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**INTERNATIONAL CONFERENCE**  
**PROBLEMS OF COMPLEX DEVELOPMENT**  
**AND PRODUCTION OF HARD-ACCESSIBLE OILS AND NATURAL BITUMENS**  
**(PRODUCTION AND REFINING)**

**Kazan, Tatarstan, Russia**  
**4—8 October 1994**

**МЕЖДУНАРОДНАЯ КОНФЕРЕНЦИЯ**  
**ПРОБЛЕМЫ КОМПЛЕКСНОГО ОСВОЕНИЯ**  
**ТРУДНОИЗВЛЕКАЕМЫХ ЗАПАСОВ НЕФТИ И ПРИРОДНЫХ БИТУМОВ**  
**(ДОБЫЧА И ПЕРЕРАБОТКА)**

**Казань, Татарстан, Россия**  
**4—8 Октября 1994**

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Russian Academy of Sciences  
Kazan Scientific Centre  
Institute of Organic and Physical Chemistry  
Power Engineering Department  
Academy of Sciences of the Republic of Tatarstan  
Cabinet of Ministers of the Republic of Tatrstan  
Academy of Natural

International Conference

**PROBLEMS OF COMPLEX DEVELOPMENT  
AND PRODUCTION OF HARD-ACCESSIBLE  
OILS AND NATURAL BITUMENS  
(PRODUCTION AND REFINING)**

**ABSTRACTS**

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Problem of oil resource development includes the aspects of efficiency of hard-to-recover drift raising and improving of active reserve recovery, peculiarities of modern control and deposit recovery reculation method, especially in late stage, and also introduction of secondary and tertiary methods of oil output increasing (OOJ).

Considerable reserves of high viscosity oils and natural bitumen with unique properties raise a question of efficient complex utilization of such raw material as one of actual and most important problems at present.

This collection includes abstracts of reports submitted to conference reflected results of experimental and theoretical investigations in three general directions on this complicated problem:

- output of hard-to-recover oils (exhausted and flooded strata, heavy oils, low-permeable, carbonate and clay collectors);
- recovery of high-viscosity oil deposits and natural bitumens;
- refining of high-viscosity oil and natural bitumens, novel technologies, preparation, method of investigation, composition.

Fundamental studies and technological solution of formation recovery, oil output increasing, design of equipment and facilities, economical problems, investigations of composition, classification and nomenclature of naphthides and novel method of oil component analysis are elucidated in material of collection.

Problems of useful production availability including small-capacity of petroleum chemicals are taken into account; schemes of production and refining of oil sources are proposed. Data on geology and reserves of oil and bitumens are presented, an evaluation of various method of producing drilling influenced the stratum are given particular attention is given to problem of heavy oil and oil residue refining.

This collection is of interest to wide circle of investigators in petroleum chemistry, power engineering, geology, geochemistry, metallurgy, ecology, to engineering and technical workers in petroleum extracting and processing industries and to other specialists.

Abstracts of reports are arranged in the collection in following order: plenary lectures (PL), extended section oral reports (OR), panel reports (PR) and publications without the are reserve and will be considered in general discussion equally with all other reports at the end of appropriate sessions.

Text of abstracts are given in author's editing.

Editorial board of Organizing Committee Secretariate:

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# PLENARY SESSION

## ANALYSIS OF HEAVY-OIL FIELD'S WELL-SPACING RATIO UNDER STEAM INJECTION AND POLYMER FLOODING

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Now common method of the selection of an efficient well-spacing ratio (WSR) under EOR/IOR for the real reservoir is lacking.

Proposed method of the selection of an well-spacing ratio is based on the expert estimations, multicriterial approach and the fuzzy theory sets.

In essence the method based upon geologic information about the reservoir geometry; fluid properties; deposit environments; expert and statistical data about the successful EOR/IOR projects with different well-spacing ratio in Russian petroleum provinces and abroad.

Analysis of the representative statistical information shows that steam injection and polymer flooding are the most commonly encountered EOR/IOR methods for Heavy-Oil Field development.

The developed method makes possible to assess the reservoir well-spacing ratio under different EOR/IOR methods.

The results of an investigation of Heavy-Oil Fields well-spacing ratio are two-parameter diagrams (viscosity-WSR; permeability-WSR; porosity-WSR) of the successful steam injection and polymer flooding projects; the estimation of an thickening drilling advantage under EOR/IOR methods.



# CONTENTS

## PLENARY SESSION

PI-1	WAYS OF DRAWING OF HARD-TO-RECOVER OIL RESERVES IN ACTIVE DEVELOPMENT R.Kh.Muslimov.....	7
PI-2	OPPORTUNITIES FOR COMMERCIAL EXPLOITATION OF NATURAL BITUMEN Elizabeth Barrett.....	9
PI-3	ON CLASSIFICATION AND DEFINITIONS OF HYDROCARBONS R.N.Diyashev.....	10
PI-4	POWER ENGINEERING AND ENERGETICS IN PROBLEMS OF HIGH VISCOSITY OIL AND NATURAL BITUMEN EXPLOITATION V.E.Alemasov, Ya.I.Kravtsov.....	11
PI-5	VEBA-COMBI-CRACKING PROCESS FOR HEAVY OIL UPGRADING F.Wenzel.....	12
PI-6	RESEARCH AND TECHNOLOGY DEVELOPMENT FOR THE EXPLOITATION OF HEAVY AND OIL SANDS RESOURCES Eddy Isaacs, Chu Hsi, Kamal Jha.....	13
PI-7	DEMERCAPTANIZATION OF FIELD OILS A.M.Mazgazov, A.F.Vildanov, F.G.Shakirov, S.N.Sukhov, I.K.Khrushcheva, A.M.Fakhriev.....	14
PI-8	BITUMEN FROM TAR SANDS-HYDROCARBON FOR THE 21ST CENTURY George J.Stosur, Satish K.Kalra.....	15
PI-9	THE BINDING OF VANADIUM AND NICKEL IN CRUDE OILS Wilton R.Biggs.....	16

## ORAL SESSION REPORTS

ER-1	HYDROXYETHYLCELLULOSE INJECTION UNITS FOR ENHANCED OIL RECOVERY BY ECOLOGICALLY PURE TECHNOLOGIES A.L.Loppinet, A.J.Paterson, S.A.Jakovlev.....	19
ER-2	HORIZONTAL WELLS IN THE EXPLOITATION OF HEAVY OIL AND TAR SANDS THERMAL RECOVERY METHODS C.Paimgren, G.Renard.....	20
ER-3	PROBLEMS OF RATIONAL PROCESSING OF HEAVY OILS AND NATURAL BITUMENS OF TATARSTAN A.N.Sadykov, I.N.Diyarov, M.G.Ibragimov, A.M.Mazgarov.....	21
ER-4	FEASIBILITY STUDY OF EOR METHOD APPLICATION IN LARGE OIL AND GAS REGIONS G.Sh.Khairatdinov, B.Ye.Andreyev, Yu.A.Kotenev, S.A.Blinov, B.I.Levi, V.M.Sankin, Kh.G.Shakirov, D.M.Fazylova.....	22
ER-5	UNCONVENTIONAL TECHNOLOGY COMPLEX OF HIGH-VISCOSITY OILS AND BITUMEN FIELD DEVELOPMENT BY THE USE OF SUBSURFACE ROBOT DRILLS N.Ph.Kagarmanov.....	23
ER-6	DEASPHALTING AND DEMETALLIZING OF HEAVY CRUDE OILS AND DISTILLATION RESIDUES WITH CO <sub>2</sub> Alfons Vogelpohl, Burkhard Eckermann.....	24



OR-1	INVESTIGATION OF THERMAL IMPACT OF HOT WATER IN MICRONUCLEOUS STATE ON THE RESERVOIR I.M.Ametov, A.O.Bogopol'sky, K.A.Koasari, V.V.Polkovnikov, A.G.Tarasov.....	25
OR-2	SUCCESSFUL APPLICATION CASES OF WATER CONTROL TREATMENT IN RUSSIA N. Kohler, J. Lessi and R. Tabary.....	26
OR-3	PROCEDURES FOR ENHANCED OIL RECOVERY OF HIGH- WATERED RESERVOIRS USING MODIFIED POLYMER-DISPERSION SYSTEMS AT THE LATER STAGE OF OIL-FIELD EXPLOITATION A.Sh.Gazizov.....	27
OR-4	SIMULATION OF WAG AND GAS INJECTION IN STRATIFIED RESERVOIRS WITH POTENTIAL SWEEP IMPROVEMENT BY APPLICATION OF FOAM L.M.Surguchev, J.E.Hanssen, D.Coombe, I.Svorstol.....	28
OR-5	USING OF THE COMPOSITIONAL SYSTEMS BASED ON THE NONIONIC SURFACTANTS IN THE ENHANCED OIL RECOVERY PROCESSES IN TATARSTAN R.Ibatullin, I.Glumov, V.Slesareva, N.Tsareva, R.Muslimov, A.Panarin.....	29
OR-6	EVALUATION OF PREDOMINANT TECHNOLOGICAL FACTORS INCREASING THE OIL RECOVERY FROM CRYSTAL BED DEPOSIT OF WHITE TIGER FORMATION IN SRV N.T.Shan, Ch.L.Dong, G.G.Vakhitov, N.V.Lutsenko.....	30
OR-7	ESTIMATION OF GRIGORYAN OIL WELL EFFICIENCY WITHIN DYNAMIC PERCOLATION MODEL A.R.Kessel, V.D.Bulavin, M.H.Brenerman, Ja.I.Kravtsov, V.A.Popov.....	31
OR-8	PROGRESSING CAVITY PUMPS USED IN OIL WELLS Leigh Schubert.....	32
OR-9	ANALYSIS OF HEAVY-OIL FIELD'S WELL-SPACING RATIO UNDER STEAM INJECTION AND POLYMER FLOODING E.S.Makarova, N.A.Eremin.....	33
OR-10	MICROBIOLOGICAL AND GEOCHEMICAL RESULTS OF THE FIRST STEP OF PILOT TESTING OF MICROBIAL TECHNOLOGY OF EOR IN CARBONATE ROCKS OF ROMASHKINO OIL FIELD T.N.Nazina, A.E.Ivanova, M.Vagner, B.Tsiran, R.R.Ibatullin, S.S.Belyaev M.V.Ivanov.....	34
OR-11	APPLICATION OF COMPOSITIONS INCLUDING HYDROCARBONS AND SURFACTANTS FOR RESTRICTING WATER INFLUX INTO PRODUCING WELLS O.B.Sobanova, G.B.Fridman, Yu.N.Arefyev, G.F.Kandaurova, Sh.M.Yunusov.....	35
OR-12	INVESTIGATION OF OIL STATE IN CLAY ROCK BY MEANS OF SELF-DIFFUSION DATA N.K.Dvoyashkin, A.I.Maklakov.....	36
OR-13	LITOGEOCHEMICAL EQUILIBRIUM OF THE OIL-RESERVOIR SYSTEM R.Kh.Muslimov, V.G.Izotov, L.M.Sitdikova, R.Z.Mukhametshin.....	37
OR-14	THE ALLROUND UTILIZATION OF HYDROCARBON RAW RESOURCES OF KENKIJACK-MORTUCK OIL BITUMINOUS ZONE A.E.Braun, B.Fischuk.....	37
OR-15	HORIZONTAL WELLS FOR THE PRIMARY RECOVERY OF HEAVY OIL RESERVOIRS. THEORETICAL BASIS AND FIELD EXAMPLES G.Renard, C.Palmgren.....	38
OR-16	GEOCHEMICAL COMPARISON OF RESERVOIR SOLID BITUMENS WITH DIVERSE ORIGINS R.J.Hwang, S.C.Teerman.....	39