"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

thereby the computations were carried through to a pressure gradient equal to 1.0018. The computations were further continued by means of S.A. Khristianovich's approximate method (Ref. 2: Udarnaya volna na znachitel'nom rasstoyanii ot mesta vzryva. Prikl. matem.i mekhan., 1956, 20, no. 5, 599-605). In addition, results are given relating to the formation of the second shock wave in the negative-phase region. Denoting by p, u, ρ, D and ξ_B the pressure, particle velocity, density, shock velocity and coordinate of the shock front, one obtains (after transformations), the system

$$\frac{\partial \tilde{u}}{\partial \tau} + b\frac{\partial \tilde{u}}{\partial \eta} + g\frac{\partial \tilde{p}}{\partial \eta} + d = 0, \tag{2.17}$$

$$\frac{\partial \tilde{p}}{\partial \tau} + b\frac{\partial \tilde{p}}{\partial \eta} + e\frac{\partial \tilde{u}}{\partial \eta} + f = 0, \tag{2.18}$$

$$\frac{\partial \tilde{\rho}}{\partial \tau} + b\frac{\partial \tilde{\rho}}{\partial \eta} + c\frac{\partial \tilde{u}}{\partial \eta} + h = 0, \tag{2.19}$$

$$b = \frac{u - \eta D}{\xi_B + \lambda}, \quad c = \frac{\rho}{\xi_B + \lambda}, \quad d = -\frac{D\tilde{u}}{\xi_B}, \quad e = \frac{\gamma p}{\xi_B + \lambda}, \tag{2.20}$$

$$g = \frac{1}{\rho(\xi_B + \lambda)}, \quad f = \frac{2\gamma p\tilde{u}}{\xi} - \frac{\tilde{p}D}{\xi_B}, \quad h = \frac{2\tilde{\rho}u}{\xi} - \frac{\tilde{\rho}D}{\xi_B}.$$

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The problem amounts to the integration of system (2.17)-(2.19) under the following boundary conditions: At the shock front

$$u = \frac{2}{\gamma+1}\left(D - \frac{\gamma}{D}\right),$$

$$\rho = \frac{\gamma+1}{\gamma-1}\left[1 + \frac{2\gamma}{(\gamma-1)D^2}\right]^{-1}, \qquad (2.21)$$

$$p = \frac{2}{\gamma+1}\left(D^2 - \frac{\gamma-1}{2}\right).$$

and at the left boundary

$$u = 0. \qquad (2.22)$$

System (2.17)-(2.19) was integrated by means of a second-order difference scheme. The partial derivatives were written in the form

$$\frac{\partial f}{\partial \tau} = \frac{f_{i+1}^{n+1} + f_i^{n+1} - f_{i+1}^n - f_i^n}{2(\tau^{n+1} - \tau^n)}, \qquad (3.1)$$

$$\frac{\partial f}{\partial \eta} = \frac{{}_{i+1}^{n+1} - f_i^{n+1}) + (1-m)(f_{i+1}^n - f_i^n)}{\eta_{i+1} - \eta_i}, \quad \frac{1}{2} \leqslant m < 1. \qquad (3.2)$$

Replacing in Eqs. (2.17)-(2.19) the partial derivatives by finite

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On the behavior of shock waves at ... S/208/62/002/001/008/016
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differences, one obtains

$$\alpha_{i+1/2}^{n+1/2}\tilde{u}_{i+1}^{n+1} + \beta_{i+1/2}^{n+1/2}\tilde{u}_{i}^{n+1} + mg_{i+1/2}^{n+1/2}(\tilde{p}_{i+1}^{n+1} - \tilde{p}_{i}^{n+1}) = A, \quad (3.3)$$

$$\alpha_{i+1/2}^{n+1/2}\tilde{p}_{i+1}^{n+1} + \beta_{i+1/2}^{n+1/2}\tilde{p}_{i}^{n+1} + mc_{i+1/2}^{n+1/2}(\tilde{u}_{i+1}^{n+1} - \tilde{u}_{i}^{n+1}) = B, \quad (3.4)$$

$$\alpha_{i+1/2}^{n+1/2}\tilde{p}_{i+1}^{n+1} + \beta_{i+1/2}^{n+1/2}\tilde{p}_{i}^{n+1} + mc_{i+1/2}^{n+1/2}(\tilde{u}_{i+1}^{n+1} - \tilde{u}_{i}^{n+1}) = F. \quad (3.5)$$

The system of difference equations (3.3)-(3.5) was solved by the "well-shaft" method (developed by I.M. Gel'fand and O.V. Lokutsiyevskiy). Thereupon, S.A. Khristianovich's approximate method is used, involving the integral of the equations of motion of a spherical shock-wave, viz.:

$$\delta = \frac{\gamma+1}{2} M \ln\frac{r}{r_0} + \frac{r_0}{r}\delta_0\left[M\frac{r}{r_0}\right], \quad (4.1)$$

where

$$M = \frac{1}{\sqrt{\gamma}}u, \quad \delta = \frac{1}{\sqrt{\gamma}}\frac{\xi}{r} - 1; \quad (4.2)$$

With low pressures, one can pass from the numerical calculation (by the "well-shaft" method) of the wave form to calculation by formula (4.1). The distribution of the excess pressure was calculated by

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the approximate formula

$$\Delta p = \sqrt{\gamma}\, u. \qquad (4.4)$$

Further, the results of calculations are given in figures and ta-
bles. The value of m in formula (3.2) was set m = 1/2. The initial
time-step was $\Delta\tau$ = 0.2117988 (0.7302 sec.). The numerical calcula-
tion was carried out to the moment τ = 65.234 (225.90 sec.); it
could not be carried out beyond that as the smoothness of the solu-
tion was impaired. The calculations by the approximate method were
started a little earlier (at τ = 58.457). The results, at τ =
65.234, coincided for both the numerical and approximate methods.
The approximate method was used for calculating the velocity dis-
tribution u, the radius of the shock front and the pressure and ve-
locity immediately behind the front. From a figure, the tendency to
profile reversal and shock-wave formation in the negative phase re-
gion, is evident. The tables show the position of the shock front,
the values of the parameters immediately behind the shock front, as
a function of time, the distribution of the excess pressure, parti-
cle velocity and density; the magnitudes of the areas of the posi-
tive and negative phases are also listed in a table. There are 2

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D299/D303

On the behavior of the k wave at

figures, 6 tables and 4 Soviet-bloc references.

SUBMITTED: October 6, 1961

Card 6/6

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSIMSKIY, D. Ye., and DUBOSHIN, G. N.,

"Some problems of astrodynamics and celestial mechanics"

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

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

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

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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

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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

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

L 18275-63 EPA(b)/EWT(1)/FCC(w)/FS(v)-2/BDS/EEC-2/ES(v) AFFTC/
AFMDC/ESD-3/APGC/SSD Pd-4/Pe-4/Pi-4/Po-4/Pq-4 TT/GW
ACCESSION NR: AT3006840 S/2560/63/000/016/0094/0123

AUTHOR: Okhotsimskiy, D. Ye.; Beletskiy, V. V.

87

TITLE: Use of an earth-oriented satellite for solar investigations

SOURCE: AN SSSR. Iskusst. sputniki Zemli, no. 16, 1963, 94-123

TOPIC TAGS: satellite attitude, orbital element, solar investigation, instrument illumination, satellite instrumentation

ABSTRACT: An analysis is made of solar illumination of instruments mounted on a satellite with triaxial stabilization—one axis oriented to the earth, the second along the normal to the orbital plane, and the third along the transversal. A slight change occurs in the attitude of the orbit relative to the sun owing to the yearly motion of the earth around the sun and the regression of the orbital node of the satellite due to the oblateness of the earth. The problem of determining the total time of illumination is solved 1) by determining the illumination time at a constant angle ν between the direction to the sun and the normal to the orbital plane, and 2) by considering changes in angle ν with time. Illumination time is the time the sun remains within the

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angle of view of the instrument. To solve the first part, the maximal time of instrument illumination during one orbit of the satellite at given values of angle ν and instrument angle of view ρ and with a varying angle between the optical axis of the instrument and the axis of the satellite is sought. It is found that the maximal illumination time increases as angle ν decreases. The determination of angle ν as a function of time makes it possible to establish its dependence on the angle of orbital inclination to the equatorial plane and on the initial conditions (hour and date) of satellite launching. For a typical orbit (inclination to equator $i = 65°$; period of rotation $T_0 = 90$ min) the total time of illumination during a satellite lifetime can reach about 60 hr under optimal conditions and only about 15 hr for an instrument with an angle of view of 5°. Increasing the angle of view increases the illumination time. The total time of illumination depends on the hour and date of launching, the position of the optical axis of the instrument relative to the satellite, and the inclination of the orbit to the equatorial plane. Optimization of the orbital elements and programmed control of the position of the axis of the instrument can increase illumination time 2—10 times. The analysis supports the feasibility of using earth-oriented satellites for solar investigations. Orig. art. has: 25 figures and 23 formulas.

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APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

DUBOSHIN, [illegible]; [illegible], [illegible]

Some problems in astrodynamics and celestial mechanics. Kosm. issl. 1 no.2:195-203 S-O '63. (MIRA 17:4)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSIMSKIY, D. YE.

OKHOTSIMSKIY, D. YE. (Moscow)

"Study of motion in a central field under the effect of constant tangential acceleration"

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

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

LIDOV, M.L.; OKHOTSIMSKY, D.YE. (Moscow)

"On a method of investigating orbits in a restricted three-body problem".

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

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

DUBOSHIN, G.N.; OKHOTSIMSKY, D.Ye. (Moscow):

"Some problems of astrodynamics."

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

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

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

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

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

Comm for Space Research USSR.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSIMSKIY, 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: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

LIDOV, L.; OKHOTSIMSKIY, D. Ye.

"Research on the category of trajectory in the restricted problem of three bodies."

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

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

L 13260-65 EWT(1)/EPF(c)/EWP(m)/FS(v)-3/EEC(j)/EEC(t)/EWG(v)/EWA(d)
Pq-4/Pg-4 GW

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

AUTHOR: Zlatoustov, V. A.; Okhotsimskiy, D. Ye.; Sary*chev, V. A.; Torzhevskiy, A. P.

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

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

TOPIC TAGS: earth satellite oscillation, elliptic orbit, periodic oscillation, periodic oscillation stability

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

$$(1+e\cos v)\frac{d^2\theta}{dv^2}-2e\sin v\frac{d\theta}{dv}+n\sin\theta\cos\theta=2e\sin v,$$

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

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ACCESSION NR: AP4046??

θ is the angle between one of principal axes of the ellipsoid of
inertia of the satellite and the radius vector of the orbit,
$a = 3[(B - A)/C]$ where A, B, and C are the principal central moments
of inertia of the satellite, and a and e satisfy inequalities
$|a| \leq 3$, $0 \leq e < 1$. 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 charac-
teristic equation are analyzed. The results of the analysis indicate
that for plane elliptic orbits with arbitrary eccentricity, there is
a range of a 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 a in the interval $0 < a < 3$. When
$e > 0.465$, the largest permissible value of a 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.

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L 13266-65

ACCESSION NR: AP4046771

ASSOCIATION: none

SUBMITTED: 10Jun64 ENCL: 00 SUB CODE: MA, [illegible]

NO REF SOV: 009 OTHER: 009 ATD PRESS: 3[illegible]

Card 3/3

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

L 21822-65 EEO-2/EWP(m)/EWG(a)/EWG(c)/EWG(j)/EWG(r)/EEC(k)-2/EWG(v)/F... FBD/FS(b)/FS(v)-3/FSF(h)/EEC(s)/EEC(j)/EEC(r)/EWA(d)/FSS-2 Pd-1/Pe-5/... Pi-4/Pk-4/Pl-4/Po-4/ Pq-4/Pac-4/Pae-2 AFMDC/AFETR/APGC(f)/ESD(dp)/ESD(si)/IJP(c) TT/GW/...

ACCESSION NR: AP5000165 S/0203/64/002/006/0817/0842

AUTHOR: Okhotsimskiy, D. Ye

TITLE: Investigation of motion in a central field under the influence of constant tangential acceleration

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 6, 1964, 817-842

TOPIC TAGS: spacecraft motion, tangential acceleration, circular orbit, spacecraft velocity, spacecraft deceleration, spacecraft thrust, spacecraft trajectory, interplanetary flight, circular velocity, hyperbolic velocity, electrojet engine

ABSTRACT: Due to the possibilities of using electroject engines for space flight ... need has arisen for an investigation of the motion of spacecraft with small thrust. Electrojet engines can impart to a spacecraft extremely small accelerations on the ... several mm/sec^2. The use of a small thrust for propulsion is possible only after ... the spacecraft into a satellite orbit by engines with a large thrust. Further propulsion by electrojet engines leads to motion of the spacecraft in a spiral trajectory. This ... presents a method for computing motion in a central field under the influence of tangential acceleration of a constant value. The authors consider a range of velocities from circular to hyperbolic. The equations of motion are presented and reduced to dimensionless form

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ACCESSION NR: AP5000165

Also included are asymptotic expansions near the attracting center and distant from it. It is shown that for the problem of propulsion from any initial circular orbit to any velocity and also for the problem of deceleration at the time of approach to a planet, an estimate of the energy expenditure can be obtained approximately by using tables of dimensionless characteristics of motion. The author shows that the formulation of the problem can be modified somewhat, for example, for a case of motion beginning in an orbit with a specific energy. Although the calculations presented are for propulsion the solution is equally applicable to deceleration; all estimates are made in the same way. The spiral solution presented essentially reduces computation of the principal kinematic parameters of motion to the use of a universal table and in some cases to the use of simple formulas only. Orig. art. has: 136 formulas, 3 figures and 7 tables.

ASSOCIATION: none

SUBMITTED: 10Aug64 ENCL: 00 SUB CODE: SV, PR

NO REF SOV: 003 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

L 21804-65 EWT(1)/EEC(a)/EP(m)/FS(v)-3/EEC(j)/EEC(r)/EWG(v)/...
Pe-5/Pq-4/Pg-4 SSD/ASD(a)-5/AFWL/AFMDC/AFETR/APGC(f)/ESD(dp)/...
IJP(c) GW

ACCESSION NR: AP5000166 S/0293/64/002/006/0843/0852

AUTHOR: Lidov, M. L.; Okhotsimskiy, D. Ye.; Teslenko, N. M.

TITLE: Investigation of one class of trajectories of the restricted three body problem

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 6, 1964, 843-852

TOPIC TAGS: celestial mechanics, moon, three body problem, spacecraft trajectory, spacecraft orbit

ABSTRACT: The authors propose a method for investigating a class of trajectories of flight of a spacecraft from the earth to the moon in which a rather close approach to the moon is made. This class of trajectories involves solutions of the spatial restricted three-body problem. Since the flight trajectory should pass near both singular points of the equations (centers of the earth and moon), the orbital parameters after approach to the moon will differ appreciably from their initial values. At present, there is apparently no complete representation of the behavior of trajectories of this class as a whole. After a sufficiently great withdrawal of the spacecraft from the moon there will be a section of the flight trajectory close to a conical section — either to an ellipse situation within the sphere of influence or to a hyperbolic curve emerging beyond the limits of this sphere. The purpose of this article is a study of the parameters of trajectories in this section.

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

L 21804-65

ACCESSION NR: AP5000166

Specifically, the authors consider the dependence of the geocentric parameters of ... after approach to the moon on certain initial parameters and on parameters det... the character of passage near the moon. Results of computations are presented ... behavior is established which is important from the point of view of the possibility of the selection of orbits with specific properties in the restricted three-body problem ... shown how these quite complex trajectories can be investigated and the characteristics ... lunar influence on near trajectories are analyzed in detail. "The authors wish to ... appreciation to A. M. Mikish and O. S. Ry*zhin who prepared the programs us... the computations for this study." Orig. art. has: 5 figures.

ASSOCIATION: none

SUBMITTED: 10Aug64 ENCL: 00 SUB CODE: SV, AA

NO REF SOV: 000 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

DUBOSHIN, G.N.; OKHOTSIMSKI, D.E. [Okhotsimskiy, D.Ye.]

Some problems of astrodynamics and celestial mechanics. Pt. 1. Aviats kosmonavt 6 no. 7:6-7 '64.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

DUBOSHIN, G.N.; OKHOTSIMSKI, D. [Okhotsimskiy, D.Ye.]

Some problems of astrodynamics and celestial mechanics. Pt.2.
Aviats kosmonavt 6 no.8:10-11, 15 '64.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

L 05077-67 EWT(m)/EEC(k)-2/EWT(d)/EWT(1)/FSS-2 IJP(c) GW/AST/GD

ACC NR: AT6022478 SOURCE CODE: UR/0000/65/000/000/0208/0213

AUTHOR: Duboshin, G. N.; Okhotsimskiy, D. Ye.

60
B+1

ORG: None

TITLE: Some problems of astrodynamics

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, 208-213

TOPIC TAGS: satellite orientation, orbit correction, space flight

ABSTRACT: The authors review the history of astrodynamics or the mechanics of space flight and discuss some of the problems involved in planning orbits and studying the motion of uncontrolled satellites near the center of mass. In the discussion of orbit calculation consideration is given to the problem of economizing on power in launching and orbiting as well as to those of accuracy in attaining the desired orbit and selection of the method for orbital corrections. The remarks on motion of uncontrolled space vehicles near the center of mass include discussions of rotational motion and libration. It is pointed out that the gravitational field of the earth may be used for stabilized orientation of artificial satellites.

KH

SUB CODE: 22/ SUBM DATE: 04Dec65

Card 1/1

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

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L 8785-65 ARO/EWP(m)/EWG(v)/EWA(k)/EWP(c)/EWT(d)/EWT(1)/FA/FBD/FBO/FS(v)- UR/0293/65/003/004/052
FCS(f)/FSS-2/EWA(d)/EWA(1) TT/WW/GW 629.197.5:533.601.3
ACCESSION NR: AP5021246

AUTHOR: Zolotukhina, N. I.; Okhotsimskiy, D. Ye.

TITLE: An investigation of spacecraft motion in an atmosphere

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 4, 1965, 523-533

TOPIC TAGS: spacecraft reentry, reentry control, atmospheric reentry

ABSTRACT: The entry of a spacecraft moving at escape velocity into the atm and its motion within the atmosphere is investigated. The utilization of trolled small lifting force for decreasing the aerodynamic forces and the ments in respect to the accuracy of entry are analyzed. Two types of desce considered: a) with a constant lift-drag ratio, and b) with a variable li ratio, using a relay circuit with one, two, or more switching positions. with a constant lift-drag ratio are analyzed with the purpose of establish range for perigee heights within which such descents are possible and als tablishing the corresponding load factors. The calculation results are pr in graphs representing the following relations: 1) dependence of the fligh tance and the load factor on the height of the perigee; 2) dependence of

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L 64765-65

ACCESSION NR: AP5021246

of the entry corridor on the value of the allowable load factor. In the case of descents with variable lift-drag ratios, versions with various numbers of switchings were analyzed. Under the assumption that lift-drag ratio is changed instantly from the maximum positive value to the maximum negative value and back (transient processes were not considered). Calculation results are presented in graphs showing the following relations: 1) dependence of the load factor on time for instants of switching; 2) dependence of the height of a spacecraft on time for various values of switching instants; 3) dependence of the load factor and the ... on time for given distances, perigee heights, and the lift-drag ratios. The ... establishing the boundaries of allowable load factor domains are also presented. Orig. art. has: 9 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 05Apr65 ENCL: 00 SUB CODE: ...

NO REF SOV: 001 OTHER: 001 ATD PRESS: ...

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

L 9491-66 EWT(1)/EWP(m)/FS(v)-3/EWA(d) GW

ACC NR: AP6000301 SOURCE CODE: UR/0293/65/003/005/0811/0825

AUTHOR: Yefimov, G. B.; Okhotsimskiy, D. Ye.

ORG: none

TITLE: On optimum acceleration of a spacecraft in a central field

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 6, 1965, 811-825

TOPIC TAGS: energy optimum trajectory, optimum acceleration, low thrust spacecraft, hyperbolic velocity

ABSTRACT: This article can be considered as an extension of the article by D. Ye. Okhotsimskiy (Investigation of motion in a central force field with constant tangential acceleration. Kosmicheskiye issledovaniya, v. 2, no. 6, 1964, 817-824). The simple asymptotic formulas derived there make it possible to calculate the parameters of motion in the neighborhood of a gravitational center as well as at points distant from it. Here, the authors raise the question of the extent to which this scheme is optimal. They analyze the variational problem of the energy-optimum acceleration of a low-thrust spacecraft in a central gravitational field from a nearly circular orbital velocity to hyperbolic velocity under the assumptions that this acceleration is variable and that its direction deviates from the direction of the tangent to the trajectory. The properties of such motion in the neighborhood of the gravitational center and at points distant from the center are analyzed. The energy-

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L 9491-66

ACC NR: AP6000301

optimum motion is compared with the corresponding motion of a spacecraft with constant tangential acceleration and its advantages and disadvantages are indicated. The authors emphasize that the scheme of motion with constant tangential acceleration presented in the earlier article is sufficiently simple and rational. The construction of the limit solution of the variational problem by which estimating the basic flight parameters can be reduced to the use of single-entry tables or to calculations by means of simple formulas (as is done in the case of motion with constant tangential acceleration) is considered. Orig. art. has: 3 figures, 53 formulas, and 2 tables. [LK]

SUB CODE: 22/ SUBM DATE: 17Aug65/ ORIG REF: 003/ OTH REF: 00:./ ATD PRESS: 4164

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

ACC NR: AR6029289 SOURCE CODE: UR/0313/66/000/006/C020/C020

AUTHOR: Duboshin, G. N.; Okhotsimskiy, D. Ye.

TITLE: Astrodynamic problems

SOURCE: Ref. zh. Issledovaniye kosmicheskogo prostranstva, Abs. 6.62.163

REF SOURCE: Tr. II Vses. s"yezda po teor. i prikl. mekhan., 1964. Obz. dokl. Vyp. I. M., Nauka, 1965, 208-213

TOPIC TAGS: astronautics, spacecraft, spacecraft entry, spacecraft attitude, orbit calculation, orbit perturbation, aerodynamic force, magnetic coercive force, weightlessness

ABSTRACT: Questions concerned with calculations for orbit and movement of a cosmic vehicle relative to the center of mass are discussed. The significance of the selection of the section for the insertion of the cosmic vehicle, investigation of sensitivity of orbit to error, to perturbations and corrective actions is noted in the first question. The combination of simplified methodology during the first stage of orbit planning, and of more precision in subsequent ones, is suggested. The second question notes the importance of investigating the effects of gravitational, aerodynamic, magnetic, and other forces, on vehicle movement. The use of the results of angular motion calculations, along with sensitive element readings, is suggested

Card 1/2

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ACC NR: AR6029289

in order to determine the angular motion of the vehicle. The importance of investigating the movement of a body with liquid-filled spaces under conditions of weightlessness is noted. V. Ponomarev. [Translation ob abstract]

SUB CODE: 22

Card 2/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSKAYA, G. P.:

OKHOTSKAYA, G. P." Outlines of the history of preschool teaching in Kazakhstan (1917-1941)". Alma-Ata, 1955. Kazakh State U imeni S. M. Kirov. (Dissertations for the Degree of Candidate of Pedagogical Sciences.)

So. Knizhnaya letopis'. No. 49, 3 December 1955. Moscow.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

AMOSOVA, S.P.; KLISTORIN, I.F.; OKHOTSKAYA, V.N.

Analysis of the operation of semiconductor thermistors with indirect heating in an a.c. and d.c. current comparison network. Trudy Inst. avtom. i elektrometr. SO AN SSSR no.10:62-67 '65. (MIRA 18:8)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSKIY, D., delegat V s"yezda Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu

Strengthen the radio clubs engaged in the building of equipment. (MIRA 15:5)
Radio no.6:4 Je '62.

1. Nachal'nik Zagorskogo samodeyatel'nogo radiokluba.
(Radio clubs)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

IODKO, E.A.; OKHOTSKIY, V.B.

Studying on models the processes of charging and melting of the charge in open-hearth furnaces. Izv. vys. ucheb. zav.; chern. met. 5 no.9:76-83 '62. (MIRA 15:10)

1. Rabota provedena v Dnepropetrovskom metallurgicheskom institute pod rukovodstvom prof.doktora tekhn.nauk S.F.Chukmasova i prof. doktora tekhn.nauk V.I.Lapitskogo. V rabote prinimal uchastiye inzh. Ye.S. Yeremich.

(Open-hearth process--Models)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

KONOVALOV, V.S.; LAPITSKIY, V.I.; LEGKOSTUP, O.I.; LYSENKO, I.V.; OKHOTSKIY, V.B.; KHOLYAVKO, Z.I.

The role of nonmetallic inclusions on the formation of internal laps in pipe. Izv. vys. ucheb. zav.; chern. met. 6 no.10:37-42 '63. (MIRA 16:12)

1. Dnepropetrovskiy metallurgicheskiy institut.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

LAPITSKIY, V.I.; TARAPAY, M.A.; OKHOTSKIY, V.B.; LAYKO, B.G.; FIRER, I.M.
Prinimali uchastiye: SESYUK, O.S. [deceased]; KUSHNAREV, I.T.;
PATLAN', Ye.F.; PITOSHENICHENKO, G.P.; SOSEDKO, P.M.

Ways of reducing wheel discards because of angular segregation.
Izv. vys. ucheb. zav.; chern. met. 7 no.7:84-89 '64 (MIRA 17:8)

1. Dnepropetrovskiy metallurgicheskiy institut i Zavod im. K. Libknekhta.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

CHHOTSKIY, [illegible] V.I.

Obtaining [illegible] by the oxygen-blown converter method. Izv.vys.ucheb.zav.; chern.met. 8 no.6:64-67 '65. (MIRA 18:8)

1. Dnepropetrovskiy metallurgicheskiy institut.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSKIY, V.P.

Intraosseous anesthesia in operations on the extremities [with summary in English]. Khirurgiia 34 no.6:84-90 Je '58 (MIRA 11:8)

1. Iz kafedry obshchey khirurgii (zav. - prof. A.A. Busalov) i kursa travmatologii i ortopedii (zav. - prof. V.A. Chernavskiy) II Moskovskogo gosudarstvennogo meditsinskogo instituta imeni N.I. Pirogova.

(ANESTHESIA,
intraosseous admin. in surg. of extremities (Rus))
(EXTREMITIES, sugery
intraosseous anesth., techinc (Rus))

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSKIY, V. P., Candidate Med Sci (diss) -- "Intraosteal anesthesia in operations on the extremities". Moscow, 1959. 15 pp (Second Moscow State Med Inst im N. I. Pirogov) (KL, No 25, 1959, 141)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOTSKIY, V.P., kand.med.nauk

Causes of toxic phenomena in intraosseous anesthesia. Nauch.trudy Chetv.Mosk.gor.klin.bol'. no.1:105-114 '61. (MIRA 15:2)

1. Iz kliniki travmatologii ortopedii 2-go Moskovskogo gosudarstvennogo meditsinskogo instituta imeni N.I. Pirogova (zav. klinikoy - prof. V.A. Chernavskiy), na baze Moskovskoy gorodskoy klinicheskoy bol'nitsy (glavnyy vrach O.F. Papko).
(ANESTHESIA--COMPLICATIONS AND SEQUELAE) (NOVOCAINE)
(EXTREMITIES (ANATOMY)--SURGERY)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OMELCHKIY, V.P., kand.med.nauk (Moskva, 30, Novo-Khoroshevskoye shosse, d.4, korpus 4, kv.34)

Abstracts of articles received by the editors. Ortop., travm.i protez. 24 no.9:51-59 S '63. (MIRA 17:4)

1. Iz kliniki travmatologii i ortopedii (zav. - prof. V.V.Chernavskiy) II Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOV, Dinko

Georgi Dimitrov State Wool-Weaving Combine, Sliven. Tekstilna prom 13 no. 4:23-26 '64.

1. Editor, "Dimitrovsko zname".

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOVA, Ye.P.

Variation in tomatoes as a result of vegetative hybridization (MLRA 9:11)
Agrobiologiia no.5:70-76 S-O '56.

1. Moldavskaya ovoshche-kartofel'naya orositel'naya opytnaya stantsiya, g.Tiraspol'.
(Moldavia--Tomatoes) (Hybridization, Vegetable)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOVA, Ye.P., mladshiy nauchnyy sotrudnik

Leaf mold of tomato. Zashch. rast. ot vred. i bol. 7 no.3:30-31 Mr '62. (MIRA 15:11)

1. Moldavskiy nauchno-issledovatel'skiy institut oroshayemogo zemledeliya i ovoshchevodstva.
(Moldavia--Tomatoes--Diseases and pests) (Molds (Botany))

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOVA, Ye.P., nauchnyy sotrudnik

Macrospora infection of tomatoes. Zashch. rast. ot vred. i bol. 9 no.3:38-39 '64. (MIRA 17:4)

1. Moldavskiy institut oroshayemogo zemledeliya i ovoshchevodstva.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHOVA, Ye.P.

Developing a new tomato form by means of vegetative and sexual hybridization. Agrobiologiia no.2:231-235 Mr-Ap '64. (MIRA 17:6)

1. Moldavskiy nauchno-issledovatel'skiy institut oroshayemogo zemledeliya i ovshchevodstva, g. Tiraspol'.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

BARANOV, A.V.; OKHRAMOVICH, A.Ye.; PASHCHENKO, P.A.

Adsorption of nitrogen oxides by activated carbon. Trudy IKHTI no.6:53-65 '58. (MIRA 13:11)
(Carbon, Activated) (Nitrogen oxide)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

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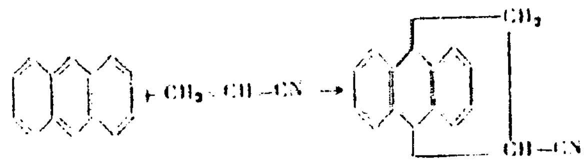
76943
SOV/80-33-3-44/47

AUTHORS: Kretov, A. Ye., Okhrimovich, A. Ye.

TITLE: Brief Communications. Cyanoethylation of Polycyclic Hydrocarbons

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 3, pp 744-746 (USSR)

ABSTRACT: A simple method of cyanoethylation is given for obtaining an anthracene adduct in high yield, and for its conversion into acid, amide, and esters.



Acrylonitrile was added in small portions during a 2-hr period to a boiling mixture of anthracene and acetic anhydride; boiling was continued for 22 hr.

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The excess acrylonitrile and acetic anhydride was distilled under vacuum, the residue poured into water at 80-90° C, and cooled to room temperature. The oil accumulated on the surface crystallized into a hard mass which was dried, pulverized, and recrystallized from methanol. Yield of the adduct after one crystallization was 80-85%, mp 113-115° C; after triple crystallization, mp 122° C. The adduct was converted into the corresponding acid by boiling it for 5-6 hr in a saturated solution of KOH in 2-methyl-butanol, distilling the alcohol, dissolving the residue in a small amount of water, filtering, and precipitating the acid with concentrated HCl (yield 80%; mp 186° C). The amide of the adduct was obtained on heating a mixture of the latter, 12% hydrogen peroxide, 95% ethanol, and aqueous NaOH solution (yield 78-80%; mp 238.5° C). Methyl ester of the adduct was obtained on heating the latter in methanol and concentrated sulfuric acid (yield 60%; mp 115-116° C, from methanol). Butyl

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

Brief Communications. Cyanoethylation of Polycyclic Hydrocarbons

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SOV/80-33-3-44/47

[illegible] was obtained similarly with n-butanol (yield 70-7[illegible]%; mp 5[illegible]-5[illegible]° C). There is 1 table; and 7 references, 2 U.S., 2 German, 1 French, 2 Japanese. The U.S. references are: U.S. Pat. 16[illegible] (1927); U.S. Pat. 1620807 (1927).

ASSOCIATION: Dnepropetrovsk Chemical Technological Institute (Dnepropetrovskiy khimiko-tekhnologicheskiy institut)

SUBMITTED: November 12, 1959

Card 3/3

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHRAMOVICH, A.Ye.; KHETOV, A.Ye.

Synthesis and study of fluorene derivatives. Zhur. prikl. khim. 33 no.9:2148-2151 S '60. (MIRA 13:10)
(Fluorene)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

24017
S/080/61/034/006/020/020
D247/D305

15 8160

AUTHORS: Okhramovich, A.Ye., Kretov, A.Ye.

TITLE: Obtaining polyesters from 9.9-dipropionic acid fluorene

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 6, 1961, 1381 - 1386

TEXT: The object was to obtain polyesters from 9.9-dipropionic acid for use in the preparation of plastics and high quality lacquers. 9.9-dipropionic acid fluorene was condensed with ethyleneglycol and with glycerine in the presence of various catalysts. In each case high molecular chain form esters were formed. Preliminary research with pentaerythrite indicated that satisfactory polyester resins are obtained only after the preliminary esterification of two hydroxyl groups of pentaerythrite by unsaturated high fatty acids. To obtain polyethylene esters from 9.9-dipropionic acid fluorene: (a) In the presence of zinc chloride, zinc acetate and

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

24017
S/080/61/034/006/020/020
D247/D305

Obtaining polyesters from ...

lead monoxide: Into a round bottomed 3-necked 100 ml. flask provided with a condenser, thermometer and funnel for introducing nitrogen, was placed 10 g (0.032 mole) of 9.9-dipropionic acid fluorene, 4.2 g (0.067 mole) of ehtyleneglycol and 0.1 g (1) anhydrous zinc chloride; (2) zinc acetate or (3) lead monoxide. The flask was heated on a sand bath for three hours at 140-160° and then for three hours at 200-220°. The nitrogen entering the reaction vessel had been previously cleansed of oxygen and dried. At 140-160° the contents were carefully stirred twice until a homogeneous mixture was obtained. After six hours the resin was poured into a porcelain dish and fractionated using acetone as solvent; (b) In a large excess of ethyleneglycol: The method was as above using 42 g (0.67 mole) of ethyleneglycol and 0.1 g of anhydrous zinc chloride (4). On warming to 140°, the mixture becomes transparent and distillation begins continuing for three hours, during which time the temperature reaches 210°. To remove all excess of ethyleneglycol a vacuum pump is used for 15 to 20 minutes. To obtain polyglycerine esters from 9.9-dipropionic acid fluorene in the presence of zinc

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

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S/080/61/034/006/020/020
D247/D305

Obtaining polyesters from ...

chloride, zinc acetate and lead monoxide: The method as for poly-ethylene esters using 6 g (0.065 mole) of glycerine and 0.1 g an-hydrous zinc chloride or zinc acetate or lead monoxide. Heat for three hours at 180-200° and then for three hours at 210-220°. (b) In a large excess of glycerine, use 60 g (0.65 mole) of glycerine and 0.1 g anhydrous zinc chloride. Heat for three hours at 200° and then under vacuum for one hour gradually raising the tempera-ture to 235°. Conclusions: (1) Hitherto undescribed polyesters were obtained by condensing 9.9-dipropionic acid fluorene with ethyleneglycol and glycerine in the presence of catalysts and with-out them; (2) Esters obtained using ethyleneglycol were superior in physical and chemical properties to those obtained with glycer-ine; (3) Of the ten esters synthesized the best was obtained with ethyleneglycol in the presence of anhydrous zinc chloride; (4) These esters can be used for the preparation of high quality lac-quers. There are 1 table and 9 references: 3 Soviet-bloc and 6 non-Soviet-bloc. The references to the English-language publications read as follows: W. Smith, J. Soc. Ch. Ind., 20, 1075, 1901; W.H.

Card 3/4

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

24017

Obtaining polyesters from ... S/080/61/034/006/020/020
D247/D305

Carothers, Ch. Rev., 8, 353, 1931.

ASSOCIATION: Dnepropetrovskiy khimiko-tekhnologicheskiy institut (Dnepro-Petrovsk Chemical Technological Institute)

SUBMITTED: November 9, 1960

Card 4/4

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

KOZOPOLYANSKIY, N.S.; KRETOV, A.Ye.; OKHRAMOVICH, A.Ye.; SHAPOVALOV, L.D.

Synthesis of alkyd resins based on fluorene-9,9-dipropionic acid. Lakokras.mat.i ikh prim. no.3:36-39 '62. (MIRA 15:7)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut.
(Alkyd resins)
(Fluorene propionic acid)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

KOZOPOLYANSKIY, N.S.; KRETOV, A.Ye.; OKHRAMOVICH, A.Ye.; ILYASH, I.I.

Use of fluorene-9,9-dipropionic acid for modification of polyester resins. Plast. massy no.11:14-15 '63. (MIRA 16:12)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHRAMOVICH, A.Ye.; KRETOV, A.Ye.

Preparation of polyesters by the condensation of fluorene-9, 9-dipropionic acid with 1,4-butylene glycol and 1,1-dihydroxyethyl ester. Zhur. prikl. khim. 36 no.12:2775-2779 D'63. (MIRA 17:2)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

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OKHRAMOVICH, A.Ye.; KRETOV, A.Ye.

Esters of fluorene-9,9-dipropionic acid. Zhur.prikl.khim. 37 no.1: 220-223 Ja '64. (MIRA 17:2)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

KRETOV, A.Ye.; OKHRAMOVICH, A.Ye.

Preparation of di- and tri-(β-cyanoethyl)-indene and their derivatives. Zhur.prikl,khim. 37 no.7:1617-1619 Jl '64.
(MIRA 18:4)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

ACCESSION NR: AT4007048 S/2598/63/000/010/0254/0261

AUTHOR: Ostrenko, V. Ya.; Bogoyavlenskaya, N. V.; Bobrikov, L. D.; Akimova, Ye. P.; Usov, V. K.; Okhramovich, L. N.; Il'vovskaya, L. A.

TITLE: Development of a production process for AT-3 titanium alloy tubes

SOURCE: AN SSSR. Institut metallurgii. Titan i yego splavy*, no. 10, 1963. Issledovaniya titanovy*kh splavov, 254-261

TOPIC TAGS: titanium alloy, AT-3 titanium alloy, AT-3 alloy tube, tube rolling, hot rolling, cold rolling, AT-3 titanium alloy property, titanium aluminum chromium alloy, iron containing alloy, silicon containing alloy, boron containing alloy

ABSTRACT: The effect of thermal treatment on the mechanical properties of AT-3 alloy and parameters affecting the cold and hot rolling of tubes of this alloy were investigated in the laboratories of the Ukrainskiy nauchno-issledovatel'skiy trubny*y institut (Ukrainian Scientific-Research Institute for Tubes) and the Nikopol'skiy yuzhnotrubny*y zavod (Southern Tube Plant, Nikopol). At temperatures of 800-900C the mechanical properties and hardness of AT-3 were markedly altered by hardening in water but essentially unchanged by cooling in air or in a kiln. This effect is explained by the fixation of the intermediate $\alpha + \beta$ structure during hardening in water. These alloys demonstrated high ductility in a wide range

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ACCESSION NR: AT4007048

of rolling temperatures (1975-1125C). A maximum deformation of 55% can be attained by cold rolling of such tubes, while hot rolling of these tubes proceeds normally. The problems involved are sticking of the metal to the rolling device and the formation of a gas-saturated film on the hot rolled tube. These problems have been solved by additional mechanical treatment, such as etching, coating with an oxide film, and lubrication with a mixture of castor oil and talc. Some of these recommended procedures are discussed. Orig. art. has: 6 figures and 3 tables.

ASSOCIATION: Institut metallurgii AN SSSR (Metallurgical Institute, AN SSSR)

SUBMITTED: 00 DATE ACQ: 27Dec63 ENCL: 00

SUB CODE: MA, ML NO REF SOV: 000 OTHER: 000

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OSTRENKO, V.Ya.; BOGOYAVLENSKAYA, N.V.; BOBRIKOV, L.D.; AKIMOVA, Ye.P.; USOV, V.K.; OKHRAMOVICH, L.N.; IL'VOVSKAYA, L.A.

Developing a technology for the production of AT-3 titanium alloy tubes. Titan i ego splavy no.10:254-261 '63. (MIRA 17:1)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

ZHOLUDEV, M.D., kand. tekhn. nauk; KISILEVICH, V.O., inzh.; BAKALYUK, Ya.Kh., inzh.; Prinimala uchastiye OKHRAMOVICH, L.M., inzh.

Production of thin-walled pipe made by galvanoplasty. Proizv. trub no.10:101-105 '63. (MIRA 17:10)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

TUPITSYN, N.Ye.; OKHREM, A.A.

Ways to increase the output of cement. TSement 28 no.6:5-6 N-D '62.
(MIRA 15:12)

(Cement plants)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHREMCHIK, A.V.

Year of operating with electric locomotives. Elek. i tepl. tiaga 2 no.11:6-9 N '58. (MIRA 11:12)

1. Nachal'nik Kuybyshevskoy zheleznoy dorogi.
(Kuybyshev Province--Electric locomotives)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHREMCHIK, A.V. (g. Kuybyshev)

Kuybyshev Trunk Line during the seven-year plan. Zhel. dor. transp. 41 no.2:49-51 F '59. (MIRA 12:3)

1. Nachal'nik Kuybyshevskoy dorogi.
(Kuybyshev Province--Railroads)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHREMCHIK, A.V.

Potentialities for increasing train speeds. Zhel.dor.transp. 42 no.6:8-13 Je '60. (MIRA 13:7)

1. Nachal'nik Yugo-Vostochnoy dorogi, g. Voronezh.
(Railroads--Train speed)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHREMCHIK, A.V.

Potentialities of the Southeastern Railroad for accelerated car turnover. Zhel.dor.transp. 43 no.2:11-15 F '61. (MIRA 14:4)

1. Nachal'nik Yugo-Vostochnoy dorogi.
(Railroads—Management)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

YAKOVLEV, N.A., inzh.; OKHREMCHIK, A.V.

Operation of diesel locomotives on long haul distances. Zhel.dor.transp. 43 no.11:68-72 N '61. (MIRA 14:11)

1. Zamestitel' nachal'nika Privolzhskoy dorogi, g. Saratov (for Yakovlev). 2. Nachal'nik Yugo-Vostochnoy dorogi, g. Voronezh (for Okhremchik).

(Diesel locomotives)
(Railroads—Management)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHREMENKO, N.M., kand. tekhn. nauk, dotsent (Leningrad)

Magnetic field of a flat induction pump. Elektrichestvo no.8: 18-26 Ag '64. (MIRA 17:11)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

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AUTHOR: Okhremenko, N. M., Docent, Candidate of Technical Sciences (Leningrad)

S/105/60/000/03/009/023
B007/B008

TITLE: Electromagnetic Phenomena in Flat Induction Pumps for Molten Metal

PERIODICAL: Elektrichestvo, 1960, Nr 3, pp 48 - 55 (USSR)

ABSTRACT: Owing to their simple construction and the possibility of feeding them from ordinary three-phase current sources, the flat linear induction pumps have the best chances at present. The scheme of such a pump is shown in figure 1. The essential features are shown, compared with the ordinary induction motors. The electromagnetic pumps are still a new branch, and their theory is little developed. A number of investigations of these pumps were carried out in the USSR at the Institut fiziki AN Latviyskoy SSR (Institute of Physics of the Academy of Sciences of the Latviyskaya SSR) under the guidance of I. M. Kirko and I. A. Tyutin (Refs 2,3,4,5,6,7,8). A.I.Vol'dek (Refs 9,10,11,12) contributed considerably to the theory of these machines. The investigations of the electromagnetic

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

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Electromagnetic Phenomena in Flat Induction Pumps for Molten Metal

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B007/B008

phenomena in a flat induction pump in consideration of the transverse and the longitudinal fringe effect, as well as the investigations of the demagnetizing influence of the currents in the metal are generalized here. The formulas for the pressure produced by the pump, for the power losses and the equivalent parameters of the secondary circuit are derived here. It is shown that the transverse fringe effect reduces the back pressure much more than the useful pressure. If the transverse fringe effect is absent, the back pressure increases, and the total pressure produced by the pump can be computed from formula (52). Formulas (53) and (54) for the power transmitted to the metal are written down. The total power transmitted by the main- and pulsating fields to the secondary circuit is expressed by formula (55). The problem given here appears to be solved. The method explained and the results given can be applied for the solution of analogous problems in the field of electric machines. The data obtained by experiments (Ref 7) are compared in the appendix with the

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Electromagnetic Phenomena in Flat Induction Pumps for Molten Metal

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pressures and powers obtained by computation from formulas (28)-(31) and (37)-(38). The computed values are within an accuracy of 5-15%. The paper by L. Ya. Ul'manis (Ref 5) is mentioned. There are 3 figures and 12 Soviet references.

SUBMITTED: August 14, 1959

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

27775
S/105/61/000/009/001/003
E194/E455

26.2140

AUTHOR: Okhremenko, N.M., Candidate of Technical Sciences, Docent (Leningrad)

TITLE: Optimum geometrical proportions in induction pumps for liquid metals

PERIODICAL: Elektrichestvo, 1961, No.9, pp.10-16

TEXT: The main problem in the design of induction pumps is to determine the principal dimensions and parameters: the height of the duct 2b, its width 2a, the pole pitch τ, the slip s and the active length l (Fig.1). Previous published work on the selection of optimum pump geometry is briefly reviewed. Existing methods are considered unsatisfactory either because important losses are ignored or because important dimensions must be assumed in advance. Accordingly, the present article considers the selection of optimum geometry of induction pumps from the two standpoints of maximum efficiency and minimum weight of active material. Solutions are given in application to a flat linear pump with an inductor on each side, but the results are also applicable to annular and spiral pumps. The initial data and

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Optimum geometrical ...

assumptions are first described. The condition and properties of the metal to be pumped are assumed known. These govern the duct wall thickness b_k and thermal insulation thickness b_i. Conditions in the electrical winding, such as current density and temperature, are also assumed known. Iron losses, hydraulic losses and losses in the short-circuiting side-bars (item 5 of Fig.1) are neglected; they are usually less than 10% of the total losses. It is assumed that the pump design is such that the transverse edge-effect is negligible. The longitudinal edge-effect is allowed for by empirical coefficients which are assumed constant. Appendix (1) gives the derivation of the following equation for the relative losses in an induction pump.

$$F(b,s)=\frac{\Sigma p}{P_2}=k_0 k_0' \left\{\frac{s}{1-s}+\frac{n}{b(1-s)s}+\right.$$
$$\left.+\frac{1}{c}\frac{[b+g_1(1-s)][\Delta^2(1-s)^2+K^2(bs+n)^2]}{b(1-s)^2 s}\right\}. \qquad (1)$$

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For the purpose of the present argument the losses may be considered as function of two arguments, the slip s and the half height of the duct b, whilst all the other coefficients in equation (1) may be considered constant. Hence their notation, which is given in Appendix 1, is not included here. Optimum values of slope and half-height are then determined by partial differentiation of Eq.(1) with respect to half-height and slip respectively. A graphical method is used to solve the resulting equations. By way of example, Fig.2 shows graphs of optimum values of b and s plotted for pump type ИН-7 (IN-7) designed by the Institut fiziki AN Latviyskoy SSR (Institute of Physics AS Latvian SSR). It pumps sodium at a temperature of 400°C and a pressure of 5 kg/cm^2, with an output of 250 m^3/hour. The pump was designed for maximum efficiency with s = 0.25, b = 8 mm. It is seen from Fig.2 that the optimum value of s = 0.126 and of b = 5.7 mm. Construction of the curves of half-height and slip requires the solution of a large number of cubic equations and is very time-consuming; a simpler method of obtaining solutions is described. The formulae show that the optimum slip diminishes with increase in the conductivity of the metal and with the square

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of its rate of flow and also with decrease in the frequency. Therefore, light metals and alloys of high electrical conductivity, such as sodium or sodium-potassium, allow a rate of flow of 10-12 m/sec; the optimum slip then lies between 0.2 and 0.35. For heavy metals of low conductivity, such as bismuth or lead, the permissible rate of flow is 3 to 5 m/sec and the optimum slip rises to 0.7 to 0.8. Once the optimum slip and duct half-height have been determined the duct width and pole pitch are readily found. The optimum proportions to give minimum weight of active materials are then considered. Appendix 2 gives the derivation of the following formula for the weights of copper and iron in an induction pump

$$G_{Cu} = C_1 \frac{[\Delta^2 (1-s)^4 + K^2 (bs+n)^2][b + g_2 (1-s)]}{s(1-s)b}; \quad (8)$$

$$G_{Fe} = C_2 \frac{\sqrt{\Delta^2 (1-s)^4 + K^2 (bs+n)^2}}{s(1-s)b}. \quad (9)$$

As before, in these expressions, only s and b need be considered variable. Determination of the minimum combined copper

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Optimum geometrical ... S/105/61/000/009/001/003
E194/E455

and iron losses is too complicated: therefore, the minimum conditions of each of the expressions (8) and (9) are considered separately. Values of slip are first determined which give minimum weights of copper and steel, by differentiating the expressions (8) and (9) by s and equating to zero. In the resulting expression, different values of slip are then assumed and the equations are solved relative to b, giving curves for the slip for minimum weights of copper and iron as functions of b. A method of finding the optimum slip by a method of linear interpolation is then explained. In practice, it is almost always necessary to depart from the slip that gives the least weight of active material in order to obtain satisfactory efficiency, but the expressions may be used to achieve an optimum design. When the optimum slip has been determined the optimum half-height of the duct may be found by graphical construction. Analysis shows that optimum conditions in respect of maximum efficiency and minimum weight require a ratio of duct width to height in the range of 20 to 40. There are four appendices which, in addition to giving the derivation of various formulae, include two numerical worked examples. There are 5 figures, 1 table and

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Optimum geometrical ... S/105/61/000/009/001/003
E194/E455

14 references: 11 Soviet and 3 non-Soviet. The three references to English language publications read as follows:

Watt D.A., A study in design of travelling field electromagnetic pumps for liquid metals, A.E.R.E. ED/R 1696, 1955;
Watt D.A., Engineering, 1956, v.181, No.4703.
Watt D.A., A.E.R.E. R/M 144, 1957.

SUBMITTED: May 8, 1961

Card 6/7

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AFWL IJP(C)/SSD P Pr-4/Pad-4/Pi-4/Po-4 WW/AT

ACCESSION NR: AR3002653 S/0124/63/000/005/B009/B009

SOURCE: Rzh. Mekhanika, Abs. 5B39

97

AUTHOR: Okhremenko, N.M.

TITLE: Growth of laminar flow of a viscous electrically conducting liquid between parallel plates, acted on by a transeverse magnetic field

CITED SOURCE: Sb. Vopr. magnitn. gidrodinamiki i dinamiki plazmy. v. 2 Riga. AN LatvSSR, 1962, 551-557

TOPIC TAGS: laminar flow, viscous liquid, conducting liquid, magnetic field, boundary layer, inertial force , Hartman number, streamline

TRANSLATION: A theoretical solution is given for the problem of the laminar flow of electrically conductive incompressible liquid in the initial part of the ... channel under the action of a transverse traveling magnetic field $B_y = B_0 s$... (wt-ax) the following is assumed: 1) the transeverse and longitudinal edge effects are absent, 2) the magnetic field doesn't vary along the height of the channel, 3) in the initial cross section, the current has a uniform velo...

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ACCESSION NR: AR3002653

profile. The method based on a partial allowance for the forces of inertia [illegible] viscosity was used for the solution of the problem. Hence, the terms [illegible] the inertial forces are taken in the form $V(\partial u/\partial x)$ where V is the [illegible] of the liquid in the input section [illegible] u is the longitudinal component [illegible] velocity in the streamline cross section [illegible] and the forces of viscosity [illegible] accounted for just the same as in the theory of the boundary layer [illegible] The solution is found by operational methods. Equations are introduced [illegible] longitudinal component of the velocity which depends on x and [illegible] statistical pressure, which is a function [illegible] In these formulas [illegible] number and the Hartmann number [illegible] as well, are utilized. The length of the [illegible] portion is found, i.e. that portion which is included between the input [illegible] section and the section in which the axial velocity varies from the [illegible] velocity as $x \to \infty$ by 1%. Evidently, the length of this part is [illegible] the increase in the Hartmann number. For large Hartmann numbers the length [illegible] part $L \approx \frac{a}{M}$ [illegible] where a is the height of the channel. Therefore [illegible]

and R = 10^4 $L \approx a$ in the same time as in the case of no field; for R = 2000 the length of the initial part L = 360a. V.M. Kuptsov

DATE ACQ: 14Jun63 SUB CODE: PH ENCL: 00

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S/144/62/000/006/002/009
D230/D308

AUTHOR: Okhremenko, N.M., Candidate of Technical Sciences, Docent

TITLE: Magneto-hydrodynamic phenomena in channels of liquid-metal induction pumps

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Elektromekhanika, no. 6, 1962, 593-601

TEXT: The author considers three special cases of the theory of laminar flow of electrically conducting liquid under the action of a travelling magnetic field: 1) The surface effect on the steady flow; 2) Length determination of the flow-forming initial section at channel entry, and 3) Non-steady flow after switching in the pump. The problem is investigated analytically for the laminar flow and the results obtained are applied to the case of turbulent flow. A specific solution is obtained for a plane-type three-phase pump. Dependent on channel height, marked e.m. field attenuation is experienced in large-sized pumps and in medium-sized pumps work-

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Magneto-hydrodynamic phenomena ... S/144/62/000/006/002/009
D230/D308

ing at frequencies of 400-1000 c/s. It is shown that the effect of the field attenuation on the fundamental velocity component decreases the mean induction value and the effective Hartmann number (M) by β times (usual notation). An approximate expression is deduced for the length of the initial part in which the steady velocity profile of the laminar magneto-hydrodynamical flow is formed. Under the action of the magnetic field this length decreases rapidly. In the turbulent case the flow formation is more rapid hence, in the practical cases of pump calculation the length of the initial section can be assumed to be zero. Non-steady flow after switching in the pump is examined and an expression for the velocity is obtained. Graphs of velocity profiles at various times are given for M = 5 and M = 10. There are 5 figures. The English-language reference reads as follows: L.P. Harris, Hydromagnetic Channel Flows, N.Y.-London, 1960.

SUBMITTED: April 5, 1962

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APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

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E031/E492

26.2231

AUTHOR: Okhremenko, N.M. (Leningrad)

TITLE: The growth of the laminar flow of a conducting fluid in a plane channel in the presence of a moving magnetic field

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no.6, 1962, 18-21

TEXT: The above problem is studied using approximate equations of motion in which the viscosity and acceleration components are partially taken into account. The following assumptions are made: 1) the motion of the fluid is parallel to the x-axis with velocity $u = u_0(x,y) + u_1(x,y,t)$ where u_1 is periodic in t, with the period a multiple of $T = 2\pi/\omega$ (u = const for x = 0); 2) the width of the channel in the direction Oz is greater than its height; 3) the planes y = a and y = -a are isolators and the two other walls are ideal conductors; the attenuation of the electromagnetic field across the height of the channel is also neglected. Under these assumptions the approximate MHD equations describing the two-dimensional flow of a viscous incompressible fluid under the influence of a moving field are solved for the

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boundary conditions $u = 0$, $v = 0$ for $y = a$ and $y = -a$, $x > 0$. Averaging the velocity components and pressure over the period T and deriving the mean equations from which $\partial p_0/\partial x$ (p_0 is the mean pressure) is eliminated and to which the Laplace transformation with respect to x is subsequently applied, expressions for the mean velocity, the length of the initial part of the channel and the pressure drop are obtained. The mean velocity profile is independent of the frequency and coincides with the solution obtained by J.A.Shercliff (Proc. Cambr. Phil. Soc., v.52, part 3, no.7, 1956, 573). There is 1 figure.

SUBMITTED: August 30, 1962

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0"

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

SAVVIN, L.G., kand.tekhn.nauk, dotsent; OKHREMENKO, N.M., kand.tekhn.nauk, dotsent (Leningrad)

Optimum geometric relationships in molten metal induction pumps. Elektrichestvo no.12:82-84 D '62. (MIRA 15:12)

1. Rizhskiy institut inzhenerov Grazhdanskogo vozdushnogo flota.
(Liquid metals--Transportation) (Pumping machinery, Electric)

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

ACCESSION NR: AT4042289 S/0000/63/003/000/0115/0127

AUTHOR: Okhremenko, N. M.

TITLE: Effect of a rotating magnetic field on hydraulic resistance to turbulent channel flow of a conductor fluid

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga, 1962. Voprosy* magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady* soveshchaniya, v. 3. Riga, Izd-vo AN LatSSR, 1963, 115-127

TOPIC TAGS: hydromagnetics, electromagnetic pump, rotating magnetic field, transverse magnetic field, channel flow turbulence, pump pressure, pressure pulsation, turbulent flow dimensional analysis, hydromagnetic pump NA-1, hydromagnetic pump NA-500, hydraulic resistance

ABSTRACT: The author surveys the existing literature, notes the lack of adequate consideration of the motion of a field relative to the liquid flow, and presents a dimensional analysis for a turbulent flow acted on by a rotating transverse magnetic field. He finds that the friction factor

$$\left[\frac{1}{\sqrt{\lambda_m}}-\frac{1}{\sqrt{\lambda}}\right]_{R^*=\mathrm{const}}=\frac{R^*}{\sqrt{8}M^2}\int_0^{M^2R^*}F_1(x)\,dx, \qquad (1)$$

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ACCESSION NR: AT4042289

and universal velocity profile

$$\frac{u}{u^*} = 5,657 \log (R^*\xi) + 6,154 + F_1\left(\frac{M^2\xi}{R^*}\right), \qquad (2)$$

as expressed by L. P. Harris for a constant transverse field, can be expanded to apply to a rotating field by substituting

$$x = \frac{M^2}{R^*} \cdot \frac{s}{1-s} k_{att}$$

for the argument $\frac{M^2}{R^*}$ (s = average slip, k_{att} = attenuation factor). Experimental verification of the effect of a rotating field on hydraulic drag, carried out with the straight-line pumps NA-1 (240, 312 or 380 v; 0 - 40 m^3/hr., 0 - 12 m/sec, s = 0.25 - 1.0) or NA-500 (220, 250 or 280 v; 0 - 500 m^3/hr., 0 - 10 m/sec, s - 0.5 - 1.0) pumping liquid Hg in a closed circulation, indicated pressure levels 30 - 40% lower than calculated and the presence of pressure pulsations. It is concluded that pressure losses due to internal flow turbulence induced by the rotating field can markedly exceed losses due to friction, especially at reduced voltages and low rates of flow. The tendency to turbulence is anticipated to be more pronounced for one-sided coil placement. Pressure pulsations are also

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ACCESSION NR: AT4042289

ascribed principally to the presence of turbulent counterflows. Orig. art. has: 17 equations, 4 graphs, 1 table.

ASSOCIATION: None

SUBMITTED: 04Dec63

ENCL: 00

SUB CODE: ME

NO REF SOV: 008

OTHER: 002

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L 40312-65 EWT(1)/EPA(s)-2/EWT(m)/EWP(w)/EPF(n)-2/EPP/EEC(t)/EWP(t)/EPA(bb)-2/EWG
Pg-4/Pt-10/Pi-4/Pu-4 JD/WW/JG/LHB/EM/GG

ACCESSION NR: AP4044309 S/0281/64/000/004/0474/0480

AUTHOR: Okhremenko, N. M.

TITLE: Currents and electromagnetic forces in a layer of molten metal of an induction trough

SOURCE: AN SSSR. Izv. Energetika i transport, no. 4, 1964, 474-480

TOPIC TAGS: electromagnetic trough, electromagnetic mixing, edge effect, surface effect

ABSTRACT: Previous analytical and experimental studies by the author have yielded the quantitative characteristics of the space distribution of the magnetic field in an electromagnetic trough and of the reaction of induced currents. These characteristics are utilized in this article to analyze the distribution of currents in a layer of metal and to obtain expressions for the power, electromagnetic stresses and buoyant forces imparted to the metal and which partially relieve the ceramic lining from the weight of the metal. In contrast to a similar problem previously studied by E. K. Kochnev and M. G. Rezin, the transverse edge effect and the boundedness of the metal layer height are taken into account. Calculated and experi-

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ACCESSION NR: AP4044509

mental values obtained by measuring stresses in metal plates are presented. Orig. art. has: 25 formulas, 2 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 30Dec63 ENCL: 00 SUB CODE: MM, ME

NO REF SOV: 002 OTHER: 000

Card 2/2

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237910008-0

OKHREMENKO, N.M., kand.tekhn.nauk, dotsent (Leningrad)

Determination of optimum dimensions of induction pumps. Elektrichestvo no.11:53-57 N '64. (MIRA 18:2)

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L 28393-66 EPF(n)-2/EWP(k)/EWT(d)/EWT(1)/EWT(m)/EWP(h)/ETC(m)-6/T/EWP(1)/EWP(v)/

ACC NR: AT6000056 SOURCE CODE: UR/0000/65/000/000/0260/0267
EWP(t)/ETI WW/DJ/JD/JG/GD

AUTHOR: Okhremenko, N. M.

ORG: Institute of Electromechanics of AN SSSR. (Institut elektromekhaniki)

TITLE: Optimal size of electromagnetic conveyor for liquid metals

SOURCE: AN SSSR. Institut elektromekhaniki. Elektricheskiye mashiny; issledovaniya, voprosy teorii i rascheta (Electrical machinery; research, problems in theory and design), Leningrad, Izd-vo Nauka, 1965, 260-267

TOPIC TAGS: electromagnetic pump, liquid metal pump

ABSTRACT: A method for calculating the optimal dimensions of an electromagnetic induction pump of a flat U-shaped type is described. Fig. 1 shows a cross-section of the pump composed of inductor core (1), winding (2), heat insulation (3), firebrick (4) and melted metal (5). The calculation was based on the principle of the least reactive energy consumption per unit pressure that is on the ratio of the apparent

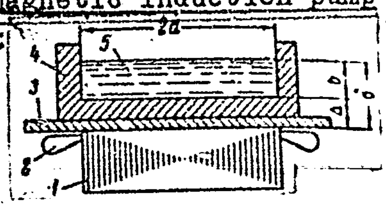

Fig. 1

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power S to the electromagnetic pressure p. In calculating the ratio S/p it was assumed that: (1) the average slip of metal does not change with the pole pitch τ; (2) the effect of induced current upon the inductor field is negligible; (3) the end effect is practically insignificant for long inductors; (4) hydraulic pressure losses are covered by the pressure safety factor. With these assumptions in mind, the formula for the S/p ratio was derived and expressed as follows:

$$\frac{S}{p}=\frac{\pi^2 Q_n}{8\mu_0 \sigma v s \Delta} k_s,$$

$$k_s=\left[\frac{1}{\tau_*}+\frac{\tau_*}{a_*^2}\right]\frac{e^{\frac{1}{\tau_*}}}{\left(1-e^{-\frac{q}{a_*\tau_*}}\right)}.$$

Here, the discharge Q_n, permeability μ_0, conductivity σ, average metal flow velocity v, slip S and thickness Δ (3 to 5 cm) are known quantities. The factor k_s depends upon the relative values of $\tau_*=\frac{\tau}{2\pi\Delta}$, $a_*=\frac{2a}{2\pi\Delta}$, $q=\frac{Q_n}{2\pi\Delta^2 v}$, $\frac{b}{\Delta}=\frac{q}{a_*}$. Thus, the factor k_s is defined only by two variable arguments τ_* and a_*. It was proven that their optimal values τ_{*0} and a_{*0} could be interrelated as $a_{*0}=\tau_{*0}\sqrt{\frac{3\tau_{*0}-1}{\tau_{*0}+1}}$.

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By using this interrelation of two optimal values and by expressing it graphically, the optimal dimensions for π, $2a$, and b could be determined. An example of calculation was presented. Orig. art. has: 3 figures and 15 formulas.

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