher (35,000 cal). The yield of hydrogen (after 8 minute oxidation) rises with increasing volume rate (Fig.6). The following optimum process conditions are recommended: 900°C during the reduction of iron oxide, 750 to 800°C during the oxidation stage, volume velocity 3,000 to 4,500 litre vapour/air for 1 litre of iron ore. The contact time should not exceed 4 minutes, and the process should proceed until formation of the solid-phase magnetite (Fe_3O_4) can be observed. Fine-grained samples of iron ore should be used and an optimum granulation of 3 to 5 mm

Card 4/5

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SOV/65-58-10-4/15

Investigations of the Oxidation Kinetics of Reduced Iron Contacts and Ores with Water Vapour During the Manufacture of Hydrogen

is recommended. There are 6 Figures, 3 Tables and 38 References: 26 Soviet, 8 English, 1 French and 3 German.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut azotnoy promyshlennosti (Research Institute for Nitrogenous Compounds)

Card 5/5

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B. M.

SARYCHEV, B. M. Dip curves in overhead electric communication lines Moskva, Gos. energ. izd-vo, 1950 160 p. (50-29851)

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APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.M.

[Tables and curves for the installation of electric overhead lines, up to 1,000 volts; manual for installing wires of low-voltage electric networks] Montazhnye tablitsy i krivye dlia provodov vozdushnykh linii napriazheniem do 1000 vol't; posobie dlia montazha provodov nizkovol'tnykh elektricheskikh setei. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1951. 58 p. (MLRA 6:7)

(Electric lines--Overhead)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.M.; DUTKIN, G.S., inzhener; SHIROKOVA, L.P.; FINGER, L.M., redaktor; MINASYAN, Ye.A., redaktor; PETROVSKAYA, Ye.S., redaktor.

[Overhead lines of municipal low-voltage networks] Vozdushnye linii gorodskikh setei nizkogo napriazheniia. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva, 1953. 163 p. (MLRA 7:2)
(Electric lines--Overhead)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.M.; KUZNETSOV, P.V., inzhener, redaktor; SOKOL'SKIY, I.F., redaktor; GUROVA, I.F., tekhnicheskiy redaktor.

[Diagrams, tables and nomographs for computing city electric line systems] Grafiki, tablitsy i nomogrammy dlia elektricheskogo rascheta linii gorodskikh setei. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1954. 19 p. (MLRA 8:5)
(Electric lines)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B. M.

AID P - 3327

Subject : USSR/Power Engineering

Card 1/1 Pub. 26 - 13/28

Authors : Ivanov, V. I. and B. M. Sarychev, Engs.

Title : Establishing the smallest spacing between conductors along a span

Periodical : Elek. sta., 8, 42, Ag 1955

Abstract : The authors consider cases where conductors, fastened to two towers are strung under a different angle and give a mathematical analysis for the computation of the smallest spacing. Two diagrams.

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, Boris Mikhaylovich; SOKOL'SKIY, I.F., redaktor; PETROVSKAYA, Ye., tekhnicheskiy redaktor.

[Nomograms, graphs and tables for calculations for electric transmission lines] Nomogrammy, grafiki i tablitsy dlia rascheta linii elektroperedachi. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1956. 107 p. (MLRA 9:5)
(Electric lines)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.M.

104-3-15/45

AUTHOR: Krivosheya, V.I. and Sarychev, B.M., Engineers.

TITLE: The spacing of supports with pin-type insulators for lines of 6 - 35 kV. (Rasstanovka opor so shtyrevymi izolyatorami dlya liniy 6 - 35 kV)

PERIODICAL: "Elektricheskiye Stantsii" (Power Stations), 1957, Vol.28, No.3, pp. 51 - 52 (U.S.S.R.)

ABSTRACT: In the design of transmission lines with pin type insulators the spacing of the supports depends on the profile of the line. It is usually supposed that the difference between span lengths should not be more than 10% on the assumption that when atmospheric conditions change the tensions in the wires in unequal adjacent spans will alter by different amounts which might weaken the poles or damage the conductors. This article provides an analysis of this question and shows that there is no risk in spacing wood or concrete poles with greater differences of span length such as are permissible when suspension insulators are used. This is most economical.

Calculations show that the greatest tension occurs at the minimum air temperature when the conductors were erected at a higher temperature. The preliminary calculations that are required in order to determine the differences of tension are stated. Particular cases are then considered such as two spans

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104-3-15/45

The spacing of supports with pin-type insulators for lines of 6 - 35 kV. (Cont.)

between anchor points, one longer than the other, three spans of gradually increasing length and so on. Diagrams showing the course and results of the calculations are drawn to scale and it is shown that the greatest difference of tension at the support is obtained when there are two spans, one of which is 1.5 to 2 times as bng as the other and that even then with conductor ПС-50 and region I climatic conditions the difference in tension is only 5 kg, which is negligible and which will not cause damage to the conductors, joints or supports. There are 5 figures.

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8(3) PHASE I BOOK EXPLOITATION SOV/1425

Sarychev, Boris Mikhaylovich

Zadachi po mekhanicheskoy chasti liniy elektroperedachi (Mechanical Problems of Electric Transmission Lines) Moscow, Izd-vo Min. kommunal'nogo khozyaystva RSFSR, 1958. 106 p. 5,000 copies printed.

Ed.: Shneyerov, S.A.; Tech. Ed.: Volkov, S.V.

PURPOSE: This is a handbook of practical problems for electrical engineers dealing with the mechanical aspects in the design and construction of electric transmission lines.

COVERAGE: The author claims that this book covers the complete range of mechanical problems encountered by an electrical engineer in erecting overhead transmission lines. For each problem the author provides a solution and accompanying exercise. The book covers the following subjects: conductor calculation for a given span, conductor calculation for anchor stay sections under various line operating conditions, load on structures, and miscellaneous problems. No personalities are mentioned. There are 14 officially approved tables and 8 Soviet references.

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Mechanical Problems of Electric Transmission (Cont.) SOV/1425

Foreword 3

Ch. 1. Conductor Calculations for Various Conditions (Problems 1-17) 5

Ch. 2. Conductor Calculations Within the Limits of an Anchor Stay Section Under Various Line Operating Conditions (Problems 18-29) 27

Ch. 3. Load on Structures (Problems 30-36) 58

Ch. 4. Miscellaneous Problems (Problems 37-53) 69

Appendixes 95

List of Symbols 106

Bibliography 107

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, Boris Mikhaylovich, inzh.; FINGER, L.M., inzh., red.; SHNEYEROV, S.A., red. izd-va,; VOLKOV, S.V., tekhn. red.

[Handbook on the planning of overhead electric lines] Spravochnik po proektirovaniiu vozdushnykh linii elektroperedachi. Moskva, Izd-vo M-va kommun. khoz. RSFSR, 1958. 314 p. (MIRA 11:12)
(Electric lines--Overhead)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, Boris Mikhaylovich; BRANDENBURGSKAYA, E.Ya., red.; VORONIN, K.P., tekhn.red.

[Determining distances in the steel-aluminum wires of overhead electric transmission lines to intersecting objects in the case of wire breaks in a neighboring span] Opredelenie rasstoianii stalealiuminievykh provodov vozdushnykh linii elektroperedachi do peresekaemykh ob"ektov pri obryve provoda v sosednem prolete. Moskva, Gos.energ.izd-vo, 1959. 79 p. (MIRA 12:12)
(Electric lines--Overhead)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, Boris Mikhaylovich, inzh.. Prinimali uchastiye: SHIROKOVA, L.P., inzh.; SHEPELEVA, F.S., inzh.. SHNEYEROV, S.A., red.izd-va; VOLKOV, S.V., tekhn.red.

[Tables for use in connection with the hanging of wires and wire cables for high voltage lines] Montazhnye tablitsy provodov i trosov vysokovol'tnykh linii. Izd.2., perer. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1959. 178 p. (MIRA 13:2)
(Electric lines--Overhead)

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ZELICHENKO, A.S., inzh.; SARYCHEV, B.M., inzh.

Determining calculated minimum permissible diameters of parts of intermediate wooden supports for 35 and 110 kv electric transmission lines during operation. Elek.sta. 31 no.2:67-71 F '60. (MIRA 13:5)
(Electric lines--Poles)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.M., inzh.

Permissible lengths for large single spans of 35 and 110 kv. lines with vertical placement of the wires in 1st and 2nd degree ice accumulation districts. Elek. sta. 31 no.3:44-46 Mr '60.
(MIRA 13:8)

(Electric lines--Overhead)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.M., inzh.; ZELICHENKO, A.S., inzh.

Determination of the permissible distance of electric power transmission lines from structures and tree tops. Elek. sta. 31 no.9:68-71 S '60. (MIRA 14:10)

(Electric power distribution)
~~(Electric lines--Overhead)~~

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ANASTASIYEV, Petr Ivanovich; SARYCHEV, B.M., red.; VORONIN, K.P., tekhn. red.

[Construction andinstallation of elelctric power transmission lines with voltages up to 1,000 volts] Sooruzhenie i montazh vozdushnykh linii elektroperedachi napriazheniem do 1 000 v. Moskva, Gos. energ. izd-vo, 1961. 54 p. (Biblioteka elektromontera, no.35) (MIRA 14:12)

(Electric lines—Overhead)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ZELICHENKO, A.S., inzh.; SARYCHEV, B.M.

Determination of the design parameters and the minimum permissible diameters of the components of wooden anchor tower corner-pole supports on 35 and 110 kv. electric power transmission lines. Elek.sta. 32 no.6:59-64 Je '61. (MIRA 14:8)
(Electric lines--Poles)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, B.M., inzh.

Semianchored and anchored mounting of lines on intermediate towers.
Elek. sta. 32 no.12:27-29 D '61. (MIRA 15:1)
(Electric lines--Overhead)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, G. S., inzh.

Semigraphical method for designing high-pressure tubular mercury-quartz lamps. Svetotekhnika 9 no.3:17-19 Mr '63. (MIRA 16:4)

1. Vsesoyuznyy svetotekhnicheskiy institut.

(Electric lamps)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

L 19000-63 EPR/BDS Ps-4 -WW

ACCESSION NR: AP3007547 S/0115/63/000/009/0028/0029

AUTHOR: Sary*chev, G. S.; Vesel'nitskiy, I. M.; Rokhlin, G. N.

12

TITLE: New method of fastening surface thermocouples 10

SOURCE: Izmeritel'naya tekhnika, no. 9, 1963, 28-29

TOPIC TAGS: thermocouple, thermocouple measurement

ABSTRACT: A simple bimetal-spring device is described for fastening a thermocouple to the bulb of a mercury-quartz lamp for the purpose of measuring the temperature on the bulb surface. Elongation of the thermocouple with temperature is compensated for by bending the bimetal spring so that proper contact with the bulb is maintained within a temperature (400-900C tested) range. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 14Oct63 ENCL: 00

SUB CODE: IE NO. REF SOV: 001 OTHER: 000

Card 1/1

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, G.S.

Light sources for industrial photochemical reactions. Khim. prom. 40 no.11:820-824 N '64 (MIRA 18:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy svetotekhnicheskiy institut.

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, I. A.

USSR/Electronics - Radio

Card 1/1 Pub. 133 - 5/24

Authors : Sarychev, I. A., and Karavayeva, S. F., Engineers

Title : Qualitative characteristics of a wire communication-path measured by means of short measuring-signals

Periodical : Vest. svyazi 6, 9-10, June 1954

Abstract : A method of measuring wire communication-paths by sending out short measuring-signals and the mode of operation of instruments, which record the frequency characteristics of the path, are discussed. The input resistance and insulation resistance of distributing feeder and subscriber lines are measured without any noticable interruption in the transmission. The measuring method was first introduced at the Moscow radio-relay network (MGRS) and some results are described. Drawings; illustration.

Institution : The City Radio-Relay Network, Moscow

Submitted : ...

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, I. A.

USSR/ Electronics - Measuring device

Card 1/1 Pub. 89 - 10/27

Authors : Sarychev, I.

Title : A device for the checking of distributing feeders

Periodical : Radio 1, 20-23, Jan 1955

Abstract : A description is presented of a measuring device which can be used for checking the electrical characteristics of feeding lines used in radio broadcasting; with the help of this device the input resistance of the feeding lines and their insulation condition can be measured practically without interruption of the broadcast. This device was designed and developed at the laboratory of the city of Moscow radio translation network. The circuit and diagrams are presented. Illustrations, schematic drawings.

Institution : .....

Submitted : .....

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SOROKER, V.I., doktor tekhn. nauk; SOKOLOV, V.A., inzh.; SARYCHEV, I.I., kand. tekhn. nauk, red.; GARNUKHINA, L.A., tekhn. red.

[Using pressure in the molding of products from stiff concrete mixes] Primenenie prigruzki pri formirovanii izdelii iz zhestkikh betonnykh smesei. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1957. 24 p. (MIRA 11:8)

1. Gosudarstvennyy Vsesoyuznyy nauchno-issledovatel'skiy institut zhelezobetonnykh izdeliy i nerudnykh materialov.
(Precast concrete)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

BOBORYKIN, Ye.P., red.; SARYCHEV, I.I., red.; FRADKIN, S.D., red.; SHAKIROV, R.A., red.; LISOGOR, A.A., red.; VENTSKEVICH, L.A., red.

[Technological information and propaganda at construction projects in Russia] Tekhnicheskaia informatsiia i propaganda na stroikakh Rossii; sbornik statei. Moskva, TSentr. biuro tekhn. informatsii, 1962. 106 p. (MIRA 16:7)

1. Russia (1917- R.S.F.S.R.) Gosudarstvennyy komitet po delam stroitel'stva.
(Construction industry--Technological innovations)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, I. YE

USSR/Chemical Technology - Chemical Products and Their Application. Water Treatment. Sewage Water, I-11

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62465

Author: Abramov, N. I., Sarychev, I. Ye.

Institution: None

Title: Reuse of Cooling Water

Original Periodical: Sb. predlozheniy po ekonomii elektr. i tepl. energii, premir. na 8-m Vsesoyuzn. konkurse, Moscow-Leningrad, 1955, 262

Abstract: Cooling water of paranit rollers is used to cool cooling and condensing units of gasoline recovery plant, it is then softened over ion-exchangers and used as boiler feed. As a result considerable savings of water and fuel are effected.

Card 1/1

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

L 34366-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AT6008411 SOURCE CODE: UR/3136/65/000/957/0001/0032

AUTHOR: Aleksandrov, Yu. V.; Aleksenko, Yu. N.; Batalov, A. A.; Buynitskaya, V. I.; Kochenov, A. S.; Sarychev, M. A.

ORG: Institute of Atomic Energy im. I. V. Kurchatov (Institut atomnoy energii)

TITLE: The study of the influence of the porosity of beryllium reflector on the flow of thermal neutrons in horizontal beams

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-957, 1965. Issledovaniye vliyaniya skvazhnosti berilliyevogo otrazhatelya na potok teplovykh netronov v gorizontal'nykh puchkakh, 1-32

TOPIC TAGS: reactor reflector, neutron beam, neutron flux

ABSTRACT: The intensity of strong neutron fluxes ($10^{10}-10^{11}$ n/cm^2·sec) at the exit of experimental reactor beams is in part determined by the flow of thermal neutrons at the header of the beam and by its cross section. In turn, these depend on the properties of the reflector. Since the authors were unable to imitate on the critical stand the active zone with the required spectral composition of the neutrons, they imitated the "thermal" active zone by establishing the appropriate distribution of the thermal neutron flux within the beryllium reflector. This was achieved by placing a 0.5-mm thick cadmium filter between the active zone and the reflector. The present article describes the critical stand used and the methodology of the

Card 1/2

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L 34366-66

ACC NR: AT6008411

experiment. The results cover extensive measurements of thermal neutron beams in channels of varying configuration and of different mutual distribution of beam relative to beryllium reflectors. In some cases the reflector consisted of consecutive layers of beryllium and plexiglas or a 26-cm beryllium and a 40-cm graphite layer. The report concludes with a theoretical calculation of the thermal neutron flux at the root of a single radial beam. The theoretical results are in good agreement with the experimentally measured values. Orig. art. has: 13 formulas, 14 figures, and 4 tables.

SUB CODE: 18 / SUBM DATE: none

Card 2/2

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, N.

Determining the type composition of peas by the "Ul'trasvet" apparatus. Muk.-elev. prom. 29 no.7:4-5 Jl '63. (MIRA 17:1)

1. Zamestitel' nachal'nika Bashkirskogo upravleniya Gosudarstvennoy inspektsii po kachestvu sel'skokhozyaystvennykh produktov.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, N., master sporta, starshiy trener

Rapid fire from a pistol at silhouettes. Voen. znan. 38 no.6:26-28 Je '62. (MIRA 15:6)

1. TSentral'nyy strelkovo-sportivnyy klub Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu.
(Pistol shooting)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

KARELI, L.; SARYCHEV, N., inzh.; FRENKEL', A.

Erection of bridge footings on high pile grillage foundations. Prom.stroi.i inzh.soor. 4 no.2:22-29 Mr-Ap '62. (MIRA 15:11)
(Nikolaev--Bridges--Foundations and piers)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, N., master sporta

An I training correctly. Voen. znan. 40 no.10:28-29 O '64.
(MIRA 17:12)

1. Starshiy trener TSentral'nogo strelkovo-sportivnogo kluba Vsesoyuznogo dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, Nikolay Grigor'yevich; MARGOLIN, M.V., red.; USPENSKIY, N.M., red.; GERASIMOVA, V.N., tekhn.red.

[Margolin pistol; design and interaction of parts] Pistolet Margolina; ustroistvo i vzaimodeistvie chastei. Moskva, Izd-vo DOSAAF, 1959. 30 p. (MIRA 12:12)
(Pistols)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, N.I., starshiy prepodavatel', kand.biol.nauk

New method for counting leucocytes in the blood of chickens. Uch.zap.Mord.gos.un. no.42:24-26 '64.

Biochemical study of the blood in avian leukosis. Ibid.:27-30

Dynamics of phosphorus metabolism in avian leukosis. Ibid.:31-38 (MIRA 18:11)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, N.I., aspirant

Phosphorus metabolism in hens with leucosis. Veterinariia 40 no.4:38-41 Ap '63. (MIRA 17:1)

1. Vsesoyuznyy institut eksperimental'noy veterinarii.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

KARELI, L. G., laureat Leninskoy premii; SAHYCHEV, N. K.; FRENKEL', A. L.

Assembly of bridge spans over the Southern Bug River. Transp. stroi. 13 no.4:13-18 Ap '63. (MIRA 16:4)

1. Nachal'nik mostopoyezda No. 444 Tresta mostostroyeniya No. 1 (for Kareli).

(Nikolayev—Bridge construction)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

L 56408-65 EWT(d)/EWT(m)/EWA(d)/EWP(v)/EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l)/EWA(e)

621.774.36

24
B

AUTHOR: Morozov, A. A.; Sarychev, O. A.

TITLE: A mill for cold rolling pipe. Class 7, No. 171368

[illegible] izobreteniy i tovarnykh znakov, no. 11, 1965, 18-19

[illegible] manufacture, cold rolling, rolling [illegible]

[illegible] certificate [illegible]

[illegible] in separate [illegible] rollers are [illegible]

Card 1/3

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

L 56498-65

ACCESSION NR: AP5017796

ASSOCIATION: none

SUBMITTED: 20Oct62 ENCL: 01 SUB CODE: IE

NO REF SOV: 000 OTHER: 000

Card 2/3

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, P.; CHULKOV, R.

Automatic equipment for loading and unloafing slaughtered poultry. Mias.ind.SSSR 32 no.6:47-49 '61. (MIRA 15:2)

1. Voronezhskiy sovnarkhoz (for Sarychev). 2. Buturlinovskiy ptitsekombinat (for Chulkov).
(Poultry plants--Equipment and supplies)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, P.P., inzh. [deceased]

Needs of the industry must be met. Bum. prom. 36 no.11:28-29 N '61. (MIRA 15:1)

(Paper industry)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ONIANI, Sh.I.; SARYCHEV, R.A.

Determination of the thermophysical characteristics of rocks. Zav.lab. 30 no.4:461-463 '64. (MIRA 17:4)

1. Institut gornogo dela AN Gruzinskoy SSR.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

DZIDZIGURI, A.A.; ONIANI, Sh.I.; SAFYCHEV, R.A.

Study of the thermophysical properties of the rocks of the Tkibuli-Shaori coal deposit. Soob. AN Gruz. SSR 31 no.1: 131-138 Jl '63. (MIRA 17:7)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

DZIDZIGURI, A.A., prof.; ONIANI, Sh.I., kand. tekhn. nauk; SARYCHEV, R.A., inzh.

Rapid method of determining the thermal and physical properties of rock and coal. Izv. vys. ucheb. zav.; gor. zhur. 8 no.1:3-6 '65. (MIRA 18:3)

1. Institut gornoy mekhaniki, razrabotki mestorozhdeniy i fiziki vzryva imeni G.A. TSulukidze AN GruzSSR. 2. Chlen-korrespondent AN GruzSSR (for Dzidziguri).

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

DOBROLYUBOVA, Tat'yana Alekseyevna; SARYCHEV, T.G., otvetstvennyy red.; KORDUN, K.B., red. izd-va; KASHINA, P.S., tekhn. red.

[Lower Carboniferous colonial Tetracorallia of the Russian Platform] Nizhnekamennougol'nye kolonial'nye chetyrekhluchevye korally Russkoi platformy. Moskva, Izd-vo Akad. nauk SSSR, 1958. 216 p. (Akademiia nauk SSSR. Paleontologicheskii institut. Trudy, vol. 70).
(Russian Platform--Corals, Fossil) (MIRA 11:5)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

DOBROLYUBOVA, T.A.; KABAKOVICH, N.V.; CHUDINOVA, I.I.; SARYCHEVA, T.G., otv. red.;

[Instructions for the collection and study of Paleozoic corals] Nastavlenie po sboru i izucheniiu paleozoiskikh korallov. Moskva, Izd-vo "Nauka," 1964. 55 p. (Nastavlenii po sboru i izucheniiu iskopaemykh organicheskikh ostatkov, no.9) (MIRA 17:6)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

GORODINSKIY, S.; SARYCHEV, V.

Equipment for laying masticated polyvinyl chloride floor coverings. Na stroi. Ros. 3 no.3:36-37 Mr '62. (MIRA 16:2)
(Ethylene) (Floor coverings)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

25983
S/560/61/000/006/001/010
E032/E114

10.5300 3,2200

AUTHOR: Sarychev, V.A.

TITLE: Effect of earth's oblateness on the rotational motion of an artificial satellite

PERIODICAL: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. No. 6. Moscow, 1961. pp. 3-10

TEXT: The problem is discussed in the three cartesian set of coordinates illustrated in Fig.1 in which P is the plane of the osculating orbit, $CX_aY_aZ_a$ is the absolute set of coordinates, CZ_a is the axis of rotation of the earth and the CX_aY_a plane coincides with the plane of the equator. The OX axis lies along the radius-vector connecting the centres of mass of the earth and of the satellite, OY lies in the plane of the osculating orbit, and OZ completes the right-handed set. The axes of the $OX_1Y_1Z_1$ set lie along the principal axes of the central ellipsoid of inertia of the satellite and the centre of mass of the satellite is at O. The elements of the transformation matrix for these sets of coordinates are given by the following table:

Card 1/ 8

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

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$$\begin{array}{cccc} & x_1 & y_1 & z_1 \\ x & a_{11} & a_{12} & a_{13} \\ y & a_{21} & a_{22} & a_{23} \\ z & a_{31} & a_{32} & a_{33} \end{array} \qquad \begin{array}{cccc} & x & y & z \\ x_a & c_{11} & c_{12} & c_{13} \\ y_a & c_{21} & c_{22} & c_{23} \\ z_a & c_{31} & c_{32} & c_{33} \end{array} \qquad \begin{array}{cccc} & x_1 & y_1 & z_1 \\ x_a & \bar{a}_{11} & \bar{a}_{12} & \bar{a}_{13} \\ y_a & \bar{a}_{21} & \bar{a}_{22} & \bar{a}_{23} \\ z_a & \bar{a}_{31} & \bar{a}_{32} & \bar{a}_{33} \end{array}$$

and the explicit expressions for these coefficients are given by:

$$\left.\begin{aligned} c_{11} &= \cos u \cos \Omega - \sin u \sin \Omega \cos i, \\ c_{12} &= -\sin u \cos \Omega - \cos u \sin \Omega \cos i, \\ c_{13} &= \sin \Omega \sin i, \\ c_{21} &= \cos u \sin \Omega + \sin u \cos \Omega \cos i, \\ c_{22} &= -\sin u \sin \Omega + \cos u \cos \Omega \cos i, \\ c_{23} &= -\cos \Omega \sin i, \\ c_{31} &= \sin u \sin i, \end{aligned}\right\} \qquad (1)$$

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$$\left.\begin{aligned} c_{32} &= \cos u \sin i, \\ c_{33} &= \cos i \end{aligned}\right\} \qquad (1)$$

where: θ is the true anomaly; $u = \bar{\omega} + \theta$; $\bar{\omega}$ is the angular distance of the perigee Π from the node; u is the latitude; Ω is the longitude of the ascending node; i is the inclination of the orbit. The absolute angular velocity of the orbital set of coordinates has the following components along the OX, OY and OZ axes:

$$\left.\begin{aligned} p_1 &= c_{31} \frac{d\Omega}{dt} + \cos u \frac{di}{dt} \\ q_1 &= c_{32} \frac{d\Omega}{dt} - \sin u \frac{di}{dt} \\ r_1 &= c_{33} \frac{d\Omega}{dt} + \frac{du}{dt} \end{aligned}\right\} \qquad (2)$$

The position of the satellite relative to the orbital set of coordinates is then defined by the three independent angles ψ, θ

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

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and γ, where ψ is the angle between the projection of OX_1 on to the OXZ plane and the OX axis, θ is the angle between the OX_1 axis and the OXZ plane, and γ is the angle between the OY_1 axis and the OX_1Y plane. The elements a_{ij} of the first of the above three matrices are then given by:

$$\left.\begin{aligned}
a_{11} &= \cos\psi \cos\theta, \\
a_{12} &= \sin\psi \sin\gamma - \cos\psi \sin\theta \cos\gamma, \\
a_{13} &= \sin\psi \cos\gamma + \cos\psi \sin\theta \sin\gamma, \\
a_{21} &= \sin\theta, \\
a_{22} &= \cos\theta \cos\gamma, \\
a_{23} &= -\cos\theta \sin\gamma, \\
a_{31} &= -\sin\psi \cos\theta, \\
a_{32} &= \cos\psi \sin\gamma + \sin\psi \sin\theta \cos\gamma, \\
a_{33} &= \cos\psi \cos\gamma - \sin\psi \sin\theta \sin\gamma;
\end{aligned}\right\} \quad (3)$$

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

and the corresponding angular velocity components are given by:

$$\left.\begin{aligned} p &= \dot{\psi} a_{21} + \dot{\gamma} + p_1 a_{11} + q_1 a_{21} + r_1 a_{31} \\ q &= \dot{\psi} a_{22} + \dot{\theta} \sin\gamma + p_1 a_{12} + q_1 a_{22} + r_1 a_{32} \\ r &= \dot{\psi} a_{23} + \dot{\theta} \cos\gamma + p_1 a_{13} + q_1 a_{23} + r_1 a_{33} \end{aligned}\right\} \quad (4)$$

To the first order of small quantities the force function which determines the effect of the gravitational field of the earth on the satellite can be written down in the form:

$$U = K \iiint_M \left[\frac{1}{\rho} - \varepsilon \frac{a^2}{3\bar{\rho}^3}\left(3\frac{\bar{z}_a^2}{\bar{\rho}^2} - 1\right)\right] dM \quad (6)$$

where

$$K = Mf_0, \quad \varepsilon = \alpha - \frac{m}{2}, \quad \alpha = \frac{a-b}{a}, \quad m = \frac{\Omega^2 a}{g_a},$$

$$\bar{x}_a = x_0 + x_1\bar{a}_{11} + y_1\bar{a}_{12} + z_1\bar{a}_{13},$$

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

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$$\bar{y}_a = y_0 + x_1\bar{a}_{21} + y_1\bar{a}_{22} + z_1\bar{a}_{23},$$

$$\bar{z}_a = z_0 + x_1\bar{a}_{31} + y_1\bar{a}_{32} + z_1\bar{a}_{33},$$

$$\bar{\rho}^2 = \bar{x}_a^2 + \bar{y}_a^2 + \bar{z}_a^2 .$$

In these expressions M_0 is the mass of the earth, f is the gravitational constant, M is the mass of the satellite, a is the equatorial radius of the earth, b is the polar radius, α represents the polar compression of the earth, Ω is the earth's angular velocity, g_a is the acceleration due to gravity on the equator, $x_1y_1z_1$ are the coordinates of the satellite in $OX_1Y_1Z_1$ frame and $x_0y_0z_0$ are the absolute coordinates of the centre of mass of the satellite. In evaluating the integral on the right-hand side of Eq.(6) it is assumed that the linear dimensions of the satellite are small compared with the distance between the earth and the satellite ρ and only first order terms in x_1/ρ, y_1/ρ, z_1/ρ are retained in the expansion of the integrand in Eq.(6). It is shown that the first order solution

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for the angles ψ, θ and γ is:

$$\left.\begin{aligned}
\psi &= -\varepsilon \frac{4(C - A) + B}{3(C - A)} \frac{a^2}{\rho^2} \sin 2i \sin \omega_0 t, \\
\theta &= \varepsilon \frac{4(B - A)}{3(B - A) - 4C} \frac{a^2}{\rho^2} \sin^2 i \sin 2\omega_0 t + e \frac{2C}{3(B - A) - C} \sin \omega_0 t, \\
\gamma &= \varepsilon \frac{(C - A) + B}{3(C - A)} \frac{a^2}{\rho^2} \sin 2i \cos \omega_0 t
\end{aligned}\right\} \quad (20)$$

where A, B and C are the principal central moments of inertia of the satellite and ω_0 is the average angular velocity of the centre of mass of the satellite on an elliptic orbit.
There are 1 figure and 4 references: 2 Soviet and 2 non-Soviet.
The English language reference reads as follows:
Ref.1: F.R. Moulton, "Periodic Orbits", Washington, 1920 (Russian translation)

SUBMITTED: April 5, 1960

Card 7/8

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, V. A.

OKHOTSIMSKIY, D. Ye., and SARYCHEV, V. A.

"Passive stabilization of a satellite in gravitational field,"

Report presented at the Conference on Applied Stability-of-Motion Theory and Analytical Mecahnics, Kazan Aviation Institute, 6-8 December 1962

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, V. A.,

"Investigation of the Dynamics of Gravitational Stabilization System."

with OKHOTSIMSKIY, D. Ye., "Gravitational Stabilization System of Artificial Satellites."

reports presented at the 13th Intl. Astronautics Congress, Varna, Bulgaria, 23-29 Sep 1962.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, V. A., BELETSKIY, V. V.,

"Problems of motion of the earth's artificial satellites about the center of the mass"

report to be submitted for the 14th Congress Intl. Astronautics Federation, Paris, France, 25 Sep-1 Oct 1963

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ACCESSION NR: AT3006834 S/2560/63/000/016/0005/0009

AUTHORS: Okhotsimskiy, D. Ye.; Sarychev, V. A.

TITLE: Gravitational stabilization system for artificial satellites

SOURCE: AN SSSR. Iskusst. sputniki Zemli, no. 16, 1963, 5-9

TOPIC TAGS: satellite, earth satellite, artificial satellite, stabilization, stabilizer, satellite stabilization, satellite stabilizer, gravitational stabilizer, aerodynamic stability, aerodynamic stabilizer

ABSTRACT: This theoretical paper examines the possible stabilization (STN) of a satellite (S) relative to a trihedron (TH) formed by the radius-vector, the transversal, and the binormal to the orbit (O). This TH is designated "the orbital coordinate system." The principle of STN is based on the utilization of the properties of the central Newtonian force field (CNFF) in order to orient a body moving therein in a specified manner. The body is assumed to have nonuniform moments of inertia relative to its principal central axes. The existence of four stable positions of relative equilibrium for a S moving in a CNFF is stated. The scheme proposed includes the use of a dissipative element which consists of a central spherical cavity filled with a viscous liquid within the gravitationally stable S. The cavity

Card 1/3

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ACCESSION NR: AT3006834

may also consist of a cavity lying between a spherical cavity and a smaller spherical body. For a given thickness of a layer and a given density of the viscous fluid, there exists an optimal viscosity which affords the greatest damping rate for the oscillatory energy. A description is given of the stabilizer (ST) proposed by the author in 1956 consisting of a spherical hinge attached to a satellite, with two equally long rods carrying equal weights at their ends extending therefrom. Such a scheme is effective at elevations at which the aerodynamic drag is negligible. However, at O elevations below 600 km, the atmospheric effect must be taken into account through consideration of the drag forces applied to the center of pressure of the S and the ST bodies, directed in a sense opposite to that of the motion of the S. The gravitationally stable S-ST system will be also aerodynamically stable with a constant equilibrium position of the S and the ST relative to the orbital system of coordinates, if the following conditions are satisfied: (1) If the axes connecting the center of mass of the S and the hinge point of the ST and that connecting the hinge point of the ST and the midpoint of the two ST weights are axes of geometric symmetry of the S and the ST, respectively; (2) both the S and the ST are not aerodynamically unstable; (3) the aerodynamic braking (ratio of the drag forces to the mass) of the ST is not greater than the aerodynamic braking of the S, that is, the S acts as a kind of parachute relative to the ST. The system of gravitational stabilization proposed here can operate for a long time and does not require any

Card 2/3

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ACCESSION NR: AT3006834

expenditure of energy for stabilization. The accuracy of the stabilization of a S is determined only by the manufacturing accuracy of the S-ST combination and can be extremely elevated. The weight of a ST required to achieve an optimal transient process, assuming rods having a length equal to twice the maximum linear dimension of the S, does not exceed a few percent of the S weight. Orig. art. has 2 figs.

ASSOCIATION: none

SUBMITTED:	02Jul62	DATE ACQ:	08Aug63	ENCL:	00
SUB CODE:	AS, AP	NO REF SOV:	001	OTHER:	001

Card 3/3

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, V.A.

Investigation of the dynamics of a gravitational stabilization system. Isk. sput. Zem. no.16:10-33 '63. (MIRA 16:6)

(Stability of rockets)
(Artificial satellites)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, V.A. (Moscow)

"The use of the gravitational field gradient for satellite stabilisation"

Report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow 29 Jan - 5 Feb 64.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ØKHOTSIMSKIY, D. Ye.; ZLATOUSTOV, V. A.; SARYCHEV, V. A.; TORZHEVSKIY, A. P.

"Periodic solutions in the problem of two-dimensional oscillations of a satellite in an eliptical orbit."

report submitted for 11th Intl Cong of Applied Mechanics, Munich, W. Germany, 30 Aug-5 Sep 64.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

SARYCHEV, V. A.

"Some problems of dynamics of satellite gravitational stabilization."

report submitted for 15th Intl Astronautical Cong, Warsaw, 7-12 Sep 64.

Comm for Space Research USSR

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ACCESSION NR: AP4026231 S/0293/64/002/001/0023/0032

AUTHOR: Sary*chev, V. A.

TITLE: Influence of atmospheric resistance on a system for gravitational stabilization of artificial earth satellites

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 1, 1964, 23-32

TOPIC TAGS: atmospheric resistance, artificial satellite, artificial earth satellite, artificial satellite orbit, forced oscillation, artificial satellite gravitational stabilization

ABSTRACT: The author has previously investigated the dynamics of a system of gravitational stabilization for the motion of satellites at relatively great heights where atmospheric resistance can be neglected (iskusstvennyye sputniki Zemli, no. 16, 1963); this paper in certain respects is a continuation of the earlier study, but with the influence of atmospheric resistance taken into account. The following simplifying assumptions are made: 1) the atmosphere is completely entrained by the rotating earth, 2) the influence of atmospheric resistance on the translational motion of the system can be neglected, 3) the effect of the atmosphere on the body is reduced to the force of resistance applied at the center of pressure and directed opposite to the velocity of the center of mass of the body relative to the air,

Card 1/32

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ACCESSION NR: AP4026231

and 4) the axes O_1y_1 of the system, shown in Fig. 1 of the Enclosure, are the axes of symmetry of the satellite and stabilizer, respectively. The orbit of the center of mass of the artificial earth satellite is assumed to be circular. Equations of rotational motion are cited; necessary and sufficient conditions of asymptotic stability of natural oscillations are cited; forced oscillations caused by rotation of the atmosphere are analyzed; and conditions are derived for neutralization of the effect of the forces of resistance on the oscillatory motion of the satellite-stabilizer system. The author briefly discusses the special case of oscillations of one solid body relative to an orbital system of coordinates in a medium with resistance. Orig. art. has: 38 formulas and 2 figures.

ASSOCIATION: none

SUBMITTED: 12Sep63 DATE ACQ: 16Apr64 ENCL: 01

SUB CODE: AS NO REF SOV: 004 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ACCESSION NR: AP4026232 S/0293/64/002/001/0033/0045

AUTHOR: Sary*chev, V. A.

TITLE: Simplification of a system of gravitational stabilization for an artificial satellite

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 1, 1964, 33-45

TOPIC TAGS: artificial satellite, artificial satellite stabilization, artificial satellite gravitational stabilization, artificial earth satellite

ABSTRACT: A study has been made of the possibility of simplifying the gravitational stabilization of an artificial satellite which was proposed earlier (D. Ye. Okhotsimskiy and V. A. Sary*chev, Iskusstvenny*ye sputniki Zemli, no. 16, 1963; V. A. Sary*chev, Iskusstvenny*ye sputniki Zemli, no. 16, 1963). It is shown that it is possible to have a movable coupling between the satellite and stabilizer by means of a suspension having one, two or three degrees of freedom; Fig. 1 of the Enclosure is a diagrammatic representation of such a system with one degree of freedom. The asymptotic stability of the position of equilibrium of the system can be maintained in this case with respect to all angular variables. The formulation of the problem is followed by development of the reading system and the principal relations applicable; a suspension with two degrees of freedom is dis-

Card 1/3

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cussed and equations of motion for the satellite-stabilizer system are derived in Lagrangian form for circular and elliptical orbits; a suspension with one degree of freedom is described and the corresponding equations of motion derived; and a suspension with one degree of freedom is analyzed with respect to stability conditions and eccentricity parameters. Orig. art. has: 45 formulas and 3 figures.

ASSOCIATION: none

SUBMITTED: 12Sep63 DATE ACQ: 16Apr64 ENCL: 01

SUB CODE: AS NO REF SOV: 004 OTHER: 000

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

L 13266-65 EWT(1)/EEC(a)/EWP(m)/FS(v)-3/EEC(j)/EEC(r)/EWG(v)/EWA(d) Pe-4/Pe-5/
Pq-4/Pg-4 GW

ACCESSION NR: AP4046771 S/0293/64/002/005/0657/0666

AUTHOR: Zlatoustov, V. A.; Okhotsimskiy, D. Ye.; Sarychev, V. A.; Torzhevskiy, A. P.

TITLE: Oscillations of an earth satellite in the plane of an elliptic orbit

B

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 5, 1964, 657-666

[illegible] orbit, periodic [illegible]

ABSTRACT: Oscillations of an artificial earth satellite in the plane of an elliptic orbit under the action of gravitational force are analyzed. The stated problem is reduced to determining stable periodic oscillations described by the equation

$$[illegible] = 2e \sin v,$$

where e is the eccentricity of the orbit, v is the true anomaly,

Card 1/3

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ACCESSION NR: AP4046771

θ is the angle between one of principal axes of the ellipsoid of inertia of the satellite and the radius vector of the orbit, $\alpha = 3[(B-A)/C]$ where A, B, and C are the principal central moments of inertia of the satellite, and α and e satisfy inequalities $|\alpha| \leq 3$, $0 \leq e < 1$. The conclusions of A. P. Torzhevskiy [Kosmicheskiye issledovaniya, v. 2, no. 5, 1964, 667-668] concerning the existence, uniqueness, and the behavior of the odd, 2π-periodic solutions of equation (1) are used for subsequent qualitative analysis of periodic solutions. Determination of odd 2π-periodic solutions is reduced to solving a certain boundary-value problem for equation (1). To study the stability of the derived periodic solutions, the equation in variations is written for equation (1), and the roots of its characteristic equation are analyzed. The results of the analysis indicate that for plane elliptic orbits with arbitrary eccentricity, there is a range of α values in which stable periodic motion of a satellite is possible. If $e < 0.465$, then stable oscillations of the satellite are possible for all values of α in the interval $0 < \alpha < 3$. When $e > 0.465$, the largest permissible value of α decreases, and the oscillations of the satellite will trace out a dumb-bell shape and be unstable. Orig. art. has. 6 figures and 10 formulas.

Card 2/3

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ACCESSION NR: AP4046771

ASSOCIATION: none

SUBMITTED: 10Jun64 ENCL: 00 SUB CODE: MA, SV

NO REF SOV: 009 OTHER: 009 ATD PRESS: 3128

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

L 05878-67 EWP(m)/EEC(k)-2/EWT(d)/EWT(l)/FSS-2 IJP(c) GW/GD/AST

ACC NR: AT6022477 (A) SOURCE CODE: UR/0000/65/000/000/0198/0207

70
B+1

AUTHOR: Sarychev, V. A.

ORG: None

TITLE: Use of the gradient in the gravitational field for orientation of artificial satellites

SOURCE: Vsesoyuznyy s"yezd po teoreticheskoy i prikladnoy mekhanike. 2d, Moscow, 1964. Analiticheskaya mekhanika. Ustoychivost' dvizheniya. Nebesnaya ballistika (Analytical mechanics. Stability of motion. Celestial ballistics); trudy s"yezda, no. 1, Moscow, Izd-vo Nauka, 1965, 198-207

TOPIC TAGS: gravitation field, artificial satellite, satellite orientation

ABSTRACT: The author considers the problems involved in orientation of artificial satellites with respect to the trihedron formed by the radius vector, transversal and binormal to the orbit and called the orbital coordinate system. The principle of stabilization is based on the use of that property of the Newtonian force field which keeps a body moving in this field oriented in a definite way. The moon and Mercury are natural examples of gravitational stabilization of a body with respect to an attracting mass. The literature on this method of passive orientation is reviewed and practical examples are given illustrating the use of gravitational orientation systems

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ACC NR: AT6022477

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in various types of satellites. The basic concepts pointed out in the literature on the dynamics of this type of stabilization system are discussed including derivation and analysis of stability conditions for the equilibrium attitude, time required for damping of natural oscillations, the effect of resistive forces, eccentric oscillations and errors. The "1963 22A" satellite of "Transit" series is discussed in detail as a practical application of the gravitational stabilization system. Orig. art. has: 6 figures, 8 formulas.

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

L 15220-66 EWT(1)/EWP(m)/ES(v)-3/EWA(d) GW

ACC NR: AP5026044 SOURCE CODE: UR/0293/65/003/005/0667/0673

AUTHOR: Sarychev, V. A.

ORG: none

59
B

TITLE: Asymptotically stable stationary revolutions of a satellite 12,44

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 5, 1965, 667-673

TOPIC TAGS: artificial satellite, rotation, stationary orbit, motion equation, asymptotic property, satellite stability

ABSTRACT: The stationary revolutions of an axisymmetric satellite in a circular orbit are studied. Taking gravitational moments into account, the equations of motion of the satellite are

$$A\frac{d}{dt}(\dot{\psi}\sin^2\vartheta) - 2A\omega_0\dot{\vartheta}\cos\psi\sin^2\vartheta - Cr_0\dot{\vartheta}\sin\vartheta - A\omega_0^2\sin\psi\cos\psi\sin^2\vartheta - Cr_0\omega_0\sin\psi\sin\vartheta = 0, \quad (1)$$

$$A\ddot{\vartheta} + 2A\omega_0\dot{\psi}\cos\psi\sin^2\vartheta - A\dot{\psi}^2\sin\vartheta\cos\vartheta + Cr_0\dot{\psi}\sin\vartheta + A\omega_0^2\cos^2\psi\sin\vartheta\cos\vartheta + 3\omega_0^2(A-C)\sin\vartheta\cos\vartheta + Cr_0\omega_0\cos\psi\cos\vartheta = 0,$$

the steady-state solutions of which are determined by

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$$\sin\psi_0 \sin\vartheta_0 (\alpha\beta + \cos\psi_0 \sin\vartheta_0) = 0,$$
$$\cos\vartheta_0 [(\alpha\beta + \cos\psi_0 \sin\vartheta_0)\cos\psi_0 - \delta(\alpha - 1)\sin\vartheta_0] = 0. \qquad (2)$$

A method of introducing controlling moments to ensure asymptotically stable stationary revolutions is proposed, and the conditions of stability of the obtained solutions are analyzed. The necessary and sufficient conditions of asymptotic stability for one of the solutions are:

$$k > 0,$$
$$\frac{kx(1 - 3\cos^2\vartheta_0)}{y\sin\vartheta_0} + (1 + \cos^2\psi_0 \sin^2\vartheta_0) > 0,$$
$$(\cos^2\vartheta_0 - \sin^2\psi_0 \sin^2\vartheta_0)\left(k - \frac{\sin^2\psi_0 \sin\vartheta_0}{y}\right) > 0, \qquad (3)$$
$$2k^3 \frac{x(1 - 3\cos^2\vartheta_0)}{y\sin^2\psi_0 \sin\vartheta_0} +$$
$$+ k^2 \frac{\sin^2\psi_0 (1 + \cos^2\vartheta_0) - \cos^2\psi_0 \cos^2\vartheta_0 (\sin^2\vartheta_0 + 6\cos 2\vartheta_0)}{\sin^2\psi_0 \cos^2\vartheta_0} +$$
$$+ 2k \frac{\sin\vartheta_0 \cos 2\psi_0}{\ldots} + (1 + \cos^2\psi_0 \sin^2\vartheta_0) > 0.$$

Figure 1 shows the ranges of asymptotic stability of the various solutions.

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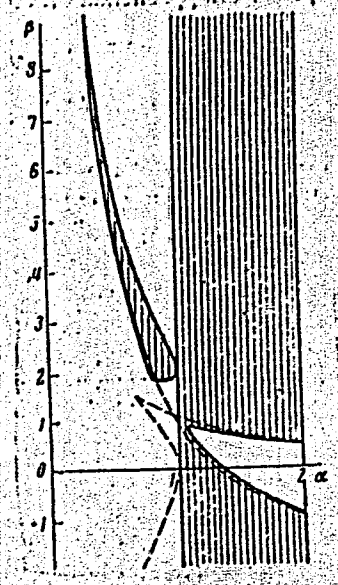

Fig. 1. Range of asymptotic stability of solution of equations in (2). The region of stability is shaded. The dotted line shows region for k = 0.

The calculations indicate that the duration of the transient does not exceed three revolutions of the satellite. This time can be reduced by optimum selection of the parameters. Orig. art. has: 5 figures and 24 formulas.

SUB CODE: 22/ SUBM DATE: 28May65/ SOV REF: 003/ OTH REF: 003

Card 3/3

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

VORONOV, F.D.; BIGEYEV, A.M.; SARYCHEV, V.F.; GONCHAREVSKIY, Ya.A.; MILYAYEV, A.F.; VORONOV, V.F.; KOROTKIKH, V.F.

Operation of large-capacity open-hearth furnaces with sinter in place of ore in the charge and with the use of oxygen in the flame. Stal' 25 no.7:603-605 Jl '65. (MIRA 18:7)

1. Magnitogorskiy metallurgicheskiy kombinat i Magnitogorskiy gornometallurgicheskiy institut.

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

VORONOV, F.D.; BIGEYEV, A.M.; GONCHAREVSKIY, Ya.A.; SARYCHEV, V.F.

Slag formation in the melting period in very high capacity open-hearth furnaces of the Magnitogorsk Metallurgical Combine. Izv.vys.ucheb.zav.; chern. met. 8 no.4:65-71 '65. (MIRA 18:4)

1. Magnitogorskiy gornometallurgicheskiy institut i Magnitogorskiy metallurgicheskiy kombinat.

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BUDNIK, G.I., kand.ekon.nauk; AVDAKOV, Yu.K., dotsent, kand.ekon.nauk; SARYCHEV, V.G., kand.ekon.nauk; PREOBRAZHENSKIY, A.A., kand. istor.nauk; AVDAKOV, Yu.K., dotsent, kand.ekon.nauk; POLYANSKIY, F.Ye., prof., doktor istor.nauk; ZUTIS, Ya.Ya. [Zutis, J.]; GULANYAN, Kh.G., prof., doktor ekon.nauk; GULANYAN, Kh.G., prof., doktor ekon.nauk; KONYAYEV, A.I., dotsent, kand.ekon.nauk; KHROMOV, P.A., prof., doktor ekon.nauk; SHALASHILIN, I.Ye., dotsent, kand.ekon.nauk; SHEMYAKIN, I.N., dotsent, kand.ekon.nauk; POGREBINSKIY, A.P., prof., doktor ekon.nauk; ORLOV, B.P., dotsent, kand. ekon.nauk; TYUSHEV, V.A., kand.ekon.nauk; BALASHOVA, A.V., kand. ekon.nauk; MOZHIN, V.P., kand.ekon.nauk; MINDAROV, A.T., dotsent, kand.ekon.nauk; SHIGALIN, G.I., prof., doktor ekon.nauk; GOLUBNICHIY, I.S., prof., doktor ekon.nauk; VOSKRESENSKAYA, T., red.; BAKOVETSKIY, O., mladshiy red.; MOSKVINA, R., tekhn.red.

[History of the national economy of the U.S.S.R.; lecture course] Istoriia narodnogo khoziaistva SSSR; kurs lektsii. Moskva, Izd-vo sotsial'no-ekon.lit-ry, 1960. 662 p. (MIRA 13:5)

1. Deystvitel'nyy chlen AN Latviyskoy SSR (for Zutis).
(Russia--Economic conditions)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

ABATUROV, A.I.; VINOGRADOV, M.A.; DUBROVA, G.B.; LOTOREV, L.M.; ZORIN, S.N.; VASIL'YEV, A.A.; VOLOKITIN, A.S.; BUKOVETSKIY, A.I.; PEMAZKOV, N.S.; MEZENTSEV, P.V.; YEGORKIN, N.I.; DANILOV, M.M.; LUKASHEV, M.Ya.; MEYEROVICH, I.L.; KLYUCHEV, A.Ye.; SARYCHEV, V.G.; ZAVILOVICH, M.A.; NOVOSEL'SKIY, N.M.; GITLITS, S.A.; REZNICHENKO, M.S.; MOROZ, L.P.; KHETAGUROVA, F.V.; CHOGOVADZE, Sh.K.; RYBCHENKO, A.A.; BOCHAROVA, N.P.; GAGLOYEVA, N.A.; KRYUKOVA, T.B.

Rubinshtein, Grigorii Leonidovich; 1891-1959. Sov. torg. 33 no.12:56 D '59. (MIRA 13:2)
(Rubinshtein, Grigorii Leonidovich, 1891-1959)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

POGREBINSKIY, A.P., prof.; BOBOVICH, I.M., dots.; AVDAKOV, Yu.K., dots.; PAZHITNOVA, T.K., dots.; CHUNTULOV, V.T., dots.; POLYANSKIY, F.Ya., prof.; FRIDBERG, L.Ya., dots.; DOROSHENKO, V.V., dots.; TALYBEKOV, S.Ye., prof.; FADEYEV, A.V., prof.; AMINOV, A.M., prof.; BOROVOY, S.Ya., prof.; KONYAYEV, A.I., dots.; SHEMYAKIN, I.N., prof.; PONYATOVSKAYA, N.P., dots.; SAKYCHEV, V.G., dots.; GOLUBNICHIY, I.S., prof.; VOSKRESENSKAYA, T., red.; NEZNANOV, V., mlad. red.; MOSKVINA, R., tekhn. red.

[Economic history of the U.S.S.R.] Ekonomicheskaia istoriia SSSR. Moskva, Sotsekgiz, 1963. 509 p. (MIRA 17:2)

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6"

"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

RUBINSHTEYN, Grigoriy Leonidovich, doktor ekon. nauk, prof.;
Prinimali uchastiye: BUKOVETSKIY, A.I., doktor ekon. nauk prof.; VASIL'YEV, A.A., kand. ekon. nauk, dots.; VOLOKITIN, A.S., kand. ekon. nauk, dots.; SARYCHEV, V.G., kand. ekon. nauk, dots.; LUKASHEV, M.Ya., kand. ist. nauk, dots.; LYSENKO, S.P., kand. ekon. nauk, dots.; BAK, I.S., doktor ekon. nauk, prof., retsenzent; GOGOL', B.I., doktor ekon. nauk, prof., retsenzent; ABATUROV, A.I., prof., red.; ROZHANKOVSKAYA, I.I., red.

[Development of domestic trade in the U.S.S.R.] Razvitie vnutrennei torgovli v SSSR. Leningrad, Izd-vo Leningr. univ., 1964. 394 p. (MIRA 18:4)

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31628
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26.2331 also 2119

AUTHOR: Sarychev, V.M. (Novosibirsk)

TITLE: On acceleration of plasma in crossed electrical and magnetic fields

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 6, 1961, 17 - 23

TEXT: The author considers isothermal acceleration of a one-dimensional stream of weakly ionized plasma in channels with limited expansion angles in external, constant crossed electrical and magnetic fields. Conventional one-dimensional equations of magnetic gas dynamics are used as the initial set of equations; equations of state, discharge, momentum, energy and Ohm's law. The system of 5 equations contains 8 unknowns; therefore any three of them (in isothermal motion only 2) can be considered as parameters. The range of values of dimensionless parameters corresponding to effective acceleration is determined for channels with limited expansion angles. The minimum value of effective acceleration can be determined in every particular case from boundary conditions. The values found are presented graphically showing the ranges within which an effective acceleration of a plasma stream is possible. The problems are solved on plasma accelera-

Card 1/2

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On acceleration of plasma ...

tion in uniformly expanding channels at maximum acceleration and acceleration of the constant effectiveness, and on optimum acceleration in uniformly expanding channels of anisotropic plasma. Maximum attainable Mach numbers are found at effective acceleration. The maximum isothermal acceleration of a plasma stream in a uniformly expanding channel is attained at the extreme values of limiting parameters. At the same time the highest effectiveness of acceleration is attained, as well as the largest M-number, however heat conditions of an accelerator turns out to be most difficult in this case. The degree of thermal ionization of conventional gases is very small at temperatures which existing materials can withstand. To raise degree of thermal ionization, and consequently, conductivity, small additions of substances with low ionization potential, e.g. vapors of alkali metals, are introduced into gases with high ionization potential. There are 2 figures and 4 references, 2 of which are Soviet-bloc.

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Card 2/2

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S/196/61/000/011/001/042
E194/E155

26.2331

AUTHOR: Sarychev, V.M.

TITLE: Motion of plasma in a tube with external crossed electric and magnetic fields

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.11, 1961, 14, abstract 11A 80. (Zh. prikl. mekhan. i tekhn. fiz., no.1, 1961, 3-9)

TEXT: The elementary theory of plasma is applied to motion in a tube of partially ionised gas with external crossed electric and magnetic fields of constant value. Expressions are found for the rate of drift and temperature of charged particles, current density, electric and magnetic field intensities in the plasma, forces acting on the charged particles, and energy dissipation of the charged particles. The conditions of maximum volumetric force acting on the plasma and of the specific power applied to the plasma are determined. The conditions of validity of the unidimensional theory are established. Motion in a tube of ionised gas in the presence of constant and crossed electric and

Card 1/2

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Motion of plasma in a tube with ... S/196/61/000/011/001/042
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magnetic fields is examined on the assumption that the media are continuous.
5 literature references.

[Abstractor's note: Complete translation.]

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Card 2/2

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"APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001447220005-6

S/207/62/000/003/003/016
I028/I228

AUTHOR: Sarychev, V. M. (Novosibirsk)

TITLE: One-dimensional motion of a thermally non-equilibrium plasma

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 3, 1962, 15–20

TEXT: The one dimensional stationary motion of a thermally non-equilibrium two-component plasma (i.e. a mixture of electron and ionic gases at different temperatures) in a channel in the absence of external electric and magnetic fields is considered. The conservation equations are established for each component. It is deduced from them that: a) the motion of the plasma is similar to the motion of a gas of molecular weight equal to that of the plasma ions and temperature equal to the sum of the temperatures of the electron and ionic components of the plasma; b) an electric field is generated in the plasma, playing a part similar to that of the collisions in the energy transfer between the plasma components. The problem of the plasma motion is solved in two particular cases: a) channel of uniform section; b) variable-section channel of a profile ensuring that the temperature of the ionic component remains constant along the channel.

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Card 1/1

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S/207/62/000/001/002/018
B113/B104

26.1410

AUTHOR: Sarychev, V. M. (Novosibirsk)

TITLE: Isothermal acceleration of a one-dimensional plasma flow in external homogeneous magnetic and electric transverse fields

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 1, 1962, 12-14

TEXT: The motion of a plasma in a plane channel is described by the system of equations

$$\rho u b = \rho_0 u_0 b_0, \quad p = \rho R T, \quad \rho u \frac{du}{dx} + \frac{dp}{dx} = \frac{jH_0}{c}$$
$$\rho u^2 \frac{du}{dx} = jE, \quad j = \sigma\left(E - \frac{uH_0}{c}\right). \qquad (1.1)$$

It is assumed that $\vec{u}=(u,0,0)$, $\vec{E}=(0,E,0)$, and $\vec{H}=(0,0,H)_0$. The respective values in the cross section at x=0 are taken as the standards of the

Card 1/3

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pressure, p_0, the density, ϱ_0, and velocity, u_0, of the plasma, the current density, j_0, the field strength, E_0, of the electric field, and the conductivity, σ_0, of the plasma. The channel width at $x=0-b_0$ is taken as unit of length. Solutions of (1.1) for constant σ and j are obtained:

$$E=\frac{M/M_0+A_0}{1+A_0}\quad\left(M=\frac{u}{\sqrt{RT_0}},A_0=\frac{cj_0}{\sigma_0u_0H_0},Q_0=\frac{j_0H_0b_0}{p_0c}\right)\tag{2.1}$$

$$p=\rho=\frac{M_0}{Mb}=\left(\frac{M/M_0+A_0}{1+A_0}\right)^{A_0^2M_0^2}\exp\left[-A_0M_0(M-M_0)\right]$$

$$x=\frac{M_0\exp(A_0M_0^2)}{Q_0(1+A_0)^{A_0^2M_0^2}}\int_1^{M/M_0}\left(\frac{M}{M_0}\right)^2\left(\frac{M}{M_0}+A_0\right)^{A_0^2M_0^2-1}\exp(-A_0M_0M)\,dM$$

M is the Mach number for isothermal flow; A_0 and Q_0 are random dimensionless parameters. The problem has no solution for $-M/M_0\leq A_0\leq -1$. For $A_0\to 0$, $Q_0\to 0$ and $x\to\infty$. Since $dp/dx=d\varrho/dx=-A_0Q_0M_0/M$, p and ϱ drop

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monotonically with plasma acceleration.

$$\frac{db}{dx} = \frac{Q_0 M_0^2}{M^4}\left(\frac{1+A_0}{M/M_0+A_0}\right)^{2A_0^2M_0^2}\left[A_0(M^2-1)-\frac{M}{M_0}\right]\exp\left[2A_0M_0(M-M_0)\right] \qquad (2.2)$$

is obtained for the angle of divergence of the channel. The plasma acceleration in a channel which cross section expands monotonically is studied for the cases where $\sigma = 1$ and $\sigma = \varrho^{-1/2}$. Expressions for the current densities are obtained. Finally the isothermal acceleration of a plasma in a hot nozzle is studied. There are 3 Soviet references.

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