UDAL'TSOVA, N.I.; SAVVIN, S.B.; NEMODRUK, A.A.; NOVIKOV, Yu.P.; DOBROLYUBSKAYA, T.S.; SINYAKOVA, S.I.; BILIMOVICH, G.N.; SERDYUKOVA, A.S.; BELYAYEV, Yu.I.; YAKOVLEV, Yu.V.; NEMODRUK, A.A.; CHMUTOVA, M.K.; GUSEV, N.I.; PALEY, P.N.; VINOGRADOV, A.P., akademik, glav. red.; ALIMARIN, I.P., red.; BABKO, A.K., red.; BUSEV, A.I., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; RYABCHIKOV, D.I., red. toma; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; SENYAVIN, M.M., red. toma; VOLYNETS, M.P., red.; NOVICHKOVA, N.D., tekhn. red.; GUS'KOVA, O.M., tekhn. red.

[Analytical chemistry of uranium] Analiticheskaia khimiia urana. Moskva, Izd-vo Akad.nauk SSSR, 1962. 430 p. (MIRA 15:7)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii.

(Uranium—Analysis)

BUSEV, Aleksey Ivanovich; VINOGRADOV, A.P., akademik, glav. red.; ALIMARIN, I.P., red.; BABKO, A.K., red.; VAYNSHTEYN, E.Ye., red.; YERMAKOV, A.N., red.; KUZNETSOV, V.I., red.; PALEY, P.N., red.; RYABCHIKOV, D.I., red.; TANANAYEV, I.V., red.; CHERNIKHOV, Yu.A., red.; VOLYNETS, M.P., red.; MAKUNI, Ye.V., tekhn. red.

[Analytical chemistry of molybdenum]Analiticheskaia khimiia molibdena. [By] A.I.Busev. Moskva, Izd-vo Akad. nauk SSSR, 1962. 300 p. (MIRA 16:1)

(Molybdenum—Analysis)

L 52280-65 EWT(m)/EPF(n)-2/Ew

ABSTRACT

L 52280-65

ASSOCIATION: Komissiya po analiti...

L 7961-66

ACC NR: AP5025749 SOURCE CODE: UR/0286/65/000/018/0097/0097

AUTHORS: Biskina, S. L.; Chernikhovskiy, I. N.

ORG: none

48
B

TITLE: Pressure regulator. Class 42, No. 174864

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 97

TOPIC TAGS: pressure regulator, vacuum regulator, pressure compensation, high vacuum, transducer, vacuum system

ABSTRACT: This Author Certificate presents a pressure regulator containing a two-bellows transducer connected to the atmosphere and to the vacuum system (see Fig. 1). To increase regulating accuracy for a high vacuum, the vacuum system is connected to the bellows while a throttling valve and orifice are placed into the line connecting the transducer with the atmosphere. This arrangement provides critical flow of the fluid and constant pressure relationship between the pressures before and after the throttle. With a corresponding relationship between the bellows areas, this configuration compensates for atmospheric pressure changes.

Card 1/2 UDC: 621.646.4:621.521

2

L 7964-66

ACC NR: AP5025749

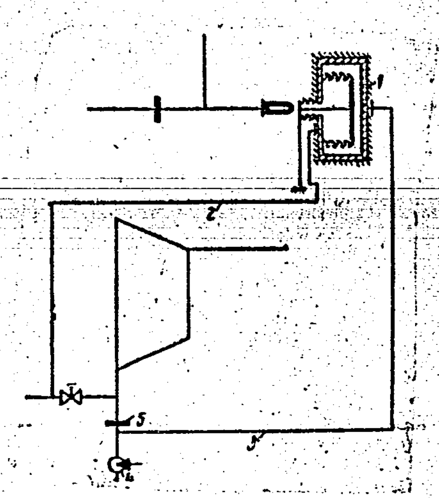


Fig. 1. 1- transducer; 2- vacuum system; 3- connection to atmosphere; 4- throttle; 5- orifice

Orig. art. has: 1 figure.

SUB CODE: ME/ SUBM DATE: 15Nov63

Card 2/2

20393

S/182/61/000/005/001/006
D038/D112

188200 1418

AUTHORS: Trubin, V.N., Chernikhova, I.Ya.

TITLE: The effect of heat treatment on the anisotropy of mechanical properties in forged steel

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 5, 1961, 5-9

TEXT: Present day opinions on the effect of heat treatment on the well-known phenomenon of the anisotropy of mechanical properties in forged steel are varied and contradictory. An experimental investigation has been carried out to verify and compare various heat treatment methods. A 320-mm diameter forging made from a 6.65-ton basic open-hearth steel ingot, was (after billeting) upset to half its height, and drawn with 11.8 reduction. Four specimen groups were subjected to: 1) homogenizing and annealing; 2) homonogenizing, annealing, quenching and tempering; 3) annealing; 4) quenching and tempering. Homogenizing consisted in heating up to 1250°C, soaking for 12 hours in a shop furnace and cooling in still air. Subsequent heat treatment was carried out in a laboratory furnace: annealing with heating up to 810°C and soaking for 2 hours, cooling in the furnace to 650°C, then in still air; quenching; heating up to 810°C and soaking for 2 hours, quenching in

20393

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D038/D112



water; tempering: heating up to 650°C, soaking for 3 hours, and cooling in still air. The results are illustrated in a graph (Fig. 2). After annealing, clearly marked bands were observed in the microstructure of the specimen. Coarse ferrite bands were seen in the backgrounds of sections with a predominantly lamellar pearlite, with band orientation in the direction of drawing. It is probable that hardly perceptible light streaks in the metal were parts with a lower carbon content. Nonmetallic inclusions were elongated in the direction of the metal flow. Annealed steel subjected to preliminary homogenizing had a perfectly identical lengthwise and crosswise structure; nonmetallic inclusions remained long. It is stated that the anisotropy of properties in the investigated steel resulted from the elongation of nonmetallic inclusions and structural banding (dendritic segregation). The structural banding can be decreased by homogenizing, which increases the diffusion processes and contributes to a certain levelling of the chemical composition in steel. The impact resistance and reduction in area of cross-section specimens increased 25-30% after homogenizing. In quenched and tempered steel nonmetallic inclusions were surrounded by a hard brittle structure. Conclusions. The anisotropy of mechanical properties in steel subjected to hot plastic deformation (drawing in one direction) depends on

20393

The effect of heat treatment... S/182/61/000/005/001/006
D038/D112

the final heat treatment. Homogenizing, irrespective of the final treatment, decreases the anisotropy of mechanical properties in forged steel. There are 6 figures, 1 table, and 6 Soviet references.

Card 3/4

20393

S/182/61/000/005/001/006
D038/D112

The effect of heat treatment...

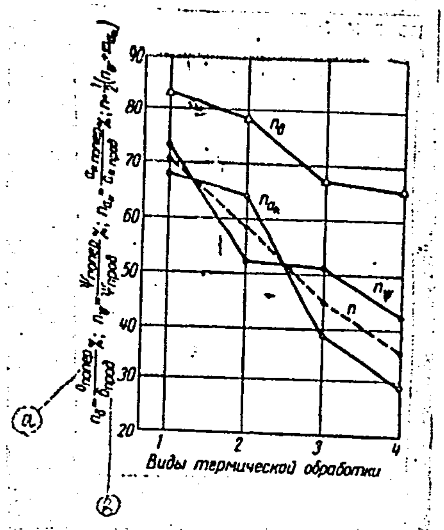


Fig. 2. The effoot of heat treatment on the anisotropy of mechanical properties in 45-steel:
1 - homogenizing and annealing;
2 - annealing; 3 - homogenizing, annealing, quenching and tempering;
4 - quenching and tempering;
a - crosswise; b - lengthwise.

Card 4/4

CHERNIKHOVA, Ye.Ya.

Basic characteristics of the geology and geomorphology of the upper Onega Basin. Uch. zap. Ped. inst. Gerts. 267:75-107 '64. (MIRA 18:9)

CHERNIKHOVSKIY, G., inzh.

Fifty crops a year. Izobr. i rats. no.6:14-15 '63.
(MIRA 16:8)

S/123/59/000/09/25/036
A002/A001

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1959, No. 9, p. 166, # 34129

AUTHOR: Chernikhovskiy, I. N.

TITLE: Self-Oscillations in the Presence of Friction in the Measuring Element of a Regulator in Indirect Control Systems

PERIODICAL: Tr. Nevsk. mashinostroit. z-da, 1957, (1958), Vol. 1, pp. 225-274

TEXT: The author discusses two indirect control systems with direct and diagonal feedback to the intermediate amplification. Mathematical relationships are derived for determining the boundaries and the parameters of self-oscillation conditions for these systems in the presence of friction in the measuring device of their regulator. The article contains the principal circuit diagrams of the systems considered, tables for the values of various quantities of established relationships, and a number of graphs with curves of the self-oscillation boundaries. There are 2 references.

R. N. F.

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

AUTHOR: Chernikhovskiy, Yu.F., Engineer 100-7-9/11

TITLE: Replacement of Worn Parts of Building Machines (O restavratsii detaley stroitel'nykh mashin)

PERIODICAL: Mekhanizatsiya Stroitel'stva, 1957, Vol.14, No.7, pp. 23 - 24 (USSR).

ABSTRACT: The RMZ Trust of the Uralspetsstroy carried out investigations on the tractor C-80 to ascertain how much maintenance was required. 2.4 tons of steel were needed to replace all the worn parts. No saving in costs could be achieved by reconditioning these parts. The most suitable method of maintenance is described. Factories producing machinery should keep adequate stock of spare parts. Methods of reconditioning of worn parts are to be considered. Semi-automatic welding as well as vibro-contact facing (welding inside an electrolyte stream) are most important. The first method is used in reconditioning large components where thermal deformations are not dangerous. The second method is applicable to small parts since no temperature rise occurs. For welding, the semi-automatic welder, ПШ -5, can be used.

AVAILABLE: Library of Congress

Card 1/1

1. Construction-Equipment-Maintenance 2. Tractors-Maintenance

Chernikhovskiy, Yu.F.

LIMANOVSKIY, Ye.I.; CHERNIKHOVSKIY, Yu.F.

Repairing building machinery. Stroi.prom. 35 no.3:46-47 Mr '57.
(MLRA 10:4)
(Building machinery--Maintenance and repair)

CHERNIKHOVSKIY, Yu.F., inzh.

The problem of turbocouplings. Stroi. i dor. mash. 8 no.2:6-7 F '63.

(Couplings) (Excavating machinery) (MIRA 16:3)

1. CHERNIKIN, I. [F.], KHRIZMAN, A.

2. USSR (600)

4. Coal-Mining Machinery

7. Wider application of two-bar channelling machines. Mast. ugl. 1, no. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

CHERNIKIN, I. F., KHRIZMAN, A. SH.

Coal-Mining Machinery

Using two-bar coal cutting machines in the mine no. 201 of the trust "Kopeiskugol'."
Ugol' no. 6, 1952.

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

CHERNIKIN, N.I.

CA

22

**Colorimetric method for the control of successive pumping.** V. I. Chernikin and N. I. Chernikin. *Neftyanoe Khoz.* 26, No. 7, 53-4(1948).—In pumping two different petroleum products in series through the same pipe line, the head of the second slug of fluid is colored by injection of a suitable dye (e.g. Sudan VI) and constitutes a "tell-tale" indicating the extent of mixing of the two products during transportation through the pipe. A comparison of the color intensity of the tell-tale layer with a standard sample provides a means for controlling the concn. of one product in the other and accurately segregating the uncontaminated slugs from the mixed layer. The comparison is effected automatically by a photocell receiving two beams of light from a single source across the pipe line (through transparent windows) and across a container with the standard sample. A rotating disk with a slot is interposed in the path to interrupt alternately the two beams, causing the photocell to produce a pulsating current, which is amplified and used for signaling a predetd. concn. limit or actuating valves. B. C. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CHERNIKIN, N. I.

AID P - 1358

Subject : USSR/Engineering

Card 1/1 Pub. 78 - 21/30

Author : Chernikin, N. I.

Title : Fight against losses from "big breathings" of high pressure stcrage tanks.

Periodical : Neft. khoz., v.32, #12, 69-73, D 1954

Abstract : The computation of losses of petroleum products due to evaporation in the storage tank is presented as the function of volume, temperature and pressure difference. One chart and 1 Russian reference (1949) in footnote.

Institution: None

Submitted : No date

CHERNIKIN, V. I.; KHRISTIANOVICH, S. A.; TREBIN, F. A. (Academicians)

"Isothermal Flow of Gas in Pipes," Iz. Ak. Nauk. SSSR. Otdel. Tekh. Nauk, No. 9, 1945.

N. Ye. Zhukovskiy Central Aerohydrodynamics Inst.
Mbr., AS

CHERNIKIN, V.I.

CA

PROCESSES AND PROPERTIES INDEX

**Pneumatic method for the measurement of petroleum products in tanks.** V. I. Chernikin. *Neftyanoe Khoz.* 24, No. 12, 55-6(1947).—A Hg-filled U-tube type gage is used in combination with an air-supply pipe immersed in the tank.
Bruno C. Metzner

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CHERNIKIN, V.I., dots.

Economically justifiable size of tanks. Trudy MNI no.7:94-96 '47. (MIRA 12:1)
(Tanks)

CHERNIKIN, V.I., dots.

Putting pipelines into operation. Trudy MNI no.7:96-102 '47.
(Petroleum--Pipelines) (MIRA 12:1)

CHERNIKIN, V.I., dots.

Forcing viscous petroleum products through pipelines. Trudy MNI no.7: 102-104 '47. (MIRA 12:1)
(Hydraulics) (Viscosity)

CHERNIKIN, V.I., dots.

Allowance for longitudinal expansion and contraction of underground pipelines. Trudy MNI no.7:104-107 '47. (MIRA 12:1)
(Pipelines)

CHERNIKIN, V.I., dots.

Optimum temperature to which petroleum products should be heated to be pipelined. Trudy MNI no.7:107-111 '47. (MIRA 12:1)
(Petroleum--Pipelines) (Viscosity)

CHERNIKIN, V. I.

Feb 1948

USSR/Petroleum
Tanks, Oil
Oil Storage

"Metallic Two-Layer Reservoirs for Petroleum, Petroleum Products and Gas," V. I. Chernikin, 3 pp

"Neftyanoye Khozyaystvo" No 2

Short discussion of technical questions raised in constructing petroleum storage tanks designed with two or more layers of storage space in order to save steel. A two-layer storage tank requires one half the metal of those of ordinary construction.

61T90

PA 59/49T7

CH RNIKIN, V. I.

USSR/Engineering Jul 48
Pumps
Petroleum Industry

"Calorimetric Method for Regulating Successive Repumping," V. I. Chernikin, N. I. Chernikiva, 2 pp

"Neft Khoz" No 7

Describes calorimetric method developed in 1946 by Moscow Petroleum Inst which is superior to a float-hydrometer. Based on system of lenses and mirrors which split light source into two beams: one going through standard mixture, the other through Plexiglas apertures in pipe

59/49T7

USSR/Engineering (Contd) Jul 48

carrying oil product. Both beams converge on one photocell after passing through holes in revolving disk. Deviation from equal light intensity shows up on meter after amplification. Author asks ministries concerned to furnish operating data on new method.

59/49T7

CHERNIKIN, V. I.

May 1948

USSR/Petroleum Industry
Heating, Industrial

"Steam Coil Preheaters in Petroleum Reservoirs,"
V. I. Chernikin, 3 pp

"Neft Khoz" Vol XXVI, No 5

Gives formulas to determine the over-all length of specific sections of the coil pipe and the total number of sections with the calculation of the thermal and hydraulic rate of the preheater.

65T80

LC

CHERNIKIN, V.I.

22

CA

**Colorimetric method for the control of successive pumping.** V. I. Chernikin and N. I. Chernikin. *Neftyanoe Khoz.* 26, No. 7, 33-4(1948).—In pumping two different petroleum products in series through the same pipe line, the head of the second slug of fluid is colored by injection of a suitable dye (e.g. Sudan VI) and constitutes a "tell-tale" indicating the extent of mixing of the two products during transportation through the pipe. A comparison of the color intensity of the tell-tale layer with a standard sample provides a means for controlling the concn. of one product in the other and accurately segregating the uncontaminated slugs from the mixed layer. The comparison is effected automatically by a photocell receiving two beams of light from a single source across the pipe line (through transparent windows) and across a container with the standard sample. A rotating disk with a slot is interposed in the path to interrupt alternately the two beams, causing the photocell to produce a pulsating current, which is amplified and used for signaling a predetd. concn. limit or actuating valves. B. C. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CHERNIKIN, V.I., kandidat tehnicheskikh nauk, dotsent.

Determining the leakage of petroleum products from main pipelines. Trudy MNI no.11:295-299 '51. (MIRA 10:3)
(Petroleum--Pipelines)

CHERNIKIN, V.I., kandidat tekhnicheskikh nauk.

[redacted]

Fluctuating state of underground pipelines for hot petroleum products. Trudy MNI no.11:300-317 '51. (MLRA 10:3)
(Petroleum--Pipelines)

CHERNIKIN, V. I.

CHERNIKIN, V. I. -- "Transfer of Heavy Petroleum Through Pipelines." Sub 23 Dec 52, Moscow Order of Labor Red Banner Petroleum Inst imeni Academician I. M. Gubkin (Dissertation for the Degree of Doctor in Technical Sciences)

SO: Vechernaya Moskva January-December 1952

CHERNIKIN, V.I.

Fight against losses of "great exhalations" from storage tanks operating under pressure. Neft.khcz. 32 no.12:69-73 D '54.
(Petroleum--Storage)
(MIRA 8:2)

CHERNIKIN, V.I., professor

V.G.Shukhov's generalized equation. Trudy Akad. neft. prom. no.2:266-269 '55. (MIRA 8:5)
(Petroleum--Pipelines)

CHERNIKIN,V.I., professor

Pipeline transportation of congealing parafinous petroleum. Trudy Akad. neft. prom. no.2:269-272 '55. (MIRA 8:5)
(Petroleum--Pipelines)

SOV/124-57-9-10293

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 9, p 57 (USSR)

AUTHOR: Chernikin, V. I.

TITLE: Hydraulic Design Calculation of "Hot" Petroleum Pipe Lines (Gidravlicheskiy raschet "goryachikh" nefteprovodov)

PERIODICAL: Tr. Akad. neft. prom-sti, 1955, Nr 2, pp 272-282

ABSTRACT: A method of design calculation for "hot" petroleum pipe lines proposed by the author in 1949 is described. The derivation of a formula for the determination of head losses in nonisothermal pipe flow is outlined (turbulent and laminar) for highly viscous petroleum products at elevated temperatures. The flow is characterized by both radial and axial temperature gradients resulting in a considerable increase in friction losses. Formulas by P. A. Filonov for the determination of kinematic viscosity as a function of the temperature were used in the derivation of the basic equations. Also used were formulas by V. G. Shukhov for the longitudinal temperature variation of petroleum products along a pipe line, as well as several propositions from the works of other authors. The resulting basic equation obtained for the characteristic of the pipe, $q=f(h)$, is represented by a curve

Card 1/2

consisting of three zones with two inflection points. In the first and third zones, corresponding respectively to low and high discharge rates, the friction losses increase with increasing discharge rate, while in the second zone corresponding to average discharge rates the friction losses diminish. Effects of pump action on the above-mentioned characteristic are studied and a change-over of pipe-line systems to the operating regime existing in the third (working) zone of the characteristic of a "hot" pipe line is recommended.

V. I. Gotovtsev

CHERNIKIN, V.I.

CHERNIKIN, V.I., prof.; KULIKOV, A.A., inzh.

Optimum parameters of pipelines. Trudy Akad. neft. prom. no.3:225-246 '56. (MIRA 10:11)

(Pipelines)

SOV/124-58-3-2889

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 48 (USSR)

AUTHOR: Chernikin, V. I.

TITLE: The Hydraulic Resistance of Welded Pipe Lines (Gidravlicheskoye soprotivleniye svarnykh truboprovodov)

PERIODICAL: Tr. Akad. neft. prom-sti, 1956, Nr 3, pp 246-249

ABSTRACT: During gas and electric-resistance pressure welding of steel pipes there are formed at the butt joints so-called "reinforced" seams [ due to the outward squeezing of the heated butted edges; Transl. Ed. Note ] which increase the general hydraulic resistance of the pipe line. The resistance of such "reinforcements" of variously shaped pipes has not been sufficiently studied. The author assumes that in the first approximation such butted joints should be considered to be equivalent in resistance to joints flux-welded on backing rings. Pipe-line weld joints are considered as axisymmetric acute-angle diaphragms with a very large opening. The increase in hydraulic resistance of welded pipe lines due to the "reinforcement" of the swollen butted joints, according to the author's suggestion, should be determined by a coefficient of local resistance of the butted joint $\lambda_c$ in

Card 1/2

SOV/124-58-3-2889

The Hydraulic Resistance of Welded Pipe Lines

accordance with the formula

$$\lambda_c = \frac{D}{l}\left[\frac{1}{\epsilon(1-4e/D)} - 1\right]^2$$

Here D is the inner diameter of the pipe line, d is the inner diameter of the available cross section at the location of the weld joint, $\epsilon$ is the contraction coefficient of the flow, $l$ is the average length of a single pipe, and e is the thickness of the "reinforcement", equal to 0.5 (D-d). For pipes with a 200-400 mm diameter, the values $\lambda_c$ calculated in accordance with the above formula are equal to 0.0045 to 0.0034. The author offers a number of practical suggestions that should serve to minimize $\lambda_c$.

V. I. Gotovtsev

Card 2/2

SOV/124-58-1-584

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 71 (USSR)

AUTHOR: Chernikin, V. I.

TITLE: The "Pump-to-pump" Transfer of Petroleum by Means of Piston-type Pumps (Perekachka neftey porshnevymi nasosami "iz nasosa v nasos")

PERIODICAL: Tr. Akad. neft. prom-sti, 1956, Nr 3, pp 250-254

ABSTRACT: Bibliographic entry

Card 1/1

SOV/124-58-3-2966

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 60 (USSR)

AUTHORS: Asaturyan, A. Sh., Yedigarov, S. G., Chernikin, V. I.

TITLE: The Laminar Motion of Viscous Petroleum Products in Rectangular Heated Channels (Laminarnoye dvizheniye vyazkikh nefteproduktov v pryamougol'nykh obogrevayemykh kanalakh)

PERIODICAL: Tr. Akad. neft. prom-sti, 1956, Nr 3, pp 254-259

ABSTRACT: The article examines the plane steady-state laminar uniform flow of viscous fluid in an open channel with a heated bottom. The calculation is made in accordance with the Navier-Stokes equation, with separate consideration of the heated fluid moving along the bottom of the channel and the cold fluid moving along its upper part. At the interface between the cold and the hot fluids, the velocities and friction stresses are conjugated. An equation is obtained for the over-all discharge of the fluid. An explanation is presented of the equation obtained, and a numerical example is given.

Card 1/1

Ye. M. Minskiy

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000308510017-6"

CHERNIKIN, V. I.

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p 49 (USSR) 124-11-12668

AUTHOR: Chernikin, V. I.

TITLE: Investigation of the Motion of Hot, Viscous Oils in Tubular Conduits. (Issledovaniye dvizheniya goryachikh vyazkikh neftey po truboprovodam)

PERIODICAL: Tr. Mosk. neft. in-t, 1956, Nr17, pp 53-70

ABSTRACT: It is found that the curve $H = f(Q)$, expressing the relationship between the loss of head H and the flow Q for a laminar motion of a hot liquid through a conduit exhibits three anomalies: 1) a sharply defined maximum for small values of Q and a minimum for intermediate values of Q; 2) between the points $H_{max}$ and $H_{min}$ the head losses with increasing flow decrease with increasing temperatures of the liquid and a sharp reduction of its viscosity $\nu$, wherein $\nu$ decreases faster than Q increases; 3) for a single value of the head H, there may be three corresponding values of the flow, only two of which afford a steady-state transfer of the liquid. The curve $H = f(Q)$ is well substantiated by tests.
Bibliography: 9 references.

A. D. Al'tshul'

Card 1/1

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 55 (USSR) SOV/124-57-4-4243

AUTHOR: Chernikin, V. I.

TITLE: Optimum Pumping Regimes and Preheat Temperature of Crude Oils Before Pumping (Optimal'nyye rezhimy perekachki i temperatura podogreva neftey pered perekachkoy)

PERIODICAL: Tr. Mosk. neft. in-t, 1956, Nr 17, pp 71-81

ABSTRACT: The paper elucidates the question of the selection of an optimum pumping regime (laminar, turbulent, or turbulent in the entrance region and laminar at the delivery end) as well as the preheat temperature of crude oils before pumping through "hot" pipe lines (from 100 to 110°C). The selection is based on the following considerations: 1) The least energy expended on the pumping (the least pressure at the pipe-line pumping-booster stations), and 2) the least energy (or the least cost of the energy) expended on the preheat and the pumping. For the solution of the problem in the first instance the author analyzes an equation determining the pressure-head losses in a pipe line with a turbulent entrance region having a specified length. For the second instance, the author solves an equation determining the

Card 1/2

cost of energy used to compensate for the heat losses and the pumping of the oil through the pipe line with a turbulent entrance region. For both instances the author provides methods for determining the optimum preheat temperatures, the temperature of the oil at the end of the pipe line, the optimum temperature interval at which the pipe-line performance achieves the minimum cost of energy expended for the compensation of the heat losses and the pumping, the optimum pressure head of the pumps, and a series of other values. The author comes to the conclusion that under turbulent conditions the preheat temperature of the oil should be selected at the highest level that the pipe line can handle consistent with its strength and endurance. Under laminar-flow conditions the preheat temperature does not depend on the length of the pipe line and is selected to equal the critical temperature (corresponding to the critical viscosity with a critical value of Reynolds number 2300). When both flow regimes prevail in the oil flow it is necessary to determine the preheat temperature on the basis of V.G. Shukhov's formula. Two numerical examples of the determination of an optimum regime of pumping and of an optimum preheat temperature of the oil pumped are analyzed in detail.

Yu. M. Savvin

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 60 (USSR) 124-1957-2-1888

AUTHOR: Chernikin, V. I.

TITLE: Investigation of Some Methods for the Improvement of the Discharge Capacity of "Hot" Petroleum Pipe Lines (Issledovaniye nekotorykh metodov uvelicheniya proizvoditel'nosti "goryachikh" nefteprovodov)

PERIODICAL: Tr. Mosk. neft. in-t, 1956, Nr 17, pp 82-92

ABSTRACT: Bibliographic entry

1. Pipelines--Analysis 2. Petroleum--Handling

Card 1/1

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 55 (USSR)

SOV/124-57-4-4244

AUTHOR: Chernikin, V. I.

TITLE: Alternation of Different "Runs" of Oil in Oil Pipe Lines (Zameshcheniye neftey v nefteprovodakh)

PERIODICAL: Tr. Mosk. neft. in-t, 1956, Nr 17, pp 93-100

ABSTRACT: The paper examines the process of mutual displacement (expulsion) of different "runs" of oils in pipe lines and the interaction of the driven and the driving flows. An approximate solution is submitted for the problem of the time required for the displacement of heavy oils by low-viscosity oils or by water in horizontal pipe lines on the assumption that the flow of the heavy oil proceeds according to the Shvedov-Bingham [Transl. Ed. Note: Shvedov also spelled "Schwedow" in technical bibliographies] law, assuming that the pressure at the pumps is constant. Laboratory experiments on the displacement of viscous oil from pipe lines by low-viscosity petroleum products were made for the verification of the relationship obtained by theoretical methods. The paper describes the methodology of the measurements and conditions governing the tests conducted. The author adduces the results of

Card 1/2

observations of the displacement of Avtol-18 automobile lubricating oil by water, kerosene and gasoline. The paper recommends formulas for the determination of the time required for the displacement of viscous oil products by water in relatively short oil-farm pipe lines (with $\ell/d < 300$) as well as in longer pipe lines ($\ell/d > 300$). The author reaches the conclusion that the displacement rate depends on the type of the displacing (driving) fluid; this rate is greater for water than for low-viscosity oil products, which indicates the expediency of using low-viscosity crude-oil products [e.g., solar oil (an oil distillate intermediate between kerosene and machine oil), kerosene, etc.] as a displacing fluid for the acceleration of the displacement process. The volume of the viscous crude oil, V, forced out constitutes half of the volume of the pipe line, $V_0$, and increases with an increase in $\ell/d$. The ratio $V/V_0$ in the displacement of viscous oil products by low-viscosity ones is 10% lower than for displacement by water. The author adduces a number of charts and graphs.

Yu. M. Savvin

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 55 (USSR)

SOV/124-57-4-4245

AUTHOR: Chernikin, V. I.

TITLE: The Simultaneous Pumping of Crude Oil and Water in Pipe Lines (Sovmestnaya perekachka neftey i vody po truboprovodam)

PERIODICAL: Tr. Mosk. neft. in-t, 1956, Nr 17, pp 101-111

ABSTRACT: The paper submits an account of the hydraulic design calculation for the so-called spiral pipe lines which are used for pumping heavy crude oils simultaneously with a small amount of water; such pipe lines have a helicoidal rifling on their inner surface; in other instances spirally-wound wire is placed inside the pipe in place of the rifling; when water and crude oil are made to pass together through such a pipe a water envelope which sharply reduces hydraulic resistance is formed over its inner surface. The author examines a case when according to observation a turbulent regime prevails in the annular flow of water while the flow of crude oil is laminar. By making a series of simplifying assumptions with respect to the two flow regimes the author derives relationships for determining the thickness of the water layer and calculating the hydraulic slope for a prescribed flow rate of water

Card 1/2

The Simultaneous Pumping of Crude Oil and Water in Pipe Lines SOV/124-57-4-4245

and crude oil. The author also explains his reasoning relative to the stability conditions of the water envelope. The paper adduces a numerical example of the calculation of pumping crude oil over an actual operating spiral pipe line and a comparison of the results of the calculations with the results of actual observations of the operational behavior of such a pipe line. The analysis of the calculations leads the author to certain deductions which are of interest from a practical point of view.

V. A. Arkhangel'skiy

Card 2/2

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 4, p 79 (USSR)

SOV/124-57-4-4413

AUTHORS: Charnyy, I. A., Chernikin, V. I.

TITLE: The Thermal Regime of the Gas-filled Space of Gasoline Storage Tanks (Teplovoy rezhim gazovogo prostranstva benzinokhranilishch)

PERIODICAL: Tr. Mosk. neft. in-t, 1956, Nr 17, pp 169-178

ABSTRACT: Bibliographic entry

Card 1/1

CHERNIKIN, V.I.

Transferring viscous petroleum by heating. Neft.khoz.34 no.4: 61-68 Ap '56. (Petroleum--Pipelines) (MLRA 9:7)

ARANOVICH, D.

Book on tank farms ("Construction and exploitation of tank farms" by V.I. Chernikin. Reviewed by D. Aranovich). Neft. khoz. 34 no.12: 63-64 D '56. (MLRA 10:8)

(Petroleum engineering)
(Chernikin, V.I.)

CHERNIKIN, V. I.,

Asaturyan, A. Sh., S. G. Yedigarov and V. I. Chernikin.

"Isothermal Flow of Viscous Liquids in Open Rectangular Channels"

"Hydromechanical Transportation of Viscouw Crude Oil Through Open Rectangular Channels"

Tsimbler, Yu. A., and V. I. Chernikin.
"Some Problems of Hydraulics of Nonisothermal Pipelines"

**Problems of Petroleum Production and Petroleum Engineering, Moscow, Neftyanoy institut, Gostoptekhizdat, 1957, 393pp. (Trudy vyp. 20)
This book is a collection of articles written by professors and faculty members of the Petroleum Inst. im I. M. Gubkin.**

CHERNIKIN, V.I.

24-9-24/33

AUTHORS: Asaturyan, A. Sh. and Chernikin, V. I. (Ufa, Moscow)

TITLE: Laminary movement of a viscous liquid with a free surface inside cylindrical tubes. (Laminarnoye dvizheniye vyazkoy zhidkosti so svobodnoy poverkhnost'yu v tsilindricheskikh trubakh).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.9, pp. 137-139 (USSR)

ABSTRACT: Some of the known methods of calculation of pipelines with a free flow surface are excessively approximate (Ref.1) and experimental investigations in this field are also inadequate (Ref.2). In this paper an accurate solution is given of the problem of laminary movement of a viscous liquid with a free surface in cylindrical tubes which is based on the integration of the Nave-Stokes equation. The steady state movement is considered of a viscous liquid inside a cylindrical tube (Fig.1) with a radius R located at an angle $\phi$ to the horizontal; at the top the flow is limited by a free surface AB whilst at the bottom it is delimited by the immobile arc ACB of the tube. The OY-axis is assumed perpendicular to the free surface plane, the OZ-axis in the direction of the flow and the OX-axis perpendicular to the YOZ plane. The problem is

Card 1/2

solved by utilising the results of Chaplygin, S.A. (Ref.3) using bipolar coordinates. The throughput capacity is expressed by eq.(16), p.138 and numerical results given in the Table, p.139, indicate that the maximum throughput capacity is obtained for a height to diameter ratio equalling about 0.85 of the flow. The throughput capacity in pressureless piping calculated according to the approximate method of Yes'man and Lobkov (Ref.1) is considerably lower than that obtained by means of eq.(16). Acknowledgments are made to Yedigarov, S.G. for his valuable advice and criticism of the paper.
There are 2 figures, 1 table and 4 Slavic references.

**SUBMITTED:** May 25, 1956.

**AVAILABLE:** Library of Congress.

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 111 (USSR) SOV/124-58-11-12702

AUTHORS: Asaturyan, A.Sh., Yedigarov, S.G., Chernikin, V.I.

TITLE: Isothermal Flow of Viscous Liquids in Open Rectangular Channels (Izotermicheskoye techeniye vyazkikh zhidkostey v otkrytykh pryamougol'nykh kanalakh)

PERIODICAL: Tr. Mosk. neft. in-ta, 1957, Nr 20, pp 305-313

ABSTRACT: An examination of the problem of the laminar flow of an incompressible viscous liquid in an inclined rectangular channel. The solution is based on approximate equations of motion of the viscous liquid, in which all inertia terms and terms containing velocity terms that are perpendicular to the center line of the channel are disregarded; here we may from the outset consider $dp/dx=0$ in equation (4), which follows from (6). With this setup and with the boundary conditions assumed by the author, the problem coincides fully with the problem on the flow of a viscous liquid in a rectangular pipe examined by Boussinesq (J. math. pures et appl., 1868, Vol 13, p 377) and the solution obtained by the authors merely reproduces Boussinesq's results. In the conclusions the authors investigate the discharge formula obtained, which coincides with Boussinesq's formula, and compare it with other calculation formulas by means of numerical computation. Bibliography: 8 references. S. M. Targ

Card 1/1

ASATURYAN, A.Sh., mladshiy nauchnyy sotrudnik; YEDIGAROV, S.G., dotsent; CHERNIKIN, V.I., prof.

Subaqueous transportation of viscous petroleums in rectangular open channels. Trudy MNI no.20:314-321 '57. (MIRA 13:5)

(Petroleum--Transportation)

TSIMBLER, Yu.A., inzh.; CHERNIKIN, V.I., prof.

Hydraulics of nonisothermal pipelines. Trudy MNI no.20:322-335 '57. (MIRA 13:5)

(Petroleum--Pipelines)

Chernikin, V. I.

KALASHNIKOV, N.V.; CHERNIKIN, V.I.

Vibration heating of viscous petroleum and petroleum products.
Neft.khoz. 35 no.3:46-53 Mr '57. (MLRA 10:4)
(Petroleum--Transportation)

CHERNIKIN, Vadim Ivanovich, prof., doktor tekhn. nauk; NOVIKOVA, M.M., vedushchiy red.; TROFIMOV, A.V., tekhn. red.

[Pumping over of viscous and paraffinaceous petroleum] Perekachka viazkikh i zastyvaiushchikh neftei. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 160 p. (MIRA 11:8)
(Petroleum)

NOVOSELOV, V.F.; CHERNIKIN, V.I.

Movement (propulsion) of oil in pipelines. Izv. vys. ucheb. zav.; neft' i gaz no.1:141-147 '58. (MIRA 11:8)

1. Moskovskiy neftyanoy institut im. akad. I.M. Gubkina.
(Petroleum--Pipelines)

AUTHOR: Kalashnikov, N.V. and Chernikin, V.I. Sov/93-58-4-14/19

TITLE: Vibration Heating of Heavy Petroleum Products and Crude (Vibropodogrev vyazkikh nefteproduktov i neftey)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 4, pp 65-67 (USSR)

ABSTRACT: The article presents formulas for determining the electric power consumption by the vibration of vibroheaters during the process of preheating heavy petroleum products and crude. The experimental data on this type of preheaters were published by the authors in Neftyanoye khozyaystvo, 1957, Nr 3. An analysis of the experimental data has shown that the resistance R to the motion of the heater during the process of vibration Eu is a function of the Re number. This relationship is expressed by the equations $Eu = C\,Re^m$ and $Eu = e\sqrt[k]{Re}$, where $Eu = \frac{R}{\varrho F v^2}$ ; $Re = \frac{\bar{v}d}{\nu}$ ; $\bar{v} = \frac{2\pi n a}{\sqrt{2}}$ - mean quadratic velocity of the heater vibration; F-area of heater projection in the plane perpendicular to the vibration direction; a and n - amplitude and frequency of the heater vibration respectively; $\nu$ and $\varrho$ - kinematic viscosity and density of the petroleum product; C, m, and k- coefficients. These function formulas are graphically presented in Figs. 1 and 2. The formulas are applicable to one-tube or single row heaters in a horizontal plane which vibrate in a vertical direction with an

Card 1/2

Vibration Heating of Heavy Petroleum (Cont.)

amplitude of 1 cm. $< 2a < 4$ cm. at Re $< 100$. The electric power consumption by the vibration of other types of heaters can be determined by the formula

$N = \bar{v}R = Eu \quad \rho F v^3$. There are 2 figures.

1. Petroleum--Heating 2. Heaters--Electrical factors 3. Heaters--Vibration 4. Electricity--Consumption 5. Mathematics

Card 2/2

NOVOSELOV, V.F.; CHERNIKIN, V.I.

Thermal conditions of petroleum reservoirs. Trudy MNI no.23: 141-149 '58. (MIRA 12:1)
(Petroleum--Storage) (Heat--Transmission)

AUTHORS: Kalashnikov, N. V., Chernikin, V. I. 20-119-4-29/60

TITLE: Investigation of the Heat Exchange Between Vibrating Heating Devices and Viscous Liquids (Issledovaniye teploobmena mezhdu vibriruyushchimi podogrevatelyami i vyazkimi zhidkostyami)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 4, pp. 735 - 736 (USSR)

ABSTRACT: Transmission of heat from immobile heating devices in liquids in the interior of containers is brought by free convection, which is very low in the case of viscous liquids. One of the most efficacious methods of intensifying the heating of liquids is that based upon the use of vibrating heating devices. Heat transfer from such a vibrating heater takes place essentially by enforced convection. The influence exercised by the vibration of the heating device upon the heat transfer to viscous liquids was investigated by means of an electromagnetic vertical vibrator, which was provided with a horizontal cylindrical electric heating device with a diameter of 1,98 cm and a length of heat transfer of 28,2 cm. The amplitude of the oscillations changed within the limits of from 2a = 1 to 4 cm and the frequency n had values of from 100 to 1600 $min^{-1}$. The following liquids

Card 1/4

were heated: highly viscous fuel oil (mazout) 100, autol 18, spindle oil, and a mixture of spindle oil and kerosene, which has nearly the same viscosity as Diesel fuel. The following results were obtained: The coefficient α of heat transfer from the heating device to the mazout without oscillations (n = 0) in the case of the $t_{medium}$ is within the limits of 40 to 45 $Kcal/m^2$.hour.dgr. In the case of oscillations with 2a.n = 3.1200 it increases by about 20 times its amount. In the mixture of spindle oil and kerosene α increases under the same conditions from 80 - 85 $Kcal/m^2$.hour.dgr. to 2080 $Kcal/m^2$.hour.dgr. Thus allowing the heating device to vibrate is an easy method of intensifying heat transfer. The increase of 2a at n-const and the increase of n at 2a = const leads to a considerable increase of α; thus α increases with an increasing velocity of vibration $\bar{V}$. In liquids with low viscosity the intensity of the growth of α at $\bar{V}$ = const depends more on the amplitude than on the velocity of vibrations. With increasing viscosity of the liquid the leading part played by the liquid diminishes and practically vanishes by the heating of liquids of high viscosity. At vibration

Card 2/4

velocities of 2o cm/sec and more free convection exercises practically no influence upon the intensity of heat transfer to viscous liquids, and the process of heat transfer is fully determined by enforced convection. Utilization of experimental data leads to the formula

$$Nu = 0{,}146\ Pe^{0{,}67} \cdot Pr^{-0{,}16}.$$

This formula is suited for horizontal cylindrical heating devices vibrating vertically with an amplitude of from 1 to 4 cm and velocities of from 2o to 134 cm/sec. The parameters Pe have the values $Pe = (1{,}6 \text{ to } 40) \cdot 10^4$ and the parameters Pr have the values $Pr = 1{,}4 \cdot 10^2$ to $1{,}5 \cdot 10^4$. There are 2 figures and 1 Soviet reference.

ASSOCIATION: Moskovskiy neftyanoy institut im. I. M. Gubkina (Moscow Petroleum Institute imeni I. M. Gubkin)

Investigation of the Heat Exchange Between Vibrating Heating Devices and Viscous Liquids 20-119-4-29/60

PRESENTED: July 2, 1957, by P. A. Rebinder, Member, Academy of Sciences, USSR

SUBMITTED: July 2, 1957

Card 4/4

SOV/24-58-7-20/36

AUTHORS: Asaturyan, A.Sh., Yedigarov, S.G. and Chernikin, V.I. (Ufa, Moscow)

TITLE: The Motion of Immiscible Liquids of Differing Densities Along a Rectangular Open Channel (Dvizheniye nesmeshivayushchikhsya zhidkostey razlichnogo udel'nogo vesa po priyamougol'nym otkrytym kanalam)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 7, pp 115 - 116 (USSR)

ABSTRACT: Oil floating on water is discussed; the solution given is exact for laminar flows in both liquids. Fourier expansion methods are used to give series which converge rapidly for the flows; one or two terms are adequate for practical purposes. A simple numerical example is used to show how much more rapidly a viscous oil can be transported in this way. There are 1 figure and 1 Soviet reference.

SUBMITTED: November 26, 1957

Card 1/1

AUTHORS: Kalashnikov, N.V. (Engineer) Chernikin, V.I. (Dr.Tech.Sci.)

SOV/96-58-10-19/25

TITLE: Heat-transfer from vibrating heaters (Teplootdacha vibriruyushchikh podogrevateley.)

PERIODICAL: Teploenergetika, 1958, No.10. pp. 78-79 (USSR)

ABSTRACT: Heat-transfer from heaters immersed in viscous fluids can be increased by vibrating the heaters. Tests were made on a cylindrical heater 1.98 cm diameter with a working length of 28.2 cm vibrating in a vertical direction in specified ways. The full-wave amplitude ranged from 0.5 - 4.0 cm, the frequency from 100 - 1600 cycles/min (1.7 - 27 c/s), and the r.m.s. velocity from 4 - 134 cm/sec. The tests were made on high-viscosity fuel oil (66.2 poise at 20°C), motor-type oil 18 (13 poise), machine oil (1.28 poise) and a mixture of machine oil and kerosene with the viscosity of diesel fuel (0.172 poise). The heaters were used in the horizontal position, which is the most effective. A 600-watt heater was fitted in two concentric brass tubes: the outer tube contained twelve thermocouples to measure the outside wall temperature of the tube. The heater was placed in an oil bath and vibrated by electro-mechanical means. Measurements were made on the heaters with and without vibration. The results for the fuel oil and the mixture of machine oil and kerosene are plotted in Fig.1. and show

Card 1/2

that without vibration the rate of heat-transfer to fuel oil is 40 - 45 kcal/m$^2$hour$^{o}$C with a temperature gradient of 42$^{o}$C, whilst with vibration at a mean speed of 134 cm/sec the rate of transfer is increased by a factor of 20. For the mixture of machine oil and kerosene, the corresponding increase is by a factor of 24. In liquids of low viscosity, the increase depends more on the amplitude than on the frequency. In more viscous liquids, the amplitude becomes less important, and in heavy fuel-oil only the mean speed of vibration is important. The results are represented by an equation. There are 2 figures and 1 Soviet reference.

ASSOCIATION: Moscow Petroleum Institute (Moskovskiy neftyanoy Institut)

NOVOSELOV, V.F.; CHERNIKIN, V.I.

Determining optimal parameters of "hot" pipelines. Trudy MNI no.23:116-129 '58. (MIRA 12:1)
(Petroleum--Pipelines)

NOVOSELOV, V.F.; CHERNIKIN, V.I.

Cooling of hot petroleum and petroleum products in shut-down pipelines. Trudy MNI no.23:130-140 '58. (MIRA 12:1)
(Petroleum--Pipelines) (Heat--Transmission)

BIRKENFEL'D, K.G.; MEZHIRITSKIY, L.M.; CHERNIKIN, V.I.

Studying finned double-pipe heat exchangers. Trudy MNI no.23: 150-157 '56. (MIRA 12:1)

(Heat exchangers)

GALIULLIN, Z.T.; CHERNIKIN, V.I.

Effect of the profile of the track on hydraulic resistance of gas pipelines. Izv.vys.ucheb.zav.; neft' i gaz 2 no.9: 93-100 '59. (MIRA 13:2)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akad.I.M.Gubkina.
(Gas, Natural--Pipelines)

BLEYKHER, E.M.; CHERNIKIN, V.I.

Hydraulic calculation of petroleum product transportation through pipelines equipped with centrifugal pumping stations. Neft.khoz. 37 no.3:59-62 Mr '59. (MIRA 12:5)
(Petroleum--Pipelines)
(Centrifugal pumps)

GALIULLIN, Z.T., inzh.; CHERNIKIN, V.I., prof.

Petroleum and gas pipelines with variable cross-sections.
Stroi. truboprov. 5 no.7:5-7 Jl '60. (MIRA 13:9)
(Pipelines)

SHCHERBAKOV, S.G.; CHERNIKIN, V.I.

Effect of hydrostatic pressure on the accuracy of measuring the quantity of petroleum and petroleum products in tanks. Izv. vys. ucheb. zav.; neft' i gaz 3 no.4:105-111 '60. (MIRA 15:6)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M. Gubkina.

(Tanks)

(Liquid level indicators)

BLEYKHER, E.M.; CHERNIKIN, V.I.

Spacing of centrifugal pumping stations along pipelines.
Izv.vys.ucheb.zav.; neft' i gaz 3 no.6:123-128 '60.
(MIRA 13:7)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad.I.M.Gubkina.
(Pipelines) (Centrifugal pumps)

GALIULLIN, Z.T.; CHERNIKIN, V.I.

Minimum weight petroleum and gas collectors and gas service networks. Izv. vys. ucheb. zav.; neft' i gaz 3 no.8:103-108 '60. (MIRA 14:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.
(Tanks)

SHCHERBAKOV, S.G.; CHERNIKIN, V.I.

Analyzing errors of a float type densitometer. Izv. vys. ucheb. zav.; neft' i gaz 3 no.11:101-105 '60. (MIRA 14:1)

1. Moskovskiy institut neftkhimicheskoy i gazovoy promyshlennosti imeni akademika I.M. Gubkina.
(Densitometers)

GALIULLIN, Z.T.; CHERNIKIN, V.I.

Some problems of unstady gas flow in pipelines. Izv. vys. ucheb. zav.; neft' i gaz 3 no.12:113-120 '60. (MIRA 14:10)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M. Gubkina.

(Gas flow)
(Pipelines--Hydrodynamics)

BLEYKHER, E.M.; CHERNIKIN, V.I.

Controlling the performance of centrifugal pumping stations in consecutive petroleum and petroleum products pipelining. Neft. khoz. 38 no.5:53-58 My '60. (MIRA 13:8)
(Pumping stations)
(Petroleum--Pipelines)

TSIMBLER, Yu.A.; CHERNIKIN, V.I.

Petroleum evaporation losses in underground storage. Neft. khoz. 38 no.9:52-58 S '60. (MIRA 13:9)
(Petroleum--Storage)

ASATURYAN, A.Sh.; TONKOSHKUROV, B.A.; CHERNIKIN, V.I.

Characteristics of the heat exchange and hydrodynamics of a flow of fluid with varying viscosity. Trudy NIITransneft' no.1:3-21 '61. (MIRA 16:5)

(Heat—Transmission) (Laminar flow)

ASATURYAN, A.Sh.; CHERNIKIN, V.I.

Unsteady gas flow in pipelines. Trudy NIITransneft' no.1:92-109 '61. (MIRA 16:5)

(Gas flow)

ABUZOVA, F.F.; CHERNIKIN, V.I.

Coefficient of diffusion of petroleum products vapors. Trudy NIITransneft' no.1:146-150 '61. (MIRA 16:5)
(Petroleum--Storage) (Vapors) (Diffusion)

ABUZOVA, F.F.; CHERNIKIN, V.I.

Evaporation losses of bright petroleum products from underground reservoirs. Trudy NIITransneft' no.1:197-212 '61. (MIRA 16:5)
(Petroleum--Storage) (Evaporation control)

TSIMBLER, Yu.A.; CHERNIKIN, V.I.

Evaporation of petroleum products from underground reservoirs. Izv. vys. ucheb. zav.; neft' i gaz 4 no.2:107-112 '61. (MIRA 15:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.

(Petroleum products--Storage)

BOBROVSKIY, S.A.; CHERNIKIN, V.I.

Temperature conditions of gas wells. Gaz. prom. 6 no.12:14-16 '61. (MIRA 15:2)

(Gas wells)

CHERNIKIN, V. I., ASATURYAN, A. S., and [illegible]NKOSHKUROV, B. A.

"On Interaction of Heat and Hydrodynamic Fields in a Flow with Variable Viscosity of a Boundary Layer."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

S/152/61/000/003/002/003
B129/B201

AUTHORS: Asaturyan, A. Sh., Tonkoshkurov, B. A., Chernikin, V. I.

TITLE: Interaction of a thermal and of a hydrodynamic field in a flow with variable viscosity

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, no. 3, 1961, 67-73

TEXT: The interaction of a thermal and a hydrodynamic field in a laminar, longitudinal viscous flow around a body is as yet insufficiently studied both theoretically and experimentally. Solutions by extensive calculations of nonlinear integral equations are not in good agreement with experimental values. For a better explanation of the physical picture of the interaction of fields, the authors solved by approximation the equations of the thermal boundary layer on a plane plate, around which there is a longitudinal viscous flow, whose physical parameters are functions of temperature. A theoretical study was made of the relations between the velocities along the x and y axes, the temperature, the Reynolds and Prandtl numbers, the kinematic viscosity of the liquid, the heat exchange, the heat conduction

Card 1/2

coefficient of the liquid. The result obtained is that the heat exchange depends on the direction of the thermal current, and that the heat exchange in the cooling process is markedly distinguished from the heat exchange in the heating process. Experimental evidence is given of the fact that the heat exchange has the same character both in a flow around a plate and a cylinder. The theoretical solution is shown to be in satisfactory agreement with experimental results. There are 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akad. I. M. Gubkina i NIITransneft' (Moscow Institute of Petroleum-chemical and Gas Industry imeni Academician I. M. Gubkin and NIITransneft')

SUBMITTED: November 19, 1960

ABDEL'-GANI, A.Sh.; CHERNIKIN, V.I.

Propulsion of solidified oils from pipelines with a saw cross section. Izv. vys. ucheb. zav.; neft' i gaz 4 no.8:99-103 '61. (MIRA 14:12)

1. Moskovskiy institut neftekhmicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.
(Petroleum—Pipelines)

TSIMBLER, Yu.A.; CHERNIKIN, V.I.

Evaporation losses of petroleum products from underground tanks operating under pressure. Izv. vys. ucheb. zav.; neft' i gaz 4 no.8:119-126 '61. (MIRA 14:12)

1. Moskovskiy institut neftekhmicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.
(Tanks)