

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7,
p 107 (USSR) 15-57-7-9475

AUTHORS: Okhotin, M. V., Levina, R. S.

TITLE: A Study of the Linear Rate and of the Upper Limit
Temperature in Crystallization of Silicate Glass
Containing B_2O_3 (Issledovaniye lineynoy skorosti
i temperatury verkhnego predela kristallizatsii
silikatnykh stekol, soderzhashchikh B_2O_3)

PERIODICAL: Tr. Vses. n.-i. in-t stekla, 1956, Nr 36, pp 20-26

ABSTRACT: A study of the linear rate and of the temperature of
the upper limit of crystallization, conducted by the
quenching method, has shown that the introduction of
 B_2O_3 in place of SiO_2 and CaO in sodium-calcium-
magnesium-alumino-boro-silicate glass lowers the rate
of crystallization 0.23 to 0.83, 0.14 to 1.67, and
0.75 to 1.14 μ /min. The introduction of B_2O_3 in place

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A Study of the Linear Rate (Cont.)

15-57-7-9475

of Al_2O_3 and Na_2O increased the crystallization (maximum rate of crystallization 1.14 to 1.33, 0.68 to 1.30, and 0.40 to 2.70 $\mu/\text{min.}$) During these experiments, the temperature of the upper limit of crystallization varied between the limits of 892° and 1078° . When magnesium oxide was replaced by boron anhydride, the crystallization properties remained practically unchanged.

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OKHOTIN, M.V.
OKHOTIN, M.V., prof., doktor khim. nauk;

ANDRYUKHINA, T.D., kand. tekhn. nauk.

Determining the viscosity of silicate glasses in the softening and
annealing temperature range by the rod deformation method. Trudy
VNIISTekla no.37:77-84 '57. (MIRA 11:1)

(Glass--Testing) (Viscosity)

15(6)

AUTHORS:

Okhotin, M. V., Professor, Doctor of
Chemical Sciences, Ushanova, A. V.

SOV/72-59-2-5/21

TITLE:

Influence of Fluorides Upon the Crystallization and Viscosity
of Alkali-Free Highly Aluminous Glass Types (Vliyaniye
ftoridov na kristallizatsiyu i vyazkost' besshchelochnykh
vysokoglinozemistyykh stekol)

PERIODICAL:

Steklo i keramika, 1959, Nr 2, pp 15-16 (USSR)

ABSTRACT:

As can be seen from the paper by V. V. Pollyak (Ref 1), fluorine compounds in the form of fluoride are added to the glass charge to accelerate the glass formation process. As is shown in figures 1 (for three-component glass) and 2 (for four-component glass) a 3 % fluoride content can be regarded as an optimum percentage. It becomes evident from figure 3 that fluorine additions lead to a decrease of viscosity.

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Influence of Fluoride Upon the Crystallization and
Viscosity of Alkali-Free Highly Aluminous Glass Types

SOV/72-59-2-5/21

Conclusions: By fluorine additions, glass tubes can be produced under lower temperature conditions. By a 4 % fluorine addition the production temperature can be lowered by 80 °. There are 3 figures and 1 Soviet reference.

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AUTHOR: Okhotin, M. V., Professor, Doctor of Chemical SciencesTITLE: The Temperature of the Upper Crystallization Limit of Glasses
With a Content of 16% Sodium Oxide

PERIODICAL: Steklo i keramika, 1960, No. 6, pp. 23 - 24

TEXT: The computation method for the above-mentioned temperature is given in the paper under review. The formula for the determination of the temperature of the upper crystallization limit of silica glasses with a content of 16% Na_2O , of 6-10% CaO and of 0-5% MgO and Al_2O_3 is given. The values

determined in accordance with this formula agree with the experimental values, as may be seen from the Table. The temperature values of the upper crystallization limit of glasses with a given chemical composition can be determined with the aid of the graphic representations of the dependence of this temperature on the chemical composition of the glass (Figs. 1, 2, and 3). There are 3 figures and 1 table.

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OKHOTIN, M.V., doktor khimicheskikh nauk, prof.

Temperature of the upper limit of crystallization of types of glass
containing 16 o/o sodium oxide. Stek. i ker. 18 no.11:18-19 N
'61. (MIRA 15:3)

(Glass--Research)

OKHOTIN, M.V., prof., doktor khimicheskikh nauk; VILENSKAYA, Ye.I.;
TUZIKOV, A.I.

Methods of measuring the viscosity of melted glass in a pot
furnace. Stek.l ker. 19 no.5:12-14, My '62. (MIRA 15:5)
(Glass manufacture)

OKHOTIN, M.Y., doktor khim.nauk, prof.; RYBCHINSKAYA, A.V., petrograf

Optical crystallographic method of determining defects in glass.
Steklo ker. 19 no.11:7-10 N '62. (MIRA 15:12)

1. Nauchno-issledovatel'skiy institut stekla.
(Crystal optics) (Glass Defects)

OKHOTIN, M.V., Doktor khimich.nauk, prof.

Using a formula to determine the maximum crystallization speed
of sodium-calcium-magnesium-aluminum silicate types of glass
containing 16 per cent Na_2O . Stek. i ker. 20 no.4:8 Ap '63. (MIRA 16:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut stekla.
(Glass)

L 42412-65 EMI(a)/EMI(b)/EMI(1)/EMI(b) Pg-4 MM
 8/0672/65/000/003/0018/0010
 ACCESSION NR: AP5008712

AUTHOR: Okhotin, M. V. (Doctor of chemical sciences)

TITLE: Mathematical calculation of the temperature of the upper crystallization

SOURCE: Steklo i keramika, no. 3, 1965. 18-19

TOPIC TAGS: glass crystallization, crystallization temperature, upper crystallization limit, aluminosilicate glass

ABSTRACT: The temperature of the upper crystallization limit of industrial calcium-magnesium-aluminosilicate glasses containing 15% Na₂O can be calculated by formulas (1) and (2) given below. The content of the glass components is expressed in weight percent.

where

$$T = \frac{a_1 n_{CaO} + a_2 n_{MgO} + a_3 n_{Al_2O_3} + a_4 n_{SiO_2} + a_5 n_{Na_2O} + a_6 n_{K_2O} + a_7 n_{CaF_2} + a_8 n_{B_2O_3} + a_9 n_{PbO} + a_{10} n_{ZnO} + a_{11} n_{BaO} + a_{12} n_{SrO} + a_{13} n_{Li_2O} + a_{14} n_{K_2CO_3} + a_{15} n_{Na_2CO_3} + a_{16} n_{CaCO_3} + a_{17} n_{MgCO_3} + a_{18} n_{Al_2CO_3} + a_{19} n_{SiCO_3} + a_{20} n_{Fe_2O_3} + a_{21} n_{FeO} + a_{22} n_{NiO} + a_{23} n_{CoO} + a_{24} n_{MnO} + a_{25} n_{ZnCO_3} + a_{26} n_{BaCO_3} + a_{27} n_{SrCO_3} + a_{28} n_{Li_2CO_3} + a_{29} n_{K_2CO_3} + a_{30} n_{Na_2CO_3} + a_{31} n_{CaCO_3} + a_{32} n_{MgCO_3} + a_{33} n_{Al_2CO_3} + a_{34} n_{SiCO_3} + a_{35} n_{Fe_2O_3} + a_{36} n_{FeO} + a_{37} n_{NiO} + a_{38} n_{CoO} + a_{39} n_{MnO} + a_{40} n_{ZnCO_3} + a_{41} n_{BaCO_3} + a_{42} n_{SrCO_3} + a_{43} n_{Li_2CO_3} + a_{44} n_{K_2CO_3} + a_{45} n_{Na_2CO_3} + a_{46} n_{CaCO_3} + a_{47} n_{MgCO_3} + a_{48} n_{Al_2CO_3} + a_{49} n_{SiCO_3} + a_{50} n_{Fe_2O_3} + a_{51} n_{FeO} + a_{52} n_{NiO} + a_{53} 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a_{826} n_{CaCO_3} + a_{827} n_{MgCO_3} + a_{828} n_{Al_2CO_3} + a_{829} n_{SiCO_3} + a_{830} n_{Fe_2O_3} + a_{831}$$

L 42412-65

ACCESSION NR: AP5606712

CaO , MgO , Al_2O_3 are numerical values of the components CaO , MgO , Al_2O_3 to the first and second power; and a , b , c are constants (whose values are tabulated). Use of the formulas is illustrated with two examples. The calculations were found to be in agreement with the experimental ones obtained by the author K.P. Yakovleva. Orig. art. has: 2 tables and 2 formulas.

ASSOCIATION: Institut stekla (Institute of Glass)

SUBMITTED: 00

ENCL: 00

SUB CODE: MT

NO REF SOV: 000

OTHER: 000

Card 2/3

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TUZIKOV, A.I., inzh.

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OKHOTIN, N.Y.

Testing the C-177-L warping machine in the flax industry. Tekst.
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vrach A.M. Bogatkina)
(KIDNEYS--TUMORS)

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no.4:137-139 Ap '57. (MLRA 10:7)

1. Iz Mariyskoy respublikanskoy bol'nitsy (glavnyy vrach A.N.
Bogatkina)

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(BLADDER--FOREIGN BODIES)

~~OKHOTIL, V.V., prof.~~

Problems in modern soil mechanics. Vest. IOU 2 no.3:54-63 M
'ly7. (MIRA 12:9)
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Determining the origin of soils according to their physicochemical properties. Uch.zap.Len.un. no.102:163-170 '50.
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Askan Fine-wooled Sheep," Kirovabad, 1960, 19 pp, 150 copies, (Azer-
baydzhan Agricultural Institute) (KL, 46/60, 126)

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OKHOTINA, M.A., assistant

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01.01.74, 19.01.74
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SHPAN'ON, P.A.

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atomic constants. Izv. tekhn. no.3:3-9 My-Je '55. (MIRA 8:9)
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24(0); 5(4); 6(2) PHASE I BOOK EXPLORATION NOV/2715
 Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni
 D.I. Mendeleeva
 Referaty nauchno-issledovatel'skikh rabot; sbornik No. 2 (Scientific
 Research Abstracts; Collection of Articles, No. 2) Moscow,
 Standartizdat, 1959. 139 p. 4,000 copies printed.
 Additional Sponsoring Agency: USSR, Komitet standartov, ser. 1
 izmeritel'nykh priborov.
 Ed.: S. V. Koshetina; Tech. Ed.: M. A. Kondrat'yeva.
 PURPOSE: These reports are intended for scientists, researchers,
 and engineers engaged in developing standards, measures, and
 gauges for the various industries.
 COVERAGE: The volume contains 123 reports on standards of measure-
 ment and control. The reports were prepared by scientists of
 the Institute of the Komitet standartov, ser. 1 izmeritel'nykh
 priborov Prikladnaya fizika SSSR (Commission on Standards,
 Applied Physics and Measuring Instruments under the USSR Council of
 Ministers). The participating institutes are: VNIIM -
 Vsesoyuznyy nauchno-issledovatel'skiy metrologii imeni D.I.
 Mendeleeva (All-Union Scientific Research Institute of Met-
 rology imeni D.I. Mendeleeva) in Leningrad; Sverdlovsk branch
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 institut koefitsientov, ser. 1 izmeritel'nykh priborov
 (All-Union Scientific Research Institute of the Coefficient
 on Standards, Measures, and Measuring Instruments), created
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 izmeritel'nykh priborov (Moscow State Institute of Measures
 and Measuring Instruments) October 1955; VNIIT - Vsesoyuznyy
 nauchno-issledovatel'skiy metrologii imeni D.I. Mendeleeva
 (All-Union Scientific Research Institute of Metrology imeni
 D.I. Mendeleeva) in Moscow; KhIMIP - Kharkovskiy gosudarstvennyy
 institut ser. 1 izmeritel'nykh priborov (Kharkov State Institute
 of Measures and Measuring Instruments); and MGIMIP - Moskovskiy
 gosudarstvennyy institut ser. 1 izmeritel'nykh priborov
 (Moscow State Institute of Measures and Measuring Instru-
 ments). No personalities are mentioned. There are no references.
 Lubentsov, V.Y., S.M. Okhotina, and P.A. Shapovalov (KhIMIP).
 Apparatus for Checking Type Voltmeters 101
 Rumyantsev, A.G., and Ye. P. Dubovik (VNIIM), and A.A. Chukh-
 lachuk (Sverdlovsk Branch of VNIIM). Developing Methods and
 Standard Apparatus for Testing Direct-Current Transformers Type
 I-59 Under Operating Conditions at 70 Kilowatts 102
 Litvinsk, M.S., V.I. Zinergina, and Ye. Ye. Kozlovskiy (KhIMIP).
 Developing and Studying Apparatus for Measuring Magnetic Fields
 by the Nuclear Magnetic Resonance Method 102
 Rudnyi, M.M., A.Z. Vekselor, and A.I. Bulanova (Sverdlovsk Branch
 of VNIIM). Method of Measuring Hysteresis Losses and Eddy Currents
 in Double Magnetization 104
 Card 20/27

OKHO TLINA, S.M.

44-38861-1015 (41: 6(2) PHASE 2 BOOK EXPIRATION NOV/2215

Vsevolodnyy nauchno-issledovatel'skiy institut matematicheskoy fiziki
D.Y. Mandel'seva

Referaty nauchno-issledovatel'skikh rabot; sbornik No. 2 (Scientific Research Abstracts; Collection of Articles, Nr 2) Moscow, Standartiz, 1958, 119 p. 1,000 copies printed.

Universal Sporting Agency: USSR, Komitet Standartov, Mark
Sovetskoye Sportivnoye Obshchestvo.

vi : 9 v Nabatima! Tech. Ed. I N. I. Kondrat'yeva.

PURPOSE: These reports are intended for scientists, researchers, and engineers engaged in developing standards, measures, and bases for the various industries.

COVERAGE: The volume contains 186 reports on standards of measurement and control. The reports were prepared by scientific institutes of the Komietsk State Scientific Center for Standardization, Pri-Sovetskii Ministerstvo SSSR (Commission on Standards), Measures, and Measuring Instruments under the USSR Council of Ministers). The participating institutes are: VNIIM (Ministry); The Participating Scientific Research Institute of Mathematics (Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Matematiki i Mekhaniki) in Leningrad; Gosvolok branch of the Lenin D.I. Mendeleev in Leningrad; Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Kometicheskikh Standartov, MGI (Scientific Institute of Metric Standards), (All-Union Scientific Research Institute of the Commission on Standards, Measures, and Measuring Instruments), created from NIIIMP - Moskovskiy Gosudarstvennyi Institut Mer i Izmereniy (Moscow State Institute of Measures and Measuring Instruments) October 10, 1957; Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Fiziko-Tekhnicheskikh i Radiotekhnicheskikh Stan-dardov i Radio-Ingeniering (Research Institute of Technological and Radio-engineering Standards) in Moscow; KMIIMP - Khar'kovskiy Gosudarstvennyi Institut Mer i Izmereniy (Kharkov State Institute of Measures and Measuring Instruments); and MGUMIP - Moskovskiy Gosudarstvennyi Institut Mer i Izmereniy (Moscow State Institute of Measures and Measuring Instruments). No personalities are mentioned. There are 6 references.

Gerasimova, Ye. I., and T. B. Morozova (VNIIM). Studying Checking Methods for Absorption-type Attenuators With Attenuation to 30 db in the Three Centimeter Wave Range 125

Laykin, I. Ya., S. M. Ostroina, P. A. Suran'ev, and B. K. Karavashkin (KNDIMP). Developing a Method for Checking CDS-6 Type Generators by a Voltage to 1 Microvolt and by the Factor of Modulation 129

Kashimovskiy, V.V. (VNIIN). Apparatus for Checking and Calibrating Generators of Undamped Electric Oscillations of Ultrahigh Frequency. *Radio Engng. Electron. Phys.* 1966, 11, No. 10, 1330-1332.

Oryashenkov, Yu. M., and A. A. Gordin. *Ordinary- (VNIIPRI). Developing a Method and Apparatus for Measuring Time-Varying Parameters of a Nonlinear System*. 131

Qizbayev, I. I., and L. S. Neustroyev (Wuzirbayev). Developing Methods and Standard Apparatus for Measuring Time-Varying Parameters of

Buzinov, V.S., and L.A. Pereverzev (WILIPRI). Developing Methods
Card 25/27

OKHOTINA, S.M.

Narrow-band quartz frequency meter. Izv. tekhn. no.12:38-41
D '63. (MIRA 16:12)

L 62859-65

ACCESSION NR: AP5019039

UR/0286/65/000/01, 0007

624.953 : 621.642.34

AUTHOR: Zalavin, K. P.; Kolpachev, Yu. G.; Okhotnikov, A. A.; Kireyev, V. Rashidov, N. F.; Grishin, M. S.; Sandakov, Ye. A.; Golovchenov, G. F.; Pyshevsky, I. V.

TITLE: A tank for storage and transportation of liquids. Class 32, No. 12.

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 12, 1965, 72

TOPIC TAGS: liquid storage, tank

ABSTRACT: This Author's Certificate introduces 1. A tank for storage and transportation of a liquid. The unit is made of an elastic material in the form of a truncated cone with a neck and a ring. The floating ring is mounted on the neck and can be replaced so that buckling of the rim of the neck can be avoided in case the ring is damaged. 2. A modification of this tank in which the floating ring is made replaceable by covering it with a sleeve which is fastened to the neck by straps.

ASSOCIATION: none

Card 1/3

L 62859-65

ACCESSION NR: AP5018039

SUBMITTED: 28F6NG4

ENCL: 01

SUB CODE

NO REF SOV: 000

OTHER: 000

Card 2/3

L 62859-65

ACCESSION NR: AP5019039

ENCLOSURE

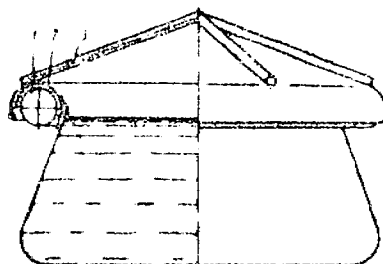


Fig. 1. 1--floating ring
2--sleeve with straps
3--lid

Card 3/3

Doc ID: A7003491

SOURCE CODE: UR/0075/66/001/003/0785/0788

MIRZAYANOV, V. S., and OMOTNIKOV, B. P., All-Union Scientific Research Institute of Comprehensive Automation of the Petroleum and Gas Industry, Moscow (Vsesoyuznyy nauchno-issledovatel'skiy institut kompleksnoy avtomatizatsii neftyanoy i gazovoy promyshlennosti)
"Chromatographic Determination of Trace Impurities of Gases in Ultrapure Helium"

Moscow, Zhurnal Analiticheskoy Khimii, Vol 12, No 8, 1966, pp 985-988

TOPIC TAGS: trace analysis, helium, gas chromatography

Abstract: Determination of the gas impurities H_2 , O_2 , N_2 , CH_4 , etc., by gas chromatography involves difficulties due to the lack of high-sensitivity detectors for them. Chromatographic concentration of impurities in this case is also difficult, chiefly due to the low degree of hydrogen enrichment. To solve this problem, the authors used the G-23 type discharge detector, which has a limit of detection for the above gases of approximately 10^{-6} volume %. Based on this detector, a method of determining impurities of hydrogen, oxygen, argon, nitrogen, and methane in ultrapure helium has been developed.

The operation of the discharge detector is based on the ionization of an impurity by metastable helium atoms. The presence in the gas-carrier of gas impurities leads to a decrease in the rate of formation of metastable helium atoms, which deteriorates detector performances. At high impurity concentrations in the gas-carrier (greater than 10^{-2} volume %), the gas undergoing

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UDC: 543.27

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L 10806-67

ACC NR: AP7003491

analysis induces a drop in discharge current. In this case, the discharge detector works as a detector of indirect electronic mobility. This leads to a lowering of detector sensitivity by more than two orders of magnitude in comparison with the performance of the detector with pure holium. An advantage of the discharge detector is its less rigid requirement for purity of the gas-carrier than holds for the beta-ionization detector operating with the holium gas-carrier (at the same sensitivity toward gases). Orig. art. has: 4 figures and 1 table. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 09Aug65 / ORIG REF: 002 / OTH REF: 003

Card 2/2

OKHOTNIKOV, O., laureat Stalinskoy premii.

~~XXXXXXXXXXXXXXXXXXXX~~
Improving the effectiveness of towing vessels by pushing. Mor.1
rech.flot 14 no.4:5-7 Ap '54. (MLRA 7:5)

(Towing)

OKHOTNIKOV, G., inzhener; MIRONOV, Y., kandidat tekhnicheskikh nauk;
~~SHUSTROV~~, D., inzhener; KHEIFETS, M., inzhener.

Operating calculations in organizing fleet movements according to
towing facilities. Rech. transp. 14 no.1:9-15 Ja '55. (MIRA 8:4)
(Inland navigation)

TETERYATNIKOV, Mikhail Stepanovich; SIVKOVSKIY, N.I., retsenzent; OKHOTNIKOV,
G.I., retsenzent; MAYORSKIY, G.I., redaktor; POMKINSKIY, L.I., redaktor;
MAKRUSHINA, A.N., redaktor izdatel'stva; BEGICHEVA, M.N., tekhnicheskii
redaktor

[Organization of navigation and the work of harbors] Organizatsiia
dvizheniia flota i raboty portov. Moskva, Izd-vo "Rechnoi transport,"
1956. 355 p. (MIRA 9:11)
(Harbors)

OKHOTNIKOV, Georgiy Il'ich; MIROMOV, Viktor Petrovich; SHUSTROV, Dmitriy
Bikiforovich; KHMYPETS, Moyshe Berkovich; KOMISSAROV, N.G.,
retsensent; SYIRIDOV, A.A., red.; MAKRUISHINA, A.A.N., red.izd-va;
TSVETKOVA, S.V., tekhn.red.

[The work of river navigation districts] Rabota flota po tiagovym
plecham. Moskva, Izd-vo "Rechnoi transport," 1957. 76 p.
(Inland water transportation) (MIRA 11:2)

KOMAROV, Anatoliy Vladimirovich, doktor tekhn.nauk; KOSTENKO, I.O., retsenzent;
OKHOTNIKOV, O.I., retsenzent; SOLOV'YEV, I.F., red.; AZROVA, A.G.,
red.isd-va; SALAZKOV, N.P., tekhn.red,

[Interaction of railroad and water transportation in combined
systems] Vzaimodistvie zheleznodorozhnogo i vodnogo transporta
v smeshannykh soobshcheniyakh. Moskva, Izd-vo "Rechnoi transport,"
1957. 211 p.

(MIRA 11:6)

(Railroads)

(Inland water transportation)

OKHOTNIKOV, G.I., inzh.; SHUSTROV, D.N., kand.tekhn.nauk

Insure dependability in transportation and regularity of traffic.
Rech.transp. 18 no.7:12-4' '59. (MIRA 12:11)
(Inland water transportation)

OKHOTNIKOV, G.

Improve the organizational level of the flow of merchandise
in river transportation. Rech. transp. 20 no.12:9-10 D '61.
(MIRA 14:12)

1. Zamestitel' direktora TSentral'nogo nauchno-issledovatel'skogo
instituta ekonomiki i ekspluatatsii vodnogo transporta.
(Inland water transportation)
(Freight and freighting)

OKHOTNIKOV, G.

Improve the organization of the river transportation of
cargoes. Rech. transp. 21 no.1:5-8 Ja '62. (MIRA 16:8)

1. Zamestitel' direktora TSentral'nogo nauchno-issledovatel'-
skogo instituta ekonomiki i ekspluatatsii vodnogo transporta.
(Inland water transportation)

OKHOTNIKOV, G. I.

"On employment of vessels with submerged wings in the USSR"

Report to be submitted for the United Nations Conference on the
Application of Science and Technology for the Benefit of the
Developed Areas - Geneva, Switzerland, 1-20 Feb 62

OKHOTNIKOV, I.; POLYAKOV, L.

Video magnetic tape recording. Znan.sila 35 no.5:38-39 My
'60. (MIRA 13:7)
(Television--Equipment and supplies)
(Magnetic recorders and recording)

OKHOTNIKOV, I.I.; NAFRASNIKOV, A.T.

Third Scientific and Practical Conference on Engineering
Problems in the Water Management of Siberia. Zap. Zabaik.
otd. Geog. ob-va SSSR no. 24:139-140 '64 (MIRA 19:1)

OKHOTNIKOV, Isaif Vadimovich; VISHNYA, L.P., red.

[Literatorskiye Mostki] Literatorskie mostki. Leningrad,
Lenizdat, 1965. 42 p.
(MIRA 19:1)

OKHOTNIKOV, N.I.

Recommendations on maintenance of group switch drives for
electric units. Elek. i tepl. tiaga 3 no.4:36-38 Ap '59.
(MIRA 12:?)

1. Mashinist-inspektor depo Moskva, Oktyabr'skaya doroga.
(Electric locomotives--Electric equipment)
(Electric switches--Maintenance and repair)

OKHOTNIKOV, N.I., mashinist-instruktor

Maintenance of voltage regulators and reciprocal-current relays.
Elek. i topl. tizna 3 no. 6:38-39 Ja '59. (MIRA 12:9)

1. Lokomotivnoye depo Moskva, Okt'yabr'skaya doroga.
(Electric locomotives--Electric equipment--Maintenance and repair)

L 10817-65 EWT(m) EPPIC EFA - T Py-H/Pah-OL RAEM(1) AFETR/AS
AEDC(6) RWH/RW/JH/RE
ACCESSION NR: AT4045683

S/2917/64/000/264/00

AUTHOR: Kulagin, L. V. (Candidate of technical sciences);
Okhotnikov, S. S. (Engineer)

TITLE: Substantiation of the requirements for the quality of
atomization of liquid fuel in combustion chambers with high-pressure
jet atomizers

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut
zhelezнодорожного транспорта. Trudy, no. 264, 1964. Ratsional-
nyye metody szhiganiya zhidkogo topliva i prirodnogo gaza (Eff-
methods of liquid fuel and natural gas combustion), 5-19

TOPIC TAGS: fuel atomization, jet atomizer, locomotive combustion
chamber, diesel fuel, coal distillate, combustion efficiency

ABSTRACT: To substantiate design requirements for high-pressure
atomizers of heavy liquid fuels, the effect of the degree of atom-
ization on the combustion efficiency has been studied experimentally
burning a diesel fuel and a contact coal coking distillate in a
locomotive combustion chamber under various operation conditions (id-

Card 1/4

1 10817-65

ACCESSION NR: AT4045685

run, 25, 50, and 100% load). Analysis of the curves obtained for the completeness of combustion (η_{Σ}) vs the engine load (N) and vs the degree of atomization (x_0) showed that the completeness of combustion for the two fuels increased with increasing load to a value of 0.96—0.98 at a load of 100%. All other conditions being equal, the completeness of combustion of the distillate was lower than that of the diesel fuel. This is attributed to the difference in the vaporization constants of the two fuels. The completeness of combustion decreased with increasing diameter of the atomized fuel drops. The dependence was more marked in the case of the distillate than in the case of the diesel fuel. The effect of the degree of atomization on the completeness of combustion decreased with increasing load. The total losses due to incompleteness of combustion connected with mechanical causes (poor atomization) decreased with increasing load. The process of mixture formation (atomization, vaporization, and the burning of drops) is the limiting factor in the burning of heavy fuels. As a result of the experimental study and the review of published theories the following equation was derived for the degree of fuel atomization:

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L 10817-65

ACCESSION NR: AT4045885

$$\delta_0 = 6 \times 10^{-3} \sqrt{\frac{\lambda V_{\text{comb}} P}{B_T (\alpha L_0 + 1)}}$$

where δ_0 is the initial diameter of a drop; λ is the coefficient representing the space occupied by the jet in the combustion chamber; λ is vaporization constant in cal/cm²; V_{comb} is the volume of active combustion zone in m³; P is the pressure in the combustion chamber; γ is the specific gravity of the combustion products; G is fuel consumption in kg/hr; α is air excess coefficient; m is the theoretically required amount of air for the combustion of a unit weight of fuel in kg/kg. This expression, which correlates burning degree of fuel atomization with engine design parameters, and fuel properties, is based on the following principles: (a) the length of the jet flame is determined by the combustion of the largest fuel drop; (b) the burning of large drops follows the law of the burning of a single drop; (c) parameter δ is applied the same under all operation regimes; (d) the time of burning of the largest drop in the jet flame should not exceed the time of residence of the drop in the combustion zone. Orig. art. has: 11 figures, 3 tables.

Card 3/4

L 10817-65

ACCESSION NR: AT4045685

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut shalesnodorov
transporta, Moscow (All-Union Scientific Technical Institute of Railroad Transport)

SUBMITTED: 00

AYD PRESS: 3117

ENCL: 00

SUB CODE: FP

NO REF SOVI 016

OTHER: 00

Card 4/4

L 8823-65 EPA/EPA-11-EST-81 KPP-1-EST-81 Pr-4/Ps-4/Pt-10
 ASD(a)/AEDC(a)/AFMDC W8 18 W8
 ACCESSION NR: AF4045687 3/2917/64/000/111

AUTHOR: Kulagin, L. V. (Candidate of technical sciences); Dobrikov, K. I.
 (Engineer); Oshatnikov, S. S. (Engineer)

TITLE: Analysis of methods of determining fuel losses due to mechanically
 deficient combustion

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut avia-
 nogo transporta. Izv. 1964, 1964. International'nyye metody opredel-
 eniya topliva i produktov gazov (Efficient methods of liquid fuel
 gas combustion), 80-46

TOPIC TAGS: incomplete combustion, fuel loss, mechanical combustion
 afterburning process, liquid fuel heater, aerodynamic resistance, heat
 coefficient

ABSTRACT: Various methods used in the determination of incomplete combustion
 reviewed. It is asserted that, in comparison to other methods for heating
 measurements, these methods have not been developed thoroughly enough. The
 most promising processes are said to be the optical method and the acoustic

Card 1/2

L 8823-65
ACCESSION NR: AT4045687

afterburning method. The former can be used without expensive apparatus and yields results which require no additional processing. The latter is suitable for a more circumstantial study of losses due to mechanically deficient combustion, provided the device used for burning of the combustion products is further improved. Orig. art. has: 1 table, 5 figures, and 19 formulas.

ASSOCIATION: Vsesoyuznyy nauchno issledovatel'skiy institut zheleznodorozhnykh transporta (All Union Scientific Research Institute of Railroad Transportation)
SUBMITTED: 00 ATE PRESS, 1107 ENCL 1

SUB CODE: PP

NO REF SOVI 003

OTHER:

Cord 2/2

OKHOTNIKOV, S.S.

IVANOVA, N.I., kandidat tekhnicheskikh nauk; METAKSA, V.A., kandidat tekhnicheskikh nauk; OKHOTNIKOV, S.S. inzhener; SAMOKHVALOVA, A.I., aspirant.

Industrial burner with pneumatic fuel firing from above to a stationary grate. Trudy TSNII MPS no.135:124-163 '57. (MIRA 10:8)
(Locomotive boilers)

KIST'YANTS, L.K.; POPLAVSKIY, A.N.; OKHOTNIKOV, S.S.; MOROZOV, B.M.;
FILIPPOVA, L.S., red.; KHITROVA, E.A., tekhn. red.

[Design of burners and spray burners for heating furnaces] Kon-
struktsii gorelok i forsunok dlia nagrevatel'nykh pechei. Moskva,
Vses. izdatel'sko-poligr. ob"edinenie M-va putei soobshcheniia,
1961. 43 p. (MIRA 14:6)
(Burners) (Furnaces, Heating)

OKHOTNIKOV, S.S., inzh.; SILEYANIN, A.A., inzh.

Small burners. Trudy TSNII MPS no. 226:19-35 '62.
(Liquid fuels) (Burners)

(MIRA 15:7)

PAVLOV, S.F., kand.tekhn.nauk; OKHOTNIKOV, S.S., inzh.

Special features of burning low-grade liquid fuels in uniflow
combustion chambers. Trudy TSNII MPS no.241:133-140 '62.

(MIRA 15:12)

(Gas turbines)

~~18500-55~~ RPA/BPE/ ~~Pa-4/20-4~~ ~~APPS(a)/AGD(p)-3/APET1/AEDC(a)/Z117717~~
~~BSD/AFMI/SSD/AEDC(b)/AFMD(t)/BSD(t)~~
 ACCESSION NR: AT4045686 5/2917/64/000/264/0111

AUTHOR: Kulagin, I. V. (Candidate of technical sciences); Okhotnitskiy, I. V. (Engineer); Morozov, B. M. (Engineer)
 TITLE: Selection of an efficient design pattern for a pneumatic sprayer

SOURCE: Moscow, Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta. Trudy, no. 264, 1964. Rational'nyye metody ishlizaniya zhidkogo topliva i prirodnogo gaza (Efficient methods of liquid fuel and natural gas combustion), 20-29

TOPIC TAGS: aerodynamics, propulsion, pneumatic sprayer, combustion chamber sprayer, air fuel ratio, turbulent flow, whirl, flame, atomizer

ABSTRACT: The Tsentral'nyy nauchno-issledovatel'skiy institut Ministerstva polety kosmicheskoy (Central Scientific Research Institute of the Ministry of Communications) has conducted a series of tests both on laboratory stands and under normal operating conditions of sprayers used in heating furnaces, hearths, railroad heating systems and combustion chambers of gas-turbine locomotives. It was found

Card 1/2

E 0500-65

ACCESSION NR: AT4045688

that droplets averaging 100--130 μ in size can be obtained with atomization-chamber and hearth sprayers. These sprayers also yielded good results when tested under operating conditions, though all of them showed a rather high rate of air flow (0.3--0.8 kg per 1 kg fuel). Air sprayers consuming a minimum of energy should meet the following requirements: 1) reduced fuel jet width; 2) maximum relative velocity at the fuel-air boundary; 3) increased surface contact between fuel and spray air; 4) optimum air jet thickness; 5) increased turbulence of air jets; 6) angular direction of the air flow towards the flame; and 7) the possibility of establishing the flame angle needed. The authors believe that a sprayer that would meet these requirements should have fuel supplied between two air jets, and should make use of the centrifugal effect arising when an eddying fuel stream issues from the nozzle. Orig. art. has 9 figures and 8 formulas.

ASSOCIATION: none

SUBMITTED: 00

A'D PRESS: 3104

ENCL

SUB CODE: PR, ME

NO REF SOV: 013

OTHE

Card

272

OKHOTNIKOV, Vadir.

In the world of congealed sounds Sofia Nauka i izkustvo 1951 49 p. (Nauchno-populiarna biblioteka)

LTK - 226

СРЕДНЕВЕКОВЫЙ, Восток

Science

In the world of quest; scientific and imaginary tales and stories
Moskva, Gos. izd-vo detskoi lit-ry 1952

Monthly List of Russian Accessions. Library of Congress, August, 1952. UNCLASSIFIED.

12-90-2-12/30

AUTHOR: Okhotnikov, V.N.

TITLE: Glaciers of the Polar Urals (Ledniki na Polyarnom Urale)

PERIODICAL: Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva, 1958,
Vol 90, Nr 2, pp 174 - 176 (USSR)

ABSTRACT: The article contains a description of glaciers in the Polar
Urals illustrated by 3 photographs. There are 3 Soviet
references.

AVAILABLE: Library of Congress

Card 1/1 1. Glaciers-Photo analysis

OKHOTNIKOV, V.N.

Genesis of Kemin diorites. Izv. AN Kir. SSR. Ser. est. 1 tekhn.
nauk 2 no.9:117-120 '60. (MIRA 14:7)
(Kemin District—Diorite)

OKHOTNIKOV, V.N.

Finds of fauna Ordovician in the sediments regarded formerly as
Pre-Cambrian. Izv. AN Kir. SSR. Ser. est. i tekhn. nauk: 4 no. 7:
91-93 '62. (MIRA 16:3)

(Tien Shan—Paleontology, Stratigraphic)

MAKSIMOV, Ye.V.; OKHOTNIKOV, V.N.

Number of ancient glaciers in the Kirghiz and Kungey Ala-Tau.
Dokl. AN SSSR 152 no.4:956-959 O '63. (MIRA 16:11)

1. Predstavleno akademikom A.A. Grigor'yevym.

OKHOTNIEV, V.N.; KISHINEV, V.I.

Porphyry formation in the western spur of the Trans-Ili Alatau
(northern Tien Shan). Zap. Kir. otd. Vses. min. ob-va no. 5:59-
69 '65. (MIRA 18:7)

OKHOCHNIKOV, Yu.D.

Setting up normal working conditions in plants in the winter.
Metallurg 10 no.3:32 Mr '65. (MIRA 18:5)

1. Nizhne-Tagil'skiy metallurgicheskii kombinat.

L 23876-65 EWT(z)/EPR/EPF(t)/EPF(b) Pr-4 IJP(c) JD/MLK
S/0000/64/000/000/0040/0043

ACCESSION NR: AT5002755

AUTHOR: Lebedev, K. B.; Agayev, S. A.; Okhotnikova, N. A.; Yermilov, T. V.
Raimbekov, Ye. S.; Pilimonov, M. I.

TITLE: Recovery of rhenium from copper concentrates by alkaline leaching.

SOURCE: Vsesoyuznoye soveshchaniye po problemam reniya, 2d, Moscow, 1962.
(Rhenium); trudy soveshchaniya, Moscow, Izd-v Nauka, 1964, 40-43

TOPIC TAGS: rhenium, rhenium extraction, copper concentrate, alkaline leaching,
rhenium cementation, potassium perrhenate

ABSTRACT: The authors propose a method for recovering rhenium in which the concentrate (about 30% copper, 1% lead, 2% zinc, and 0.003% rhenium) is leached with sodium hydroxide, rhenium and lead go into solution, and their cementation is carried out on zinc. A complete flow diagram of the process is given, and the procedure is described in detail. The method is applicable to both copper and copper-lead rhenium-containing concentrates. The final recovery of the rhenium is tentatively estimated as follows: rhenium in potassium perrhenate, 50-55% in crude lead, 20-25%, and in sheet zinc, up to 7%. Orig. art. has:

L 23876-65

ACCESSION NR: AT5002755

and 1 formula.

ASSOCIATION:

SUBMITTED: 05Aug64

ENCL: 00

SUB CODE: PM

NO REF SOV: 011

OTHER: 000

Card 2/2

YEMEL'YANOV, A.S.; MOSTOVAYA, L.I.; OKHOTNIKOVA, M.N.

Efficient underground hydraulic mining of coal. Ugol' Ukr. 7
no.6:42-45 Jo '63. (MIRA 16:8)

BOROVITSKIY, V.N.; OKHOTNIKOVA, Ye.V.

Topical exhibit at the Exhibition of the Achievements of the
National Economy of the U.S.S.R. Prom. energ. 19 no. 4:52
Ap '64. (MIRA 17:5)

OKHOTNITSKIY, I.I.
OKHOTNITSKIY, I.I., inzh.; YURKOV, B.I., inzh.

Method for adjusting the relay IR-1. Avtom., talon. i svias' 2 no.1:
28-29 Ja '58. (MIRA 11:1)

1. Chelkarskaya distantziya signalizatsii i svyazi Orenburgskoy
dorogi.
(Electric relays)

BABANOV, G.K. [Babanov, H.K.]; OKHOTOV, A.A. [Okhotov, G.O.]; PLYSKO,
A.G. [Plysko, A.N.]; TEACH, N.V. [Tkach, M.V.]

Unit for air heating. Khar. prom. no.3:49-50 J1-S '65. (MIRA 18:9)

OKHOTSIMSKAYA, M.Y.

Seasonal distribution of short-period oscillations of an electromagnetic field of the earth. Izv. AN SSSR, Ser. geofiz. no. 8:999-1000 Ag '56. (MLRA 10:1)

1. Akademiya nauk SSSR, Geofizicheskiy institut, Geofizicheskaya stantsiya Alma-Ata.

(Magnetism, Terrestrial)

OKHOTSIMSKAYA, M.Y.

Effect of the Perseid shower on the electrical field in the earth's atmosphere. Izv. AN SSSR. Ser. geofiz. no. 1:122-123 Ja '57.

(MIRA 10:3)

1. Akademiya nauk SSSR. Institut fiziki zemli. Geofizicheskaya stantsiya "Alma-Ata". (Meteors—August) (Atmospheric electricity)

OKHOTSIMSKIY, D. Ye.

On the Theory of Rocket Propulsion. D. E. Okhotsimsky. *Applied Mathematics and Mechanics* (Academy of Sciences of the U.S.S.R.), Vol. 10, 1946, pp. 251-272. In Russian, with English summary.

OKHOTSKINSKIY, D. E.

Distr: 1841

789. Okhotinskiy, D. E. Theory of the motion of a body with cavity partially filled with liquid (in Russian), Prikl. Mat. Mekh. 20, 1, 3-10, Jan./Feb. 1956: 24

N. E. Jochowsky (1882) has investigated the motion of a solid with cavities wholly filled by a liquid and shows that all systems can be replaced by some solid body having the same mass as the system and same moment of inertia. The problem was first discussed by Stokes (1842) and studied by Helmholtz (1858), Lobach (1873) and Newman (1883). The case where a cavity is partially filled was discussed first in 1936, and reports on this subject are appearing successively. Present paper is one of them.

In this case we can not replace the system by an equivalent one but we can introduce a virtual ch. characteristics of the system, analogous to mass and moment of inertia for some special motion such as rotational motion and harmonic oscillation, and establish equations of motion utilizing them. This enables us to analyze the motion of the system under a given external force. Results are obtained for the case of a cavity in the form of a cylinder and two concentric cylinders.

M. Kurokawa, Japan

OKHOTSIMSKIY, D. Ye., Eneiev, T. M. and Taratynova, G. P.

"Determining the Time of Existence of the Artificial Earth Satellite and Studying Secular Perturbations of its Orbit."

Paper prepared for the VIII International Astronautical Congress held in Barcelona, 6-12 October 1957.

Incl. No. 4, R-456-57, ~~DATEX/ESP/XXX~~ Conf. File.

SOV/124-58-3-2659

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 16 (USSR)

AUTHORS: ~~Okhotsimskiy, D. Ye.~~, Kondrasheva, I. L., Vlasova, Z. P.,
Kazakova, R. K.

TITLE: Calculation of Point Detonation With Counter-pressure (Raschet
tochechnogo vzryva s uchetom protivodavleniya)

PERIODICAL: Tr. Matem. in-ta AN SSSR, 1957 Vol 50, 66 pp. ill.

ABSTRACT: The author gives the results of the solution of a problem concerning point detonation in a motionless medium where the constant values of the initial density and pressure are ρ_0 and p_0 , respectively. Taken as initial equations are the equations of one-dimensional, unsteady, adiabatic motion of a perfect ideal gas with Lagrangian independent variables and specially selected unknown functions. The problem is solved by the network method with some changes and additions. The distribution of the functions sought, at a certain moment of time sufficiently close to the detonation, as obtained from L.I. Sedov's solution of a self-similar problem concerning a detonation without taking into account the counter-pressure, is used to provide the initial known quantities. The paper presents an account of

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one of the possibilities employed in the calculation, in which the intervals on the coordinate $\Delta\sigma$ remain constant, while the time spacing $\Delta\tau$ is selected from the condition $\Delta\tau = \Delta\sigma / c$ (c being the velocity of the shock wave at the moment of time under consideration). After the number of intervals was doubled, the intervals were also doubled in size. At the center of the detonation, in view of the singularity thereof, asymptotic formulae describing the behavior of the functions sought were employed. The magnitude of the central interval was taken from the condition of a smooth fairing with the asymptotic curve. The smoothness of the fairing was controlled. Calculations are made for the exponent of the adiabat $\gamma = 1.4$. In two stages, the calculations are brought up to the moment of time $t = 61.47$ sec (corresponding to the dimensional variables at the liberation of the initial energy $E_0 = 8.54 \times 10^{12}$ kgm, $\rho_0 = 0.125$ kg. sec²/m⁴, $p_0 = 10,321$ kg/m²) with a shock-wave radius $r = 21666$ m and a shock-wave pressure $p = 1.040$ atm. Detailed tables and graphs are presented. Comments are made upon the peculiar nature of the changing characteristics of the motion of the gas with the passage of time. A satisfactory coincidence is noted of the calculation results with the self-similar solution at the early stage of the detonation and the extremely slow deformation of the shock wave profile during its deterioration. Parallel solutions of the same problem were achieved by different methods by Goldstine and Neumann

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Calculation of Point Detonation With Counter-pressure

(Goldstine, H., Neumann, J., Commun. Pure and Appl. Math., 1955, Vol 8, pp 327-354) and Brode (Brode, H., Appl. Phys., 1955, Vol 26, Nr 6, pp 766-775 - RZhMekh., 1956, Nr 9, abstract 5794). It is indicated that the comparison of the results obtained with the results of the first of these papers shows a satisfactory coincidence, but that a smaller number of computation points along the coordinate and the time was required in the paper here reviewed.

M. L. Lidor

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OKHOTSIMSKIY, D. Ye., ENEYEV, T. M.

53-1a-2/18

AUTHOR:

TITLE:

Some Variation Problems Connected with the Launching into Space of an Artificial Earth Satellite. (Nekotoryye variatsionnyye zadachi, svyazannyye s zapuskom iskusstvennogo sputnika zemli, Russian)

PERIODICAL:

Uspekhi Fiz. Nauk, 1957, Vol 63, Nr 1a, pp 5 - 32 (U.S.S.R.)

ABSTRACT:

The present paper investigates the problem of conveying the artificial earth satellite to its orbit. This conveyance is assumed to be carried out by means of a rocket booster having one or more steps. The problem is investigated here as to what nature the law of the modification with respect to time of the direction of the trajectory motion of the reactive forces must be in order that the satellite may be conveyed on to a given orbit with the least possible fuel consumption. Also the most favorable fuel consumption is ascertained. The authors solve this problem for several simplifying assumptions, and this solution conveys a definite idea of the characteristic peculiarities of the optimum conditions for launching the satellite into space. By making use of these data it is then possible to construct rocket booster with the lowest possible weight.

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§ 1) Selection of the optimum process for fuel consumption and of the optimum program for trajectory motion: The following assumptions form the basis of the solution of this problem: Aerodynamic forces are assumed to be lacking and the field of gravitation is assumed to be plane-parallel. These assumptions apply only very approximately in reality, but also in this form of approximation the problem is very interesting. First the equations for the motion of the satellite with its booster are given, after which the boundary conditions are formulated: At the beginning of the motion a certain height Y_0 is assumed to be attained at $t = 0$, and likewise also certain values of the horizontal and vertical projection of the velocity (here denoted with u_0 and w_0 respectively). The velocity V at the beginning of the motion is, of course, put equal to zero. At the end of the motion, i.e. at the moment $t = T$, the height must be $y = Y$ and the velocity must be horizontal ($w = 0$). The amount of V must at the end of the motion be equal to a certain fixed value V_k . Certain simplifying circumstances prevailing, the assumption of a definite value V_k corresponds to the assumption of a certain ratio between initial and final weights. With a given value of the earth satellite this means assuming or

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Launching into Space of an Artificial Earth Satellite.

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presupposing a definite initial weight of the rocket booster. The rocket motor need not be in operation during the entire flight of the accelerator. The authors then construct an auxiliary functional which is varied according to the functions and variable parameters occurring in it. The various operations of computation are described. In the case of an optimum program, the tangent of the "angle of pitch" (called "tangage" angle in the Russian text and meaning the angle formed by the axis of the rocket and the horizon of the place from which the rocket is launched) must be a linear function of time. Various varieties are then mentioned (combustion of the entire fuel at the beginning of the motion or at a later stage, combustion of fuel during the entire duration of the motion, and various combinations of these possibilities). All these possibilities are realizable at certain conditions. Next, the case is studied in which the duration of motion is not fixed but is ascertained from the maximum condition of final velocity. Also the initial angle is not assumed as fixed, but is chosen to be as favorable as possible. Also a numerical example is given.

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Some Variation Problems Connected with the Launching into Space of an Artificial Earth Satellite. 53-1a-2/18

Motion with assumed regulation of fuel consumption: The best rule for acceleration is the linear dependence of the tangent of the "tangeage angle" (see above) on time. By integration of the equations of motion expressions for the projections of velocity and for the coordinates at a given point of time are obtained. For the practical computation of the integrals it is necessary to know the dependence of reactive acceleration on time. There follows a detailed investigation of the optimum motion of a composed rocket. The necessary computations are followed step by step. A special examination is made of a composed rocket the n steps of which have similar main characteristics.

Conveyance to the orbit in consideration of the variability of the field of gravity and of the rotation of the earth: Here the motion of the rocket is investigated in relation to a system of coordinates connected with the earth. The formula for the optimum control program, which is found after complicated computations and is valid for various geographical conditions is explicitly given.
(With 9 illustrations)

ASSOCIATION: Not given
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SUBMITTED:
AVAILABLE: Library of Congress
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AUTHOR
TITLE

OKHOTSIMSKIY, D.M., ENOLYEV, T.M., PARATYKO A, G.P., 53-1a-3/18
The Determination of the Life of an Artificial Satellite and the
Investigation of the Secular Perturbations of its Orbit.
(Opredeleniye vremeni sushchestvovaniya ~~is~~isustvovaniya i issledovaniye valovyykh vozmushcheniy yego orbity - R. S. S. R.)
Uspekhi Fiz. Nauk, 1957, Vol 63, Nr 1a, pp 33 - 50 (U.S.S.R.)

PERIODICAL

ABSTRACT

At heights of from about 100 to 150 km the life of the satellite is short and in the case of low transversal stresses the satellite does not even perform a full revolution. Works existing up to now on the life of artificial satellites use only approximation methods and for the general case do not give a full solution of the problem. Besides, unsubstantiated methods of approximation may lead to essential errors. By means of the method discussed here the life of the satellite can for the general case be computed sufficiently quickly and reliably. This investigation proved the existence of universal dependences between the main parameters of the oscillatory ellipse. These relations apply in the case of any satellites and depend only upon the density distribution of the air at increasing height. With the help of the diagrams and tables given here the life of the satellite as well as the change of its orbit parameters with respect to time can be determined quickly. The equations used here were computed by means of the electronic rapid computer BESM of the Academy of Science of the U.S.S.R. Because of the hitherto unknown dependence on height of the air density, the numerical results given here are natu-

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ally suited only for temporary orientation. The values recorded by the satellites will make it possible to carry out precise computations.

The dependence of the density of the atmosphere upon height: An approximated formula for this dependence is given.

The equation of motion: The motion of the satellite is determined here by making use of the osculatory orbit elements; the corresponding equations of motion are written down explicitly. This system of equations is then transformed by means of the known celestial-mechanical theorems. Equations for the variable "argument of breadth" u are more suitable for computations than the equations of the true anomaly ψ .

The method of the determination of the life of an artificial satellite: The authors here investigate the motion of the satellite in the terrestrial atmosphere in the case of a central gravitational field of the earth. The simultaneous motion of the atmosphere together with the daily revolution of the earth is neglected here. The corresponding system of equations is given. The resistance of the atmosphere does not cause secular perturbations of the radial length and the inclination of the orbit. The problem investigated here leads to the integration of a system of two differential equations. Carrying out of integration is discussed. The computations are carried out

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here for the initial height of the apogee $h_{a0} = 1600$ km and for initial heights of the perigee $160 \text{ km} \leq h_{p0} \leq 900$ km. The integration of the system of equations was, up to the height of 100 km, carried out by the satellite.

The results of computations and their discussion: These results are shown together in a table and are illustrated by a nomogram. This table contains the amounts of ν (in $\text{m}^3/\text{kg sec}^2$) as function of the initial values of h_a and h_p as well as the velocities in the perigee at the beginning of the motion of the satellite. During the motion of the satellite the heights of the apogee and perigee decrease monotonously, and h_a decreases more rapidly than h_p . This difference can be very remarkable for long-stretched orbits. The eccentricity of the orbit decreases more and more and tends towards zero. The life of the satellite at an increase of the initial height of the perigee increases more quickly than in the case of an increase of the initial height of the apogee. At unchanged heights of the perigee the life of the satellite can be prolonged considerably by increasing the initial height of the apogee. Long-stretched orbits are, in any case, of advantage. The life of the satellite is nearly inversely proportional to the density of the air within the domain of the primary perigee. The times of revolution computed here for some numerical examples amount to several, or even many years.

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and the Investigation of the Secular Perturbations of its Orbit.

The last chapter deals with the secular perturbations of the orbit parameters of the satellite.
(2 illustrations and 2 tables).

ASSOCIATION Not Given.

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SECRET

BARYCEV, V. A.,

"Investigation of the Dynamics of Gravitational Stabilization System."

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

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

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 Mechanics, Kazan Aviation Institute, 6-8 December 1962

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S/208/62/002/001/008/016
D/299/D303

24 1330 2006
21 7100
AUTHORS:

Okhotsimskiy, D.Ye., and Vlasova, Z.P. (Moscow)

TITLE:

On the behavior of shock waves at a large distance from the explosion

PERIODICAL:

Zhurnal vyc islitel'noy matematiki i matematicheskoy fiziki, v. 2, no. 1, 1962, 107 - 124

TEXT: A numerical calculation is carried out of spherical shock-wave propagation. The present investigation is a continuation of D.Ye. Okhotsimskiy, I.L. Kondrasheva, Z.P. Vlasova and R.K. Kazakova (Ref. 1: Raschet totchechnogo vzryva s uchetom protivodavleniya. Tr. Matem. in-ta AS SSSR, 1957, 50). As initial data, a distribution of gasdynamic parameters was taken, corresponding to a pressure gradient at the shock front equal to 1.1079. The computation grid covered only the region of disturbed flow immediately behind the shock front; the other part of the gas behind the shock was considered as undisturbed. In order to make allowance for the values of the hydrodynamic variables at the late stages of shock development, correction terms were added. A 48-point scheme was used; ✓

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