

Engineering and Mining Geophysics 2020

Perm, Russia
14 - 18 September 2020

Volume 1 of 2

ISBN: 978-1-7138-2185-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2020) by the European Association of Geoscientists & Engineers (EAGE)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

For permission requests, please contact by the European Association of Geoscientists & Engineers (EAGE)
at the address below.

European Association of Geoscientists & Engineers (EAGE)
PO Box 59
3990 DB Houten
The Netherlands

Phone: +31 88 995 5055
Fax: +31 30 634 3524

eage@eage.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

IDENTIFICATION OF SOURCES OF OIL POLLUTION OF THE RESERVOIR WATER AREA USING THERMORESISTIVE METHODS	1
<i>N.G. Maksimovich, O.Y. Meshcheriakova</i>	
NEGATIVE INDUCED POLARIZATION AND ITS POSSIBLE ORIGIN	12
<i>V. Shevnin, A. Bobachev</i>	
ELECTRICAL RESISTIVITY TOMOGRAPHY OF THE FROZEN EMBANKMENT DAM.....	20
<i>V.V. Olenchenko, P.S. Osipova</i>	
ELECTROINTROSCOPY OF INTERWELL SPACE IN SPECIAL CEMENT WORKS IN TECTONIC AND TECHNOGENIC DISTURBED CARBON DEPOSITS OF EASTERN DONBASS	28
<i>N.Y. Fomenko, V.V. Moldakov, A.N. Grossu, L.N. Fomenko</i>	
EXAMPLES OF APPLICATION OF GPR FOR ENSURING SAFETY OF INFRASTRUCTURE OBJECTS AT THE AREA OF THE RUSSIAN ANTARCTIC STATION PROGRESS (EAST ANTARCTICA).....	41
<i>S.D. Grigoreva, E.R. Kiniabaeva, M.R. Kuznetsova, S.V. Popov, M.P. Kashkevich</i>	
ELECTRICAL RESISTIVITY TOMOGRAPHY AND INDUCED POLARIZATION FOR ALLUVIAL GOLD PLACER PROSPECTING.....	52
<i>P.S. Osipova, V.V. Olenchenko</i>	
INCREASED SENSITIVITY OF ELECTRICAL PROSPECTING	60
<i>A. Zlobinskiy, V. Mogilatov</i>	
RESULTS OF COMPLEX GEOPHYSICAL WORKS ON THE REGIONAL PROFILE THROUGH THE UGRA RIVER.....	66
<i>S.V. Zaitsev, V.A. Kulikov, E.D. Aleksanova, M.Y. Maslo, A.V. Solovyova, N.L. Shustov, A.G. Yakovlev</i>	
USING GEOPHYSICAL METHODS TO SEPARATE THE TYPES OF SECONDARY ROCK ALTERATIONS IN THE EXPLORATION OF LS-EPITHERMAL GOLD DEPOSITS	73
<i>E. Ermolin, V. Melnikov</i>	
THE CHOICE OF A RATIONAL COMPLEX OF GEOLOGICAL AND GEOPHYSICAL WORK IN THE DESIGN OF LAND REMEDIATION MEASURES FOR THE LANDFILL OF SOLID HOUSEHOLD WASTE (MSW).....	79
<i>I.V. Zuykov, V.V. Bedinov</i>	
SOME ASPECTS OF LOCALIZATION OF PYRITE MINERALIZATION WITHIN THE SUBARCTIC REGION.....	90
<i>V.A. Dushin, V.S. Kozmin, D.I. Prokopchuk, A.K. Trutnev, E.A. Zhuklin</i>	
ESTIMATION OF THE PHYSICAL PROPERTIES OF QUATERNARY SOILS BY NEAR-SURFACE SEISMIC DATA IN THE CENTRAL PART OF THE EAST EUROPEAN PLAIN	98
<i>V.V. Romanov, K.S. Sergeev, V.I. Ryzhkov</i>	

THE INVESTIGATION OF SHALLOW STRUCTURE INHOMOGENEITIES BY 2D AND 3D SEISMIC ENGINEERING TECHNIQUES.....	104
<i>V.Y. Bobrov, I.Y. Gerasimova</i>	
THE RELATIONSHIP OF SEISMICITY WITH TECTONIC PROCESSES ACCORDING TO THE ANALYSIS OF LARGE EARTHQUAKES THAT OCCURRED ON THE TERRITORY OF IRAN IN THE XX AND XXI CENTURIES	113
<i>H. Aljabasini</i>	
SEISMIC TOMOGRAPHY FOR MONITORING STRESS STATE OF PILLARS IN UNDERGROUND MINES	122
<i>I.A. Startcev, I.E. Semenova</i>	
ASSESSMENT OF DIRECT CURRENT TECHNOGENIC EFFECT ON THE PROPERTIES OF DISPERSED SOILS.....	129
<i>S.B. Burlutskiy, S.N. Khomutinnikov, A.Y. Tatarskiy, M.A. Lazdovskaya</i>	
A QUANTUM-MECHANICAL APPROACH TO CALCULATE SHALLOW SEISMIC TIME SECTIONS.....	137
<i>M.V. Tarantin, N.A. Golyarchuk</i>	
IDENTIFICATION OF NATURAL AND TECHNOGENIC DENESTERED ZONES IN THE PROCESSED THICKNESS BY GRAVIMETRIC DATA	144
<i>S.G. Bychkov, A.V. Michurin, A.A. Simanov, V.V. Khokhlova</i>	
THE EXPERIENCE OF MAPPING TECHNOGENIC OIL POLLUTION BY GEOPHYSICAL METHODS.....	151
<i>A.V. Muslimov, V.L. Luhmanov</i>	
GRAVITY EXPLORATION FOR K-MG SALTS IN KALININGRAD REGION.....	163
<i>E. Ermolin, A. Brisjuk, A. Pakhunov, V. Romanov</i>	
SURFACE-TO-MINE ELECTROMAGNETIC SOUNDING IN THE CONTEXT OF SALT DEPOSITS	170
<i>V.P. Kolesnikov, T.A. Laskina</i>	
SURVEY OF SOIL CONDITIONS ON DAMAGE SECTIONS OF THE SEWER COLLECTORS IN ST. PETERSBURG USING ELECTRICAL SOUNDING WITH CAPACITIVE ELECTRODES	176
<i>A.F. Volynin</i>	
RESULTS OF GEOPHYSICAL STUDIES OF AN UNFORTIFIED BRONZE AGE SETTLEMENT IN THE SOUTHERN URALS	183
<i>V.V. Noskevich, N.V. Fedorova, L.A. Muravyev</i>	
FEATURES OF CALCULATION OF SUPPLIES ON THE GYPSUM FIELDS IN CONDITION OF HIGHLY CAVERNOUS POROSITY (FOR EXAMPLE SOKOLINO-SARKAEVSK FIELD)	192
<i>K.O. Khudenkikh, V.N. Kataev</i>	
PRE-URAL BORDER STRUCTURE: FEATURES OF THE DEEP STRUCTURE AND OIL AND GAS	204
<i>V.S. Druzhinin, N.I. Nachapkin, V.Y. Osipov, L.A. Muravyev</i>	
RESULTS OF COMPLEX GEOPHYSICAL WORKS PERFORMED IN THE FILI DISTRICT OF MOSCOW FOR HIGH-RISE RESIDENTIAL DEVELOPMENT	211
<i>V.A. Kulikov, I.P. Korotkov, V.S. Serebryakov</i>	

PECULIARITIES OF BOTTOM LAKE SEDIMENTS STUDIES PERFORMED WITHIN URBAN BORDERS BY GEOPHYSICAL METHODS	218
<i>N.Y. Bobrov, N.Y. Bogomolov, V.V. Polovkov, A.E. Rybalko</i>	
THE EXPERIENCE OF COMPLEX DENDROLOGICAL SURVEY OF THE PLANTATIONS OF RECREATIONAL ZONE OF THE NATIONAL PARK «KISLOVODSKY» BY METHODS OF RESISTOGRAPHY AND GPR	229
<i>V.M. Yakushev, T.A. Yarylchenko, V.V. Yufereva</i>	
MINE SEISMIC SURVEYS FOR THE CONTROL OF SAFETY PILLARS IN POTASH MINES.....	239
<i>A.G. Yaroslavtsev, K.B. Fatkin</i>	
THE WAY TO ACCURATELY DETERMINE THE CONTOURS OF OBJECTS.....	249
<i>A. Zlobinskiy, V. Mogilatov</i>	
AMPLITUDE ANALYSIS OF SHALLOW 3D SEISMIC SURVEYS FOR AREAS WITH INCREASED TECHNOGENIC IMPACT	254
<i>A.A. Zhikin, I.A. Sanfirov, A.G. Yaroslavtsev</i>	
TECHNOLOGY OF SEISMIC IMAGE OF STRUCTURE AND STATE OF MINING ARRAY IN UNDERGROUND OPERATIONS	261
<i>V. Pisetski, A. Zudilin, U. Patrushev, L. Zudilina, S. Lapin</i>	
ORIENTATION ANALYSIS OF ACTIVE LINEAMENTS OF THE PERM URALS TO IDENTIFY PATTERNS OF THE MODERN FIELD OF TECTONIC STRESSES.....	267
<i>S.N. Tagiltsev, A.E. Lukyanov, S.V. Surganov, S.N. Tagiltsev</i>	
MONITORING OF NATURAL PROCESSES IS THE KEY TO UNDERSTANDING THE CAUSES OF ACCIDENTS IN UNDERGROUND STRUCTURES	277
<i>A.Y. Tatarskiy, A.F. Volynin</i>	
RESULTS OF COMPLEX GEOPHYSICAL STUDIES OF NEAR-SURFACE KARST FORMATIONS	288
<i>I.A. Sanfirov, S.G. Bychkov, A.I. Nikiforova, G.V. Proistolupov, G.P. Shcherbinina</i>	
DEVELOPMENT OF TECHNOLOGY FOR ELECTRICAL MONITORING OF GEOLOGICAL ENVIRONMENT.....	297
<i>S.B. Karpov, V.P. Kolesnikov, T.A. Laskina, V.P. Mokronosov, A.A. Zubrikov</i>	
THE STUDY OF PALEOLITHIC MONUMENTS IN KARST CAVES BY ELECTROTOMOGRAPHY	304
<i>P.S. Osipova, V.V. Olenchenko, L.V. Tsibizov, A.I. Krivoshapkin</i>	
INVESTIGATION OF THE WAVE PROPAGATION PROCESS UNDER SEISMOACOUSTIC IMPACTS IN A ROCK MASS USING MATHEMATICAL MODELING METHODS	312
<i>A.M. Prigara, V.N. Aptukov, R.I. Tsarev, V.A. Voroshilov, A.A. Zhukov</i>	
APPLICATION OF A NEW TYPE OF VIBRATION SOURCE IN VARIOUS CLIMATIC CONDITIONS.....	321
<i>V. Serebryakov, I. Korotkov, A. Zhukov, A. Solovyov</i>	
THE STUDY OF THE PROPERTIES AND STRUCTURE OF ROAD CLOTHING BY GPR	328
<i>R.R. Romanov, A.A. Matushenko, A.A. Ivanov, A.I. Poserenin</i>	

DETAILED SEISMOLOGICAL MONITORING TECHNOLOGY BASED ON OBSERVATIONS IN THE KRASNOSLOBODSKY FAULT ZONE OF THE STAROBINSK POTASH DEPOSIT	334
<i>D.Y. Shulakov, F.G. Verkholtantsev, A.S. Zvereva</i>	
PRACTICAL ASPECTS OF APPLYING APPROXIMATION OF GEOPOTENTIAL FIELDS BY SOURCE FUNCTIONS	341
<i>A.S. Dolgal</i>	
ABOUT GEOPHYSICAL TESTING OF POTASH SALTS AT THE VKMKS	351
<i>A.N. Nekrasov, O.V. Korotchenkova</i>	
FORECASTING OF NEW ORE AREAS BASED ON GEOPHYSICAL DATA	358
<i>P.S. Babayants, A.A. Trusov</i>	
MINE SEISMIC STUDIES OF LITHOLOGICAL HETEROGENEITIES	365
<i>T.V. Baibakova, A.G. Yaroslavtsev, S.A. Mironov</i>	
ON THE POSSIBILITIES OF CMPCC ANALYSIS OF SURFACE WAVES TO DETECT LATERAL HETEROGENEITY AND ZONES OF SUBVERTICAL FRACTURE IN SOILS	373
<i>V.P. Lisin, I.A. Sanfirov, A.V. Chugaev, A.I. Babkin</i>	
EXPERIENCE IN APPLYING THE NATURAL FIELD METHOD IN SALT MINES	384
<i>Y.I. Stepanov, E.S. Bushueva</i>	
CLARIFICATION OF THE CONTOURS OF A POTENTIALLY ORE-BEARING INTRUSIVE BASED ON THE RESULTS OF GROUND-BASED GEOPHYSICAL WORK IN THE NORILSK REGION.....	390
<i>V.V. Romashko</i>	
EMPRICAL MODE DECOMPOSITION OF RESULTS OF PROFILE MEASUREMENTS OF ELECTRIC FIELDS	400
<i>L.A. Khristenko</i>	
THE RESULTS OF EXPERIMENTAL AND METHODOLOGICAL WORK ON THE IDENTIFICATION AND MAPPING OF TECTONIC DISTURBANCES IN URANIUM DEPOSITS OF THE PALEO-VALLEY TYPE BY METHODS OF EMANATION SURVEY AND RAP	406
<i>V.V. Bedinov, D.A. Prokhorov, A.V. Starodubov</i>	
ANALYSIS OF ACOUSTIC IMPACT ON THE FORMATION BY THE METHOD OF FILTRATION PRESSURE WAVES.....	416
<i>E.A. Marfin, A.G. Gavrilov, M.N. Ovchinnikov</i>	
THE EXPERIENCE OF USING SHALLOW GEOPHYSICS IN THE STUDY OF THE GEOLOGY OF THE FLOODPLAIN OF THE DNIEPER RIVER IN THE GNEZDOVSKY ARCHAEOLOGICAL COMPLEX	421
<i>K.S. Sergeev, A.V. Belousov, V.V. Romanov, A.D. Gorin, V.V. Novikov</i>	
THE EXPERIENCE OF USING ARCHAEOLOGICAL GEOPHYSICS IN THE STUDY OF THE BURIAL COMPLEX OF THE 9TH-10TH CENTURIES ON THE TERRITORY OF THE CENTRAL SETTLEMENT OF THE GNEZDOVSKY ARCHAEOLOGICAL COMPLEX.....	427
<i>K.S. Sergeev, A.V. Belousov, A.D. Gorin, A.V. Turenina, V.V. Novikov</i>	
EFFICIENCY OF VES WITH MULTI-FREQUENCY MEASUREMENTS OF INDUCED POLARIZATION FOR STUDYING DEPOSITS OF SAND AND GRAVEL MIXTURES	432
<i>S.A. Anoshina, V.A. Kulikov</i>	

SHALLOW PALEO-SEISMOGENIC FAULTING INVESTIGATIONS USING GROUND-PENETRATING RADAR (EXAMPLE FROM THE KURAI FAULT ZONE)	437
<i>S.S. Bricheva, E.V. Deev, I.O. Dubrovin, M.M. Doroshenkov, A.V. Panin, I.V. Turova, A.L. Entin</i>	
EXPERIENCE IN A COMPLEX STUDY OF SMALL LAKES IN THE CITY TO ASSESS THEIR ENVIRONMENTAL STATUS AND ANTHROPOGENIC POLLUTION	442
<i>A.E. Rybalko, V.A. Shcherbakov, V.V. Polovkov, N.Y. Bobrov, P.Y. Belyaev, A.Y. Alekseev, I.V. Fedorova</i>	
STATISTICAL DIFFERENTIATION OF TECHNOGENIC MAGNETIC ANOMALIES	452
<i>P.N. Novikova</i>	
STUDY OF STRUCTURAL FEATURES OF LANDSLIDE ARRAYS BASED ON THE CORRELATIONS OF SEISMIC CHARACTERISTICS OF CLAY SOILS WITH THEIR HUMIDITY	457
<i>A.M. Yusha, S.B. Burlutskiy, A.A. Abramovich, V.V. Glazunov, M.A. Lazdovskaya</i>	
FEATURES OF THE FORMATION OF STRESS FIELDS OF LANDSLIDES OF VARIOUS STRUCTURAL TYPES BASED ON MATERIALS OF COMPUTER SIMULATION AND GEOTOMOGRAPHY	468
<i>V.S. Taninkova, S.B. Burlutskiy, V.V. Glazunov</i>	
METHOD FOR MEASURING SMALL SIGNALS IN ERT TOOLS	479
<i>G.L. Panin, E.V. Balkov</i>	
RESEARCH OF CRACKING IN CASE OF EXPLOSION ON OUTBURST-HAZARDOUS DOLOMITE ROCKS	485
<i>E.A. Nesterov, D.A. Bobrov</i>	
PREDICTION OF THE SEISMIC WAVE AMPLITUDE FOR THE ZHOMART MINE CONDITIONS	491
<i>A.S. Mury skin, D.Y. Shulakov, F.G. Verkholantsev</i>	
TECHNOGENIC-MINERAL FORMATIONS OF POTASH PROCESSING: FORMING, TRANSFORMATION, ECOLOGICAL EVALUATION	496
<i>B.A. Bachurin, E.S. Khokhriakova</i>	
EVALUATION OF GROUND CONDITIONS OF OPEN-PIT DEVELOPMENT OF DEPOSITS OF CRYOLITHOZONE BY GPR	504
<i>L.L. Fedorova, G.A. Kulyandin</i>	
SPATIAL AND TEMPORAL VARIABILITY OF ENGINEERING AND GEOLOGICAL CONDITIONS OF THE «DRAZHNY» DEPOSIT AREA	511
<i>E.D. Nugmanova, I.V. Abaturova, I.A. Koroleva, V.S. Kozlov</i>	
FEATURES OF EXPERIMENTAL-METHODICAL ELECTRICAL EXPLORATION STUDIES AT THE MSU TRAINING AREA (ALEKSANDROVKA VILLAGE)	521
<i>E. Ermolin, V. Kulikov, A. Melnikov, A. Asoskov</i>	
METHODS OF MONITORING EXOGENETIC PROCESSES IN NATURAL-TECHNICAL SYSTEMS	532
<i>I.V. Abaturova, A.V. Bykova</i>	
MODERN UNMANNED TECHNOLOGY IN ARCHAEOGEOLOGICAL STUDIES	542
<i>E.V. Balkov, Y.G. Karin, O.A. Pozdnyakova, P.G. Dyadkov</i>	

GEORADIOLOCATION STUDIES AT MINING ENTERPRISES OF KOLA REGION..... 553
A.I. Kalashnik, D.V. Zaporozhets

AN APPROACH TO THE GEOMETRIC 3D INVERSION OF AIRBORNE EM DATA FOR
DETECTION AND GEOMETRIZATION OF LOCAL TARGETS OVERLAPPED BY
LATERALLY INHOMOGENEOUS LAYERS 559
M.G. Persova, Y.G. Soloveichik, D.V. Vagin, D.S. Kiselev, A.P. Sivenkova, Y.I. Koshkina

VOLUME 2

AUTOMATIC CAVITY DETECTION IN BUILDING STRUCTURES ACCORDING TO GPR
DATA..... 567
R.A. Eremin, Y.A. Sukhobok

THE ANALYSIS OF THE HEAD WAVES REGISTERED IN CROSSHOLE SURVEY FOR
CALCULATION VELOCITIES IN THE VICINITY OF BOREHOLES 576
A.V. Chugaev, V.P. Lisin, A.I. Babkin, K.J. Tomilov

COMPARING THE RESULTS OF MER WITH THE RESULTS OF A TRADITIONAL
ALGORITHM FOR SOLVING THE INVERSE PROBLEM OF ELECTRICAL EXPLORATION..... 585
A.A. Tainickiy

APPLICATION SEISMIC ATTENUATION TOMOGRAPHY IN STUDIES OF GEOHAZARD
ON EVIDENCE COMPLEX ENGINEERING SITE INVESTIGATIONS 591
N.V. Kulikova, V.V. Glazunov, S.M. Daniliev, N.N. Efimova, A.I. Kulikov

USE OF GEOLOGICAL AND STRUCTURAL ANALYSIS IN EVALUATING ENGINEERING
AND GEOLOGICAL CONDITIONS OF MINERAL DEPOSITS 597
I.V. Abaturova, L.A. Storozhenko, V.B. Pisetsky, I.A. Savintsev

INVESTIGATION DESTRUCTION ZONES OF MINE WORKINGS BY GPR DATA 606
S.M. Danilev, N.A. Danileva

IDENTIFICATION LAYERS OF POTASSIUM-MAGNESIUM SALTS IN THE WELL
SECTION BASED ON THE INTERPRETATION WELL-LOGGING DATA 613
S.M. Danilev, N.A. Danileva

THE OPTIMAL SPEED OF SPECTROMETRIC GAMMA-RAY LOGGING CHOOSING BY
LOGGING EXAMPLE A HYDROGEOLOGICAL WELL IN THE LENINGRAD REGION 619
A.A. Miller, G.K. Grigoriev, V.S. Kirillov, G.D. Gorelik

NUMERICAL MODEL FOR ASSESSING THE DISSOLUTION OF INTER-CHAMBER
PILLARS DURING FLOODING OF THE SKRU-2 MINE OF THE VERNEKAMSKOYE
SALTS DEPOSIT 627
A.A. Potapov, P.K. Konosavsky, R.A. Filin

SURFACE CONDUCTIVITY AND INDUCED POLARIZATION OF KIMBERLITE 637
V.I. Emelyanov, K.V. Titov, A. Revil

THE RESULTS OF THE PLATE WITH FOOTPRINTS OF DINOSAUR AND THE ADJACENT
TO ITS TERRITORY INVESTIGATION BY THE METHODS OF GEOPHYSICS AND
GEOCHEMISTRY..... 643
V.M. Yakushev, M.P. Sherstyukov, V.V. Yufereva

THE STUDY OF EFFECTIVE FOUNDATION DESIGN METHODS TAKING INTO ACCOUNT SEISMOACOUSTIC METHODS	654
<i>V.A. Bereznev, V.V. Nikiforov</i>	
THE INDUCED POLARIZATION EFFECT IN AIRBORNE EM PROSPECTING OF ORE DEPOSITS IN THE URAL REGION.....	663
<i>M.G. Persova, Y.G. Soloveichik, D.V. Vagin, A.P. Sivenkova, E.I. Simon, M.G. Tokareva</i>	
THE STUDY OF TALIKS OF CENTRAL YAKUTIA BY ELECTROTOMOGRAPHY	669
<i>K.I. Bazhin</i>	
ESTIMATION OF INFORMATION CONTENT OF MINE MULTI-WAVE SEISMIC SURVEY FOR PREDICTION OF VARIABILITY OF PHYSICAL AND MECHANICAL PROPERTIES OF ROCK MASS	675
<i>A.I. Babkin, I.A. Sanfirov, A.M. Macheret</i>	
DOWNHOLE EMITTER FOR CREATING A FIELD OF ELASTIC VIBRATIONS IN A GEOLOGICAL ENVIRONMENT	686
<i>A.A. Abdrashitov, E.A. Marfin</i>	
GEOLOGICAL AND ARCHEOLOGICAL MODEL OF THE PROTECTION ZONE OF THE NECROPOLIS OF THE STATE MUSEUM PRESERVE «TAURIC CHERSONESE» ACCORDING TO THE DATA OF COMPLEX GEOPHYSICAL STUDIES	692
<i>V.V. Glazunov, G.D. Gorelik, A.S. Ageev, N.N. Efimova</i>	
MINING WASTE AS OBJECTS OF SMALL BUSINESS	700
<i>V.B. Boltyrov, S.A. Degtyarev, L.A. Storozhenko, S.G. Seleznev</i>	
STUDIES OF THE DYNAMIC CHARACTERISTICS OF REFLECTED WAVES IN THE PRESENCE OF INHOMOGENEITIES DIMENSIONS SMALLER THAN THE SEISMIC RESOLUTION	708
<i>I.I. Semerikova</i>	
APPLICATION OF HIGH PRECISION GRAVITY SURVEY IN ANTIMONY ORE BODIES EXPLORATION	716
<i>A.B. Karmanov, A.A. Nikulina</i>	
COMPOUND ELECTRODES ARRANGEMENT IN ELECTRICAL RESISTIVITY TOMOGRAPHY	725
<i>A. Bobachev</i>	
ELECTROPHYSICAL PROPERTIES OF SAND-WATER MIXTURES IN VARIOUS PHASE STATES	733
<i>P. Daniel, V.A. Yavna, S.N. Sulavko, A.G. Kochur, A.A. Vasilchenko</i>	
ELECTROPHYSICAL PROPERTIES OF BENTONITE AND KAOLIN DEPENDING ON SALINITY AND TEMPERATURE	739
<i>P. Daniel, V.A. Yavna, S.N. Sulavko, A.G. Kochur, A.A. Vasilchenko</i>	
GPR CALIBRATION FOR DETERMINING THE ELECTROPHYSICAL PROPERTIES OF SOIL STRUCTURAL LAYERS.....	748
<i>V.L. Shapovalov, A.V. Morozov, A.A. Vasilchenko, M.V. Okost, V.A. Yavna</i>	
GPR METHOD FOR STUDYING THE DRAINAGE PROPERTIES OF SAND LAYERS	758
<i>V.L. Shapovalov, A.V. Morozov, A.A. Vasilchenko, M.V. Okost, V.A. Yavna</i>	

GPR EQUIPMENT FOR SOLVING ROAD PROBLEMS	769
<i>A.M. Kulizhnikov</i>	
MULTICHANNEL MAGNETOMETRY TO SEARCH FOR TECHNOGENIC IRON OBJECTS IN COVERING ENVIRONMENTS	780
<i>L.A. Muravyev, N.V. Fedorova, A.Y. Denisov, V.A. Sapunov, V.V. Savelev, V.G. Bezdudny</i>	
MAGNETOMETRIC SEARCH TECHNOLOGY FOR EXTRATERRESTRIAL MATTER.....	790
<i>L.A. Muravyev, E.D. Narkhov, V.A. Sapunov, A.V. Sergeev, A.L. Fedorov</i>	
MODERNIZATION OF GROUND-BASED OVERHAUSER POS MAGNETOMETERS TO USE ON SMALL UNMANNED COPTER-TYPE AERIAL VEHICLES.....	798
<i>V.A. Sapunov, A.Y. Denisov, V.V. Savelyev, S.E. Kiselev, E.D. Narkhov*, A.V. Sergeev, A.L. Fedorov, A.A. Shirokov, M.Y. Popkov</i>	
DIINSO SOFTWARE PACKAGE FOR SOLVING DIRECT AND INVERSE PROBLEMS OF ELECTROTOMOGRAPHY IN NON-TYPICAL PROBLEM DEFINITION	806
<i>A.V. Marinenko</i>	
KINEMATIC FRACTURE ANALYSIS AS THE MAIN TOOL FOR PREDICTING THE MECHANISM OF DEFORMATION OF A ROCK MASS	815
<i>S.A. Korchak, I.V. Abaturova, I.A. Savintsev</i>	
UPDATING METHODS FOR STUDYING THE DEGREE AND NATURE OF ROCK FRACTURES IN SOLID MINERAL DEPOSITS	825
<i>S.A. Korchak, I.A. Savintsev, L.A. Storozhenko</i>	
JOINT INTERPRETATION OF SEISMIC AND ELECTRICAL DATA BASED ON THE RESULTS OF WORK ON LAKE ONEGA	836
<i>A.A. Bobachev, A.K. Mirinits</i>	
RESEARCH OF ACOUSTIC CHARACTERISTICS AND PHYSICAL AND MECHANICAL PROPERTIES OF QUATERNARY SOILS	844
<i>V. Izotova, D. Petrov, K. Pankratova, G. Pospheov</i>	
IMPROVING THE ACCURACY OF STUDIES OF THE TECHNICAL CONDITION OF WELLS USING THE GAMMA-GAMMA METHOD IN THE CONDITIONS OF THE VERKHNEKAMSK POTASSIUM SALT DEPOSIT	851
<i>S.V. Belov, A.V. Shumilov, I.A. Chernykh, M.A. Oskina</i>	
IMPACT OF OPEN-PIT MINING ON THE GEOLOGICAL ENVIRONMENT	859
<i>L.A. Storozhenko, I.G. Petrova, Y.V. Klokova, I.O. Lymar</i>	
INVESTIGATIONS OF THE BESHPIGIR SAND DEPOSITS AS PROSPECTS FOR EXPANDING THE TERRITORY OF FUTURE PRACTICAL STUDIES OF STUDENTS IN GEOLOGICAL EXPLORATION	867
<i>A.G. Kerimov, E.V. Sokolenko, A.G. Saltanova, E.G. Kerimova, M.P. Sherstyukov, V.M. Yakushev</i>	
SOME METHODOLOGICAL ASPECTS OF THE APPLICATION OF ELECTROMAGNETIC SOUNDING TECHNOLOGY AND INDUCED POLARIZATION AT THE VERKHNEKAMSK DEPOSIT OF POTASH AND MAGNESIUM SALTS.....	878
<i>A.Y. Belova, M.S. Shkirya, Y.A. Davydenko, A.S. Bashkeev</i>	
ASSESSMENT OF THE DEGREE OF ROCK WEATHERING AND ENGINEERING- GEOLOGICAL ZONING	887
<i>T.S. Bobina, I.V. Abaturova</i>	

THE RESULTS OF THE SURVEY BY GEOPHYSICS METHODS OF THE OBJECTS OF THE CITADEL OF THE ARCHAEOLOGICAL SITE «TATAR SETTLEMENT» (STAVROPOL)	898
<i>V.M. Yakushev, D.V. Yurin, S.G. Tumanyan, N.S. Linev</i>	
PHYSICAL MODELING RESULTS OF GPR SOUNDING OF LENA RIVER SANDS (THE MIDDLE FLOW).....	904
<i>I.I. Khristoforov, K.P. Danilov</i>	
HETEROGENEITY OF THE CENTRAL CHROMITE DEPOSIT (POLAR URALS) DUE TO THE STAGES OF FORMATION OF THE ROCK MASS	917
<i>E.A. Zvonarev, L.A. Storozhenko</i>	
ANALYSIS OF THE PROBLEM OF CLASSIFICATION OF MINING WASTES.....	928
<i>V.N. Kondakova, K.V. Pankratova, A.A. Pomortseva, G.B. Pospekhov</i>	
CHARACTERISTIC FEATURES OF GPR WAVE FIELDS IN STUDY OF SUBSURFACE ICE OF CRYOLITHOZONE	936
<i>R.A. Dyagileva, K.O. Sokolov</i>	
IMPROVEMENT GPR RESEARCH OF DREDGED POLYGONS USING THE ANGULAR SCANNING TECHNIQUE.....	942
<i>G.A. Kulyandin, L.L. Fedorova</i>	
OVERCOMING AIRBORNE IP IN FREQUENCY DOMAIN.....	947
<i>E.V. Karshakov, J. Moilanen</i>	
USING AREAL COMMON DEPTH-POINT (CMP) SEISMIC REFLECTION METHOD FOR ADDITIONAL EXPLORATION OF THE COAL FIELD.....	956
<i>A.M. Turchkov, A.N. Oshkin, I.P. Korotkov, E.A. Keldyushova, A.A. Vyaznikovcev</i>	
ELECTROMAGNETIC SOUNDINGS APPLICATION TO PREDICT THE VELOCITY MODEL OF UPPER PART OF THE SECTION IN THE SOUTH OF THE SIBERIAN CRATON	965
<i>I.A. Shelokhov, I.V. Buddo, A.A. Pyankov, A.S. Smirnov</i>	
CASE STUDIES OF SHALLOW TRANSIENT ELECTROMAGNETIC SOUNDINGS FOR MAPPING OF POTASH SALT DEPOSITS	975
<i>I.A. Shelokhov, N.V. Misiurkeeva, M.V. Sharlov, A.A. Jukov</i>	
GEOLOGICAL SUBSTANTIATION OF THE RESULTS OF MINE SEISMIC SURVEY ON SHEAR WAVES WITH REFLECTION SEPARATION	985
<i>R.I. Tsarev, A.V. Gluhih, A.A. Zhukov, YU.N. Moroshkina, A.M. Prigara</i>	
COMPARISON OF THE UPPER SECTION VELOCITY MODELS BUILT WITH TOMOGRAPHY AND FWI.....	993
<i>A.A. Tikhonov, S.Syme</i>	
GEOPHYSICAL SURVEY OF A MUD VOLCANO CHONGELEKSKY	999
<i>I.N. Modin, A.D. Skobelev, A.Y. Palenov, T.P. Shirokova, D.A. Kvon, T.B. Sokolova, I.V. Lygin, D.A. Arutyunyan</i>	
EXPERIENCE OF USING MAGNETIC PROSPECTING IN THE STUDY OF UNDETECTED BURIAL MOUNDS ON THE SURFACE OF THE SUZDAL OPOLE	1009
<i>I.N. Modin, S.A. Erokhin, A.Y. Palenov, V.A. Shevchenko, S.S. Rybakov</i>	
15 YEARS OF DEVELOPMENT OF ELECTROTOMOGRAPHY IN RUSSIA	1021
<i>I.N. Modin, A.A. Bobachev, D.K. Bolshakov, V.A. Shevchin, M.N. Marchenko, K.D. Efremov</i>	

RESULTS OF GEOPHYSICAL INVESTIGATIONS AT AN ARCHAEOLOGICAL SITE, DANCENT, LOCATED AT THE MOUTH OF THE SYR DARYA RIVER	1037
<i>I.N. Modin, A.Y. Palenov, T.P.Bocharov, S.S. Rybakov, A.V. Kuvinov, A.D. Prikhod'ko</i>	
ESSAY ON THE REGIONAL GEOLOGY OF THE PALEOZOIC PYRITE DEPOSITS OF THE URALS.....	1046
<i>E.S. Kontar, V.A. Dushin</i>	
FEATURES OF PROCESSING OF MINE SEISMIC DATA ON TRANSVERSE WAVES WITH REFLECTION SEPARATION.....	1053
<i>A.M. Prigara</i>	
GPR STUDIES OF OVERBURDEN ROCKS WITH A CRACK FILLED WITH ICE DURING THE DEVELOPMENT OF ALLUVIAL DIAMOND DEPOSITS IN YAKUTIA.....	1064
<i>N.D. Prudetskiy, K.O. Sokolov, R.A. Dyagileva</i>	
MULTILEVEL MAGNETIC SURVEY WITH UAVS TO STUDY LINEAR INDUSTRIAL OBJECTS	1070
<i>M. Kosnyreva, K. Kuznetsov, A. Palenov, L. Zolotaya, I. Lygin, D. Arutyunyan</i>	
HYDRO-GEO-MECHANICAL STRATIFICATION CLASTIC SEDIMENTS OF THE COAL FIELDS	1081
<i>S.N. Tagiltsev, V.S. Tagiltsev, A.E. Lukianov, S.V. Surganov</i>	
SELF-POTENTIAL SIGNALS ASSOCIATED WITH PUMPING TEST OF HETEROGENOUS AQUIFERS: NUMERICAL MODELLING	1090
<i>A.A. Mikhailenko, P.K. Konosavsky, K.V. Titov</i>	
IMPROVING THE EFFICIENCY OF HYDRODYNAMIC STUDIES OF OIL AND GAS WELLS BY APPLYING PBL	1097
<i>G.A. Tsvetkov, V.I. Kostitsyn, T.I. Sakhautdinov</i>	
ADAPTIVE SEPARATION OF ABNORMAL GEOMAGNETIC FIELD COMPONENTS	1104
<i>A.S. Dolgal, V.A. Voroshilov</i>	
APPLICATION OF THE COMPLEX OF GEOPHYSICAL AND ATMOGEOCHEMICAL METHODS TO SOLUTION OF GEOECOLOGICAL TASKS AT MINING PLOTS OF CLOSED MINES IN THE EASTERN DONBASS	1110
<i>N.E. Fomenko</i>	
A COMPLEX OF GEOPHYSICAL DATA COLLECTION METHODS FOR ASSESSING THE DYNAMIC PROPERTIES OF SOILS	1120
<i>M.P. Shirobokov, V.V. Kapustin</i>	
EFFICIENCY EVALUATION OF HIGH-RESOLUTION SEISMIC; ELECTRICAL RESISTIVITY TOMOGRAPHY AND ELECTROMAGNETIC SURVEYS ON RIVERS, BASED ON MODELLING STUDIES	1130
<i>A. Simakov, S. Vakulenko, A. Politsina, P. Ivanov, E. Rusakov, M. Marchenko N. Shustov</i>	

Author Index