USBM Contract Number HO242031 (PB 251-496)

(Volume 4 - Final Report)

APPENDIX C
REFERENCES AND BIBLIOGRAPHY WITH ABSTRACTS

WILLIAM C. COOLEY

United States
Department of the Interior
Bureau of Mines

USBM Contract Report (Contract HO242031)

OCTOBER 15, 1975

TERRASPACE, INC.
304 NORTH STONESTREET AVENUE
ROCKVILLE, MARYLAND 20850

USBM Contract Number HO242031

SURVEY OF UNDERGROUND HYDRAULIC COAL MINING TECHNOLOGY (Volume 4 - Final Report)

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FOREWORD

In Part 1 is included a list of the key words used to sort accessions, together with the identifying color code and number of the corresponding plastic "Key Word Card" (in the information retrieval system delivered to the U. S. Bureau of Mines Twin Cities Mining Research Center) and the accession numbers of the items relating to each key word.

Part 2 contains copies of the 5 x 8 in. accession cards for all items collected which were judged to be relevant to underground hydraulic coal mining. In many cases, abstracts are included.

Abstracts were taken from the source, from other reviews, or from the preliminary screening of Russian documents performed by Dr. A. L. Brichant. No attempt was made to write abstracts for every accession item.

Not all accession numbers have been used, because of deletions of original accession items which after review were considered not to be relevant.

CONTENTS

		PAGE
1.	List of Key words with Accession Numbers of Relevant Documents	1
2.	Copies of Accession Cards	19

PART 1

List of Key Words with Accession Numbers of Relevant Documents

RED 00 - 19

A. EQUIPMENT AND TECHNOLOGY FOR DISINTEGRATING COAL:

00 Hydraulic Mining - 1352-0010-0003-0004-0005-0006-0010-0019-0023 0024-1076- 1331 - 771-772-773-782-785-795-796-711-745-819-824-736-737-738-615-812-814-816-817-740-834-842-873-874-907-897-927-982-975-735-742-743-744-989-990-1032-1039-1033-1036-1038-1048-768-926-1056-1057-1058-668-1074-1077-1078-1084-747-1100-849-1197-1199-1200-1207-1210-1112-1237-1241-1242-1183-1188-1190-278-1184-1185-1186-1187-1189-1027-928-929-930-933-934-935-939-940-941-942-943-944-946-947-948-949-951-952-954-955-956-957-958-994-995-996-997-999-1003-1008-1011-1020-1023-1000-1060-1062-1182-1224-1201-1115-1064-1221-1222-1227-1249-1046-1133-0133-0415-0607-608-609-164-932-945-998-1012-1013-1014-1015-1016-1017-1018-1019-1025-1026-1075-1076-1063-733-734-1061-198-1041-1087-1254-1259-1260-1261-1275-1276-1277-1278-1279-1280-1281-1282-1283-1284-1285-1286-1287-1288-0228-1292-1294-1295-1296-1297-1298-1301-1314-170-351-1262-1268-1269-1270-1273-1324-1336-1337-1344-1345-1346-818- 1075 - 165-166-169-175-176-277-381-387-391-404-405-406-407-408-409-410-411-412-413-414-419-420-422-423-425-426-427-430-431-432-433-434-435-438-449-450-455-456-457-461-463-464-465-470-473-476-478-487-488-490-491-492-494-495-496-504-505-506-507-509-510-512-514-531-534-535-538-539-541-542-543-544-545-546-547-548-549-551-552-553-557-558-561-562-564-565-566-567-568-571-572-595-596-597-599-601-611-612-613-614-616-620-621-624-627-628-637-646-656-658-659-660-661-662-665-666-667-671-672-158-677-678-679-688-694-695-696-712-722-699-705-706-707-708-769-770-471-49-50-52-110 111-134-153-154-155-157

01 Monitor 785-819-823-736-737-738-615-812-815-816-834-874-907 975-735-744-1032-1038-1056-1057-1074-668-1077-1078-1100-676-1188-1189-936-939-940-996-997-1224-1115-1064-1227-1133-657-607-1076-733-1280-1284-1285-1286-1288-1296-1297-089-0118-0351-0934-1268-1270-1273-1324-1336-1343-1346 - 1351-0004-0005-0006-0019 894-1183-998-238-387-410-434-438-449-450-455-457-464-476-487-488-490-491-492-504-506-509-510-511-512-534-535-538-542-543-544-546-548-549-564-565-567-568-571-595-597-620-621-623-627-637-646-658-659-661-662-664-665-666-667-671-677-695-696-715-717-699-1262 1076 -49-50-52-110-111-133-154-155-157-158-164-166-169-175

02 Jet Cutter - 0054-0194-0410-0596-0667-0695-0157-0785 1258-0139-1140-0008-1144-0140-1290-228-239-304-351-142-1343 737-838-1079-11-12-324-1102-1210-1068-1231-1257-1344-1345

03 Pump - 1330 - 0049 - 155 - 158 -164 - 165 - 166 -169-750
386-410-419-453-461-463-469-470-476-465-478-752-763-758
759-760-761-699-1262-1268-1269-1291-1337-1346-1347-1269
0351- ,772-799-739-819-737-738-617-829-839-841-843-844-
891-895-925-793-883-882-959-963-964-970-735-742-743-744
1030-1031-1048-1054-980-1056-1057-1058-1059-668-1074-1077
1088-1143-1045-1136-925-1195-1196-1202-1066-1067-985-1230
929-940-942-943-1001-1002-1003-1005-1006-1009-1010-1060-
139-1046-1133-1138-1139-1142-1145-1155-1161-657-731-1150
1092-1288-1292-1294-1295-1298-1300-1304-0089-0122-0170-751
639- -480-502-509-512-521-531-543-548-549-550-564-595-623
646-651-652-655-656-658-667-671- -677-690-720-627-727-730
1064-1257-0934-874-879-907-833-990-1027-1026-1129-1189-1190
756-1100

04 Pressure Intensifier - 785-1187-1257-1258-0008-0054-0158
173-386-695

05 Pulsating Jet - 599-695-130-1351-738-1245-1194-122-351-388

06 Water Cannon - 131-195-199-456-495-695-774-775-776-777-785
884-990-992-926-347-1110-1184-1185-1186-938-999-1021-1245
1191-1192-1132-1289-0122

07 Explosives - 277-433-504-544-548-568-677-1273-736-737-738
668-1074-1077-1078-1105-953-1275-1278

08 Disintegration - 20-50-52-54-153-154-157-158-169-175-176
381-386-409-449-130-450-785-926-1058-668-1074-1077-1110-410
1231-1140-1076-1276-1287-1289-1290-1296-0074-0118-0304-1329
1193-1343-1268-0004-0006-455-473-476-482-488-541-545-546
565-595-596-597-599-616-623-658-660-661-662-665-666-667-678
688-694-695-715

09 Jet Characteristics - 975-1183-1184-1185-1186-1224-1245
139-1144-998-734-1132-1297-0089-1343-388-20-50-111-133-157
176-387-438-458-541-546-595-596-599-659-664-665-667-678-688
715-717-449

10 Hydraulic Mining System - 740-980-492-671-690

11 Mining Machinery - 436-466-479-497-556-690-695-696-462
825-829-831-832-969-1110-1235-1231-1229-0158-1221-986-459
932-945-1012-1013-1014-1015-1016-1017-1018-1019-1063-1284
1304-0228-1262-1340-1344-1345-952-1273-0005-0018-609-1286

12 Water Infusion - 470-488-538-549-555-557-696-450-1105-1111
1276-1329-1193-1263

13 Jet Drilling - 1068-1215-0122

WHITE 20-29

B. EQUIPMENT AND TECHNOLOGY FOR CONVEYING COAL FROM FACE:

20 Flume (Sluicing) - 110-428-433-441-483-502-504-534-542
543-548-549-564-566-568-571-595-600-620-621-624-627-637-646
647-651-652-658-677-695-696-722-723-724-699-772-782-711-739
819-736-737-834-907-915-735-990-1077-1100-1154-1219-1241
657-733-1317-425-1346-1273

21 Conveyor - 461-730-738-811-839-876-735-1031-808-1077-756
1114-1097-1182-1229-1146-1167-657-427-1346-1206

22 Slurry - 1075-1330-0024 -773-779-780-803-804-806-807-751
736-737-738-617-823-830-838-841-843-907-906-914-965-659-735
1027-1030-1037-1048-1050-1056-1059-1077-756-1100-1113-1130
1176-1177-1178-1179-1180-1195-1196-1202-1067-985-1108-1109
1220-1230-1236-1241-1244-1004-1005-1022-1023-1065-1064-1246
1046-1157-1025-1090-1091-1041-1288-1300-1301-1302-1303-1306
1313-1314-1315-1316-1317-1318-1319-1320-0309-0310-1334-1335
1262-0016-0001-0002-0004-0007-0009-0016-0017-0022-1264-1265
53-59-185-196-269-421-452-458-461-468-472-493-521-529-530
531-536-538-539-542-543-545-549-550-558-566-567-568-585-598
600-603-631-648-649-650-651-652-653-654-655- - -690-713
714-718-301-639-720-721-723-724-729-731-730-750-753-763-764
757-758-759-699 -458-772-739-819-824-742-744-835-1137-1165
1181-1136-1218-1219-1248-1249-986-1307-1308-1312-1346-1347
1349

YELLOW 30 - 39

C. EQUIPMENT AND TECHNOLOGY FOR SUPPORTING ROOF:

30 Roof Support - 746-736-737-827-838-851-876-878-907-893
1035-1093-1094-1095-1096-1100-1211-1106-1223-1229-1222
986-1169-1278-1284-1285-351-934-1272-1262-1273-158-433
505-511-547-548-549-571-601-677-696-1262-1273

31 Hydraulic Roof Supports - 439 - 556

32 Hydraulic Stowing - 440-460-468-481-483-504-548-572-630
631-635-441-753-1075-1078-1106-1239-1222-657-423-1089
1099-1169-1271-1267-1266-0007

33 Roof Bolts - 1093-1272-1206

ORANGE 40 - 51

D. EQUIPMENT AND TECHNOLOGY FOR HOISTING AND HAULING COAL:

40 Crusher - 503-534-550-564-627-649-656- -720-780-783
784-819-811-839-850-907-919-962-1027-1048-1059-1122
1250-1146-1148-1158-1159-1160-1167-1205-1151

41 Feeder - 110-158-277-417-418-493-530-543-548-549-600
621-646-648-650-652-655-656-721-727-730-750-751-760-761
772-773-803-739-819-839-850-735-992-1027-1030-1031-808
0756-1088-1153-1172-1173-1158-1167-0053-1299-1300-1304
1059-1309-1310-1311-1324-1206-0004

42 Hydraulic Hoist - 742- 782-785-739-819-737-738-812-907
744-1053-1057-1059-1088-1130-849-1172-1173-1112-1230-1190
1060-733-1041-1292-1298-1299-1300-1303-1304-1307-1309-1310
1260-1261-1324-1346- 158-269-277-387-417-418-419-424-433-451
452- 465-469-472-480-493-502-505-509-530-531-535-539-543-564
568-621-627-635-648-658-671-727-730-752-758-760-699-705-706
708-944-1001-1005- 1262-1352-0005-0010-0015-1269-0022-982
659 -1311-1312-1314-453-454-735-571-620 769-770

43 Hydraulic Haulage - 772-773-774-775-776-777-778-779-780-782
757-53-59-158-185-196-301-415-416-421-423-424-427-441-451
468-483-493-499-502-506-507-512-523-528-529-534-535-536-538
543-546-548-549-550-561-566-568-572-595-598-600-613-620-621
647--649-650-651-652-653-654-655-656-658- -677-680-690-696
714-718-720-721-724-727-728-730-750-751-753-763-764-760-761
806-739-819-736-737-738-766-812-585-838-907-893-897-914-966
835-991-1027-1030-1031-1048-1056-1058-1059-1077-1078-1083
1085-1174-1181-1175-1176-1177-1199-1201-676-1066-1067-1114
956-1020-1034-1229-1221-1248-1249-986-657-417-418-1036-1025
1288-1302-1305-1306-1308-1311-1313-1314-1316-1317-1318-1319
0558-1337-1346-1347-0733-0198-1283-458-465-639-646-659-982
0015-0017-1264-0022-1320-1324-0425--539-542-713-1190-944-954
1262-1352-0001-0002-0003-0004-0005-0007-0009-0010-735-742-
622-756-1088-1097- 0024

44 Air Lift - 158-417-502-705-739-819-824-735-1053-1112

45 Pipeline - 0017-185-301-468-472-536-543-567-585-639-677
696-714-718-720-721-729-731-542-728-730-750-753-763-764
757-758-760-761-772-773-778-779-780-738-736-737-739-824
843-844-870-898-908-965-1027-1030-1031-1037-1038-1048-841
1050-1086-622-756-1100-1113-1088-870-1181-1178-1179-1180
1196-940-941-954-1065-1064-1246-986-1134-657-0053-733-839
1302-1311-1313-1314-1315-1318-1319-306-309-310-1347-594
1264-1305-1306-1307-1136-1244-1202-1056-1057-1059-823-835

46 Wear and Abrasion - 804-739-819-838-839-870-915-882-833-990
756-1088-870-1195-1196-1219-1189-930-1008-1009-1021-1164
1191-657-0053-415-731-1318-0017

47 Power Consumption (Pipeline) - 1302-1303-1305-1311-1312-
1313-1316-1319-0002-0009 -22-53-59-453-454-458-550-568
603-653-654-655-656-718-729

48 Slurry Pump - 786-788-791-799-819-821-917-965-659-980-756
1031-1037-1120-917-1135-1162-1163-1310-1311-1316-1337-1262
656

49 Screen - 741-780-843-852-879-883-965-1030-1031-1055-1059
1100-1154-1346-849-1167-1075

50 Corrosion - 1318

51 Pipe Feeder - 1304

BLACK 50 - 69

E. COAL DEPOSITS:

50 Anthracite - 164-166-389-410-427-488-491-527-662-667-681-
695-730-819-736-737-811-817-842-893-900-735-1031-809-1110
1105-1104-1229-1256-1282-1306-1350

51 Bituminous - 845-847-893-900-1031-808-809-810-1212-1110
1104-0053-1316-351-1322-1206-389-681-635

52 Flat Coal Beds - 736-737-738-812-816-817-907-933-1294-158
277-547-658-671-677-696

53 Pitching Coal Beds (10°-90°) - 819-736-737-738-813-834
839-907-1077-1100-1078-933-935-1222-1256-1036-0609-1282
1283-1288-1262-1329-1322-110-153-158-164-277-460-461-464
490-504-602-627-637-638-658-665-696-549-130-1270-471

54 Coal Hardness - 157-175-277-410-433-464-504-539-549-565
571-599-616-658-661-666-667-677-678-688-696-449-130-450
1263-0004-736-738-1077-1198-1208-937-938-1226-1287-1290
1118

55 Permeability and Porosity - 1323-1118-450-601-1263

56 Floor - 771-736-738-813-815-854-1077-1100-1221-986-277
1033-433-464-504-547-568-677

57 Roof - 277-433-464-481-504-544-547-568-601-677-696-736
1262-1270-738-815-839-854-1058-1077-668-1100-1106-936
1182-1122-986-1131-1133-1272-1033

58 Methane - 746-288-736-838-907-893-1035-1070-1209-1211
1111-1212-1182-1253-986-1076-1216-1333-1268-638-437-469
563-585-604-635

59 Reserves -

60 Seam Thickness - 736-737-839-845-847-1100-933-935-986
1098-401-1033-846-1270-543

61 Coking - 900-1069-1262-523-525-623

62 Petrology -

63 Overburden - 1277-1274

64 Water Availability - 736-737

65 Petrography - 666

66 Coal - 454-772-778-779-780-782-783-784-785-789-790-
711-803-804-806-807-739-745-819-824-736-737-738-591-794-811
816-817-818-834-838-839-842-843-845-846-847-825-873-874-907
906-909-911-912-913-919-831-830-961-965-966-659-927-982-735
835-992-1027-1030-1039-1047-1048-1070-808-809-810-1056-1057
1081-1074-1077-1078-324-756-1113-1088-1130-1082-1141-1165-
1181-1175-1176-1177-1178-1179-1180-1202-1209-1208-1210-1211
1067-1111-1110-1106-1112-1105-1114-1119-1136-1218-1219-1220

66 Coal (continued) - 718-719-720-722-723-724-726-729-731
409-727-728-730-751-752-753-750-764-761-699-704-0001-16
0002-10-15-17-18-1264-1265-1269-21-22-157-158-164-165-166
1242-1243-1190-1104-928-929-937-938-939-940-942-943-951-955
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1284-1285-1287-1288-1289-1290-228-1294-1295-1296-1297-1300
1305-1306-1037-1308-1309-1310-1311-1312-1313-1314-1315-1316
239-351-401-934-142-306-309-310-313-1262-1269-1270-1273-1321
1329-1263-1333-1334-1336-1337-1346-952-1268-1347-1348-1349
1282-1286- 49-0016-0001-0002-0004-0005-0009-0010-0015-0016
1264-1265-1269-0021-0022-50-52-53-54-55-110-134-153-154-155
169-175-176-269-277-301-315-381-382-386-387-389-404-405-406
412-413-414-415-416-417-418-420-421-422-423-424-425-426-427
432-433-434-435-437-438-449-450-451-453-454-456-457-460-461
469-470-471-472-473-475-476-478-479-480-483-486-487-488-490
496-497-499-500-502-504-505-506-511-521-523-524-525-527-528
536-538-539-541-542-544-545-546-547-548-407-408-410-411
549-550-551-555-556-561-563-564-565-566-428-429-430-431
567-568-571-572-585-595-596-597-598-599-462-464-465-468
600-601-602-603-604-611-612-613-614-616-491-493-494-495
620-621-624-625-627-628-630-635-636-637-529-530-534-535
638-639-646-647-651-652-653-655-658-660-812-813-814-815
662-665-666-667-671-672- 19-677-678-681-893-900-904-905
688-690-694-695-696-712-713-714-715-716-742-743-744-989
733-910-198-1193-1280-1281-1283-1301-1302-1303-1317-1318
1320-1322-1323-1324-1350-1118-1206-17-18-19-1058-1059-668
1172-1173-1174-1212-1217-1066-1225-1237-1241-956-994-995
999-1065-1122-1126-1013-1014-1015-791-792-795-796-1046
1098-1131-1075-1076-1330

GREEN 70 - 90

F. GEOGRAPHICAL LOCATION

70 USSR (Other than Donbass and Kuzbass) - 613-764-792-711
746-824-795-796-831-830-735-742-743-744-989-927-747-1170
1111-1110-657-1252-1275-1304-1312-1317-934-1269-1272-1339
1341-0009-1269

71 Donbass, USSR - 524-525-538-548-549-597-599-613-636-648
652-665-666-51-158-277-406-407-408-410-433-435-438-461-466
464-468-469-470-485-490-502-504-667-671-672- -681-695
696-712-730-450-277-745-819-736-737-738-812-815-816-817-907
659-735-1056-1058-1059-668-1074-1077-1078-1242-1020-417-418
1276-1279-1281-1282-1283-1284-1285-1299-1306-1314-1304-1270
1333-1337-1340-1268-882-0004-0005-0007-0009-0019-1266-883
427-733-1252-1273-1274-1332-1075-1076

72 Kuzbass, USSR - 51 - 158-238-404-405-408-425-430-458
460-461-471-478-484-497-507-511-525-538-544-547-548-549
564-565-571-599-613-614-636-650-651-658-671-672- -677
678-681-695-696-627-712-730-130-737-738-812-873-907-832
1057-1058-1083-929-930-934-937-939-944-949-952-953-955
1023-1064-1222-986-1192-657-459-607-608-609-1026-1099-
1306-558-934-1262-1269-745-1271-0003-0004-0005-0007-1265
736-659-735-742-1056-956-999-1005-1008-733-1277-1278
1279-1269

73 Poland - 534-535-539-543-549-635-655-656-764-0004-772
736-738-817-907-1239-657

74 Germany - 819-907-982-1036-1173-1207-1253-1255-1288-1324
657-387

75 Czechoslovakia - 711-738-907-657-635-432-492-543-549-551
725

76 Japan - 738-795-796-907-989-715-717-1123-1130-1170-1172
1197-1297-451-452-453-454-528-530-549-0010-0015

77 British Columbia - 907-873-989-1100-309-310-1346-562

78 France - 772-657-1303-1309-543-549-631-730-753-764

79 England - 772-907-982-989-1030-1031-169-538-542-549-721
727-730-750

80 Canada - 165-391-536-543-637-764-759-824-834-795-796-1039
1069-1084-1170-1174-1319-1346-0110

81 India - 657-1320-0004-0005-0009-572

82 Appalachian U.S. - 790-845-846-847-907-965-968-989-1027
1048-1070-1209-1211-1212-1229-1228-1256-1294-1350-1293-527
638-164-662-528-550

83 Mid-western U. S. - 772-790-968-1209-1293

84 Western U. S. - 790-839-907-893-900-901-903-904-905
906-909-911-912-961-968-983-989-1037-1028-809-1081-1141
1204-1209-1225-1237-910-1040-1072-1087-401-1329-1322-1347
1293-382-389-523-529-536-595-716-719-49-153-154-155-662
487-301-639-714-721-720-764-758-704-

85 New Zealand - 907-278-849-0004-543-549-566-567-568-620
621-624-625-628-722-723-724

86 Australia - 543-760-1310-1311-1348

87 Hungary - 657-757-761

88 China - 907-699-657-0004-

89 Karaganda Basin, USSR - 1314-0009

90 United States (other than Appalachian, Western and Mid-western) - 1316-306

SAND 90 - 99

G. ECONOMIC INFORMATION

90 Economics - 0024-698-700-301-315-423-425-426-433-451
461-468-470-471-475-483-487-504-506-507-511-513-523-531
536-548-550-558-560-566-568-602-613-620-672- -677
680-696-728-753-758-782-785-800-745-819-738-812-813-817
765-808-809-810-1069-1074-1078-756-1123-1124-1125-1178-
1021-1182-1228-1229-1036-609- -932-1099-733-1275-1282
952-1033-1206- 1274-635-0005-1283-1287-1303-1340-
1179-1180-934-935-946-826-836-906-659-991-

91 Capital Investment - 169-524-536-548-672- -677-698-700
800-819-813-745-907-659-991-765-808-810-1078-952-1033-1206

92 Amortization - 613-672

93 Production Rate - 790-745-819-824-736-737-738-735-991-767
1058-668-1242-1251-986-1133-1281-1286-558-1262-1033-1350
704-49-51-158-164-169-277-387-433-456-461-475-476-487-496
502-524-525-534-543-548-564-566-571-597-613-638-658-662
666-672-678-681-696

94 Cost per Ton - 24-51-169-387-433-461-524-543-548-566-658
672- -758-1262-1274-0005-819-736-745-808-809-810-668
1069-1125-1099-733-1275-1283-1340-952-1033-1206-471

95 Electrical Power - 745-738-743-808-1058-1059-668-1074
1221-1206-153-175-543-544-545-546-566-658-667-758-677

96 Manpower - 110-165-542-543-548-564-566-571-650-658-698
635-745-737-1234-986-1206

97 Productivity - 0024-49-51-110-154-165-169-175-315-387
433-461-487-496-504-524-565-566-568-571-613-658-662-666
695-696-698-704-659-1238-745-736-812-814-815-834-907-900
808-809-810-1059-668-1074-1078-1077-1086-1100-1103-849
1229-158-417-427-521-608-733-1286-425-1269-1273-1033-1206
989-1030-1048-928-938-952-1182-813-1262-635-1269

98 Recovery - 819-110-461-471-548-563-568-658-677

PURPLE 00 - 09

H. SAFETY AND HEALTH

00 Safety - 1076-110-387-429-430-461-469-524-538-542-568
604-694-798-746-288-819-736-737-738-591-826-907-893-967
1035-1048-1077-1100-1114-1111-1106-1107-1232-952-953-521
1182-1131-1076-733-239-1206

01 Air Flow (Ventilation) - 746-288-736-737-740-839-893-899
659-977-978-979-982-735-1035-1100-954-1182-986-239-313-1341
110-500-538-604-628

02 Coal Dust - 110-386-437-461-466-500-538-548-613-658-694
696-746-288-819-737-738-817-818-838-907-832-979-977-978
982-991-1100-1114-1210-1243-1182-1158-0054-733-239-212-313

03 Explosion Hazard - 736-738-907-1100-239-469

04 Temperature - 737-989-954-431-604

05 Spontaneous Combustion - 288-736-838-907-1024-0239-461
604-625

06 Health - 746-288-736-817-826-907-1035-1048-1111-1106
1107-953-1131-521-239-1206

07 Roof Falls - 1263-746-288-1076

08 Humidity - 746-954

09 Environmental Impact - 1028-1237-1347-0014-1265

BLUE 10 - 19

I. WATER REQUIREMENTS:

10 Water Supply - 51-110-155-158-164-165-277-382-449-494
501-506-536-543-559-567-568-621-656-666-685-724-730-745
819-738-828-874-907-901-903-960-659-982-983-735-742-990
1037-1029-767-808-1057-1058-1059-1077-1086-1203-1204-1117
1225-944-994-1007-1252-1158-1288-1295-170-1206-1293-1262
1264

11 Water Pollution - 568-684-808-1117-1252

12 Water Purification - 828-741-913-830-883-1247-1252-657
277-534-681-684-685-686-761

13 Settling - 158-461-627-730-760-742-756-1117-1240-657
731-1075

14 Dewatering - 1075-441-461-467-534-539-542-543-567-730
620-647-656- -677-760-0005-677-738-811-741-843-883-970
659-735-744-1031-765-1077-1078-1100-1104-1117-1119-1082
0985-1218-1220-1236-1240-1241-955-1247-158-1157-657-1090
1075-1061-1335-1066-1091

15 Water Clarification - 742-833-1049-1077-1078-158-1075

16 Water Availability - 1237-1322

GRAY 20 - 40

J. MISCELLANEOUS RELATED DATA:

20 Bibliography - 116-180-226-456-549-586-731-798-905-909
961-927-926-1056-622-1128-1203-1213-1214-993-910-663-733
670-673-196-1208

21 Bore-hole Mining - 464-531-623-705-706-707-708-769-770
1270-1076-668-1074-1224-1041-1259-1260-1261-1298

22 Continuous Miners - 55-497-522-556-690-838-839-875-877
907-991-768-809-810-808-1071-1100-1088-1182-1156-1206

23 Longwall - 381-437-522-687-635-1266-840-877-907-982
1100-1116-1239-1229-1221-986-228

24 Mine Development - 413-466-495-504-505-614-695-696-698
700-1262-700-1077-1255-1144-1273-1328-1332-1268-0003-0018

25 Open Pit - 896-1032-1028-768-1085-1199-1200-1201-676
1027-1248-1277-478-484-506-507-510-512-514-546-561-567-638
764-1296

26 Coal Mining - 1331-0024-1266-1265-54-134-429-430-437
462-466-470-471-472-478-481-482-483-485-501-512-513-522
525-527-538-559-560-563-602-604-634-636-690-730-698-700
798-800-824-736-591-812-826-827-828-840-842-875-876-877
878-896-829-832-884-960-967-968-969-982-983-991-1033-278
1085-1035-1028-1029-808-809-668-1080-1086-1100-1102-1104
1105-1123-1124-1088-676-1111-1106-1107-1103-1116-1223-1232
1234-1235-1238-1239-1224-994-1228-1229-1255-0008-139-1209
986-459-1089-1099-733-1252-1253-1260-1261-1271-1272-1274
1328-1266-1267-1339-1341-1344-1345-1346-1033-1348-1206
1293-1224-0003-0007-0014-507 .

27 Mining Systems - 736-0014-0023-55-464-687

28 Mining Plan - 134-387-425-426-433-434-437-461-464-476
485-487-492-502-505-511-521-534-542-543-547-548-549-564
567-568-571-658-671-677-696-712-711-819-1027-1038-946-1221
1276-1279-1281-1286-1287-1288-934-1322-110-1262-0003

29 Coal Preparation - 1075-422-461-467-477-506-539-567-568
627-700-0003-819-811-741-830-981-742-1047-1049-1127-1082
1212-1110-1117-1119-1218-1219-1220-1233-1236-1240-1241
1243-1104-946-955-1024-1126-1247-1251-1157-1090-1091-1075
1061-1101-1281-1288-558-1334-1335-1349-1265-0021

30 Monorail - 819-737-1062-1284-1346-110-677

31 Gilsonite - 897-989-990-1037-1038-301-536-595-0017

32 Roadheader - 495-695-696-736-737-818-875-907-884-992-1056
1058-1071-1077-1074-1110-950-953-1011-1224-986-1255-1284
1332-1262-0018

33 Up-raise Mining - 1077-1078-1336-1268-504-623-157-1270
1076

34 Rock - 1075-269-423-452-453-455-458-466-473-493-495-502
504-506-507-509-510-512-514-526-531-545-546-557-558-561
572-598-599-600-601-603-616-650-651-661-662-667-672
468-764-759-771-785-472-736-737-738-815-839-854-874-907
900-914-882-735-835-992-1032-1050-809-1056-1059-668-1071
1078-1077-1074-347-324-1195-1198-1027-1068-985-1110-1230
1244-938-1231-1245-1246-1248-0008-139-1140-1192-657-1144
140-1149-1075-1215-1277-1289-1290-228-1298-1299-1302-1303
1305-1308-1309-1311-1312-1313-1319-1320-74-118-122-304-351
142-1272-1324-1343-388-1352-2-6-9-17-1265

35 Tunneling Machine - 875-1140-1149-0074-

36 Feeder-Breaker - 918-919-920-850-809-1100-1121-1146-1346

37 Valve - 1331-916-1165-1152-1064-1135-1147-1166

38 Dredging - 1199-1201

39 Shortwall - 1103-936-1229-1221-657-1262

40 Instrumentation and Control - 1301-558-1321-1323-1337 1339-0016

RED 40 - 99

K. SPECIFIC MINES AND PIPELINES:

1. SOVIET DONBASS:

40 Pioneer D-1 - 736-737-812-1242-1287-1273-277-407-408 468

41 Pioneer D-2 -736-737-812-735-1242-1287-1273-277-667-696 407-408-468 - 1076

42 Ordzhonikidselugol Colliery No. 4 - 736-815-735-1076 277-438-648-652-0005

43 Krasnougol Colliery No. 160 -277-652

44 Odesskaya Komsomolskaya Colliery No.2 - 736-737-738-817 735-668-1279-1281-1282-1287-277-410-597-667-712-450

45 Yanovskiy Luganski - 736-737-659-735-1306-1075-277-406 438-597-667-696-548-764

46 Gidrougol - 277

47 "Novo-Grodovko" No.3 - 736-668-1287-277-648

48 "Tomashevskaya Yuzhnaya" - 1075-1078-1299-1340-277-504-19

49 "Mariya Glubokaya" - 1077-1078-277-504 -1075

50 "Toshkovka" No.5-13 - 1077-1078-1075-277-504

51 Dzerzhinskiy No.12 - 738-277

52 Leninugol "Belyanka" No.7 - 1287-277

53 "Krasnoarmeyskaya" No.1 - 816-882-735-733-1281-1332 1333-277-502

54 "Krasnoarmeyskaya" No.2 - 816-882-735-733-1281-1332 1333-158-502-277

55 "Kapitalnaya of the Proletarskugol" No.6 - 1059-277

56 Krasnaya Oktyabar Mine - 468

57 Samsonovski No.1 (50th Anniversary of USSR) - 737-1074 1077-1078 -1270-1075-1076-277-464-502-504-696

58 Karbonit No.4-6 - 883-1077-1078-1075-504

59 Zimor'yevskiy Mine #63 - 737-668-696-450

60 Artema (Voroshilovgradugol Kombinat) - 815-883-1074 1268-504

61 Nagolichinskaya No. 4 - 737-1287-667-695-696-712-450

62 Da'yevskaya No. 3 - 736-668-1287-667-695-450

63 Privol'nyanskaya Severnaya #4 - 736-737-738-668-696-450

80 Lutuginsky #4 Mine (ILLIRISKI Mine Mgmt) - 1285

81 Nikitovka Mine - 1304

82 Kirovskaya Mine - 1268

2. SOVIET KUZBASS:

64 Baidayevskaya - Severnaya - 659-929-939-949-956-607-608
609-1306-952-51-158-671- -696

65 Polysayevskaya - Severnaya - 736-937-1192-459-607-1279
934-952-405-544-565-547-658-671- -677-712-548-549-627
678

66 Severnaya Maganak - 461

67 Nikitinskaya - 0004-671

68 Nogradskaya - 461

69 Voroshilov - 461

70 Gramoteinskaya No.3 & 4 - 735-939-459-607-608-934-952
158-548

71 Ziminka #3 - 736-607-1279-548

72 Ziminka #4 - 736-607-1279-548

73 Krasnogorskaya - 736-738-735-999-1192-607-608-1026-408
461-511-548-613-695-130

74 Tyrganskiye Uklony - 736-733-461-544-548-549-627-571-613
678-564

75 Taybinskaya Mine - 461-613-1271

76 Yubileinoye Mine - 736-737-812-735-1083-1192-733-558
1262-613

77 Koksovaya No.1 - 736-1222-433-461-548

78 Tomusinskaya Mine - 607-1279

79 Hydromine #2 - Inskoe Seam - 1269

WHITE 30 - 81

3. CZECHOSLOVAKIA:

30 Kladno Basin - 492-543

31 Ostrave - 492-543

4. POLAND

32 Siersza - 655-656-539-534-543

33 Czeladz - 655-539-534-543

34 Debiennsko - 772-655-656-539

35 Andaluzja - 655

36 Yan - "Komuna Pariska" - 736-534-635-656

37 Kleofas -

5. JAPAN

38 Sunagawa - 907-989-1172-1197-451-454-528-530-0010-0015

74 Yoshima Colliery - 0010

6. GERMANY

39 Gneisenau - 819-982-1207-1173-1253-1324-387

40 Carl Funke Mine - 819-982-1036-1173-387

68 Hasner Mine - 819

7. ENGLAND:

41 Trelewis Drift Mine (South Wales) - 169-538-542

42 Walton Colliery Pipeline - 538-721

43 Woodend Colliery - 772-1031-727

8. CANADA:

44 Kaiser Hydraulic Mine #1 - 834-795-796-907-1100-1170-391

45 Vicary Creek - 165

69 Hosmer-Wheeler (Kaiser) - 1084

70 Fording - 1100

9. UNITED STATES:

46 Carbondale, Colorado Mine (Thompson Creek Mine) - 662

47 Roslyn No. 9 Mine - 49-153-154-155-662

48 Roslyn No. 10 Mine - 153-487-662

49 Sugar Notch, Pennsylvania Mine - 164-662

50 Robinson Run Mine - 965-1027-1048-1229-528-550

51 Consol Humphrey No. 7 Mine - 1027-1048-550

52 Consolidation Coal Pipeline - 772-1305-301-536-639-714
721-764-758

53 Black Mesa Pipeline - 919-1181-1179-1202-1347-301-529
536-719-720-764-758

54 West Lebanon Experimental Mine - 1294

71 Powder River - Arkansas Pipeline - 1347

10. NEW ZEALAND:

55 Charleston Mines - 567-568

56 Westport District - 566-567-624

57 Seddonville (Hydro Coal Mines, Ltd.) - 566-568

58 Seddonville (Rodgers Bros. Mine) - 566-621

59 Seddonville (Charming Creek Mine) - 566-621

60 Berlins (Glen Crag Opencast Mine) - 566-567

61 Stockton (Fly Creek Mine) - 566-567-722-724

62 Buller District (Buller Gorge Rahui Mine) - 566-620

63 Buller District (South Island, N.Z.) - 567-568

64 Buller District (Buller Gorge) - 568

65 Buller District (Comet Mine) - 567-624-628

66 Cascade Creek (Denniston Mines 1 & 2) - 568

67 Cardiff Bridge Mine - 566

11. FRANCE

72 Devillaine Mine (St. Etienne) 1303-1309

73 Merlebach Pit Pipeline - 543

PART 2

1

COPIES OF ACCESSION CARDS

Pipilen, Arnold P., Weintraub, Murray and Orning, A. A., "HYDRAULIC TRANSPORT OF COAL", RI 6743 Bureau of Mines Report of Investigations, 1966

KEY WORDS: Coal, Hydraulic Haulage, Slurry

2

Wang, R. C. and Seman, J. J., "SOLID-LIQUID FLOW IN NONCIRCULAR PIPES", RI 7725 Bureau of Mines Report of Investigations, 1973

KEY WORDS: Slurry, Hydraulic Haulage, Power Consumption (Pipeline), Rock, Coal

3

Vorobjev, B. M., "MODERN METHODS OF EXPLOITATION OF THICK COAL SEAMS", Journal of Mines, Metals & Fuels, July, 1962, pp.1 - 6 with continuance on p. 22.

KEY WORDS: Coal Mining, Hydraulic Mining, Mine Development, Hydraulic Haulage, Kuzbass

4

Sharma, S. N., "HYDRAULIC MINING IN U.S.S.R.", Journal of Mines, Metals & Fuels, November, 1962, pp. 11 - 20 with conclusion on p. 31

KEY WORDS: Hydraulic Mining, Kuzbass, Donbass, China, Poland, New Zealand, India, Hydraulic Haulage, Coal Hardness, Disintegration. Hydromonitor, Mining Plan, Feeder, Coal, Coal Preparation, Slurry

5

Mathur, S. P., "HYDRAULIC MINING OF COAL", Journal of Mines, Metals & Fuels, May, 1972, pp. 5 - 13

KEY WORDS: Hydraulic mining, Coal, Hydraulic Haulage, Hydraulic Hoist, Dewatering, Donbass, ORZHONIKIDZE-UGOL Mine, Kuzbass, Mining Machinery, Economics, Cost per Ton, Hydromonitor, India

6

IVANOV, A. E., "DETERMINING THE PRODUCTIVITY OF EXCAVATING ROCKS WITH WATER JETS", Skochinskii Mining Institute, Moscow, pp. 264 - 268, Translated from Fiziko-Tekhnicheskie Problemy Razrabotki Poleznykh Iskopaemykh, No. 3, pp. 70-75, May-June, 1968. Original article submitted Nov. 10, 1966.

KEY WORDS: Rock, Disintegration, Hydraulic Mining, Hydromonitor

7

Zolotarev, G. M. "MALFUNCTIONING OF HYDRAULIC STOWING EQUIPMENT", A. A. Skochinskii Institute of Mining, Moscow, translated from Fiziko-Tekhnicheskie Problemy Razrabotki Polexnykh Iskopaemykh, No. 1, pp. 61-64, January-February, 1973,; pp. 56 - 58

KEY WORDS: Hydraulic Stowing, Hydraulic Haulage, Slurry, Kuzbass, Donbass, Coal Mining

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8

Huck, P.J., Singh, M.M., "ROCK FRACTURE BY HIGH SPEED WATER JET," Report FRA-RT-71-58, IIT Research Institute, Dec. 1970

KEY WORDS: Rock, Pressure Intensifier, Jet Cutter, Coal Mining

ABSTRACT:
This report discusses a study of rock breakage phenomena by high speed water jets. The water jets were 1 mm (0.039 in.) in diameter, traveling at 1200 m/sec (4000 fps) and had a duration of nearly 1.5 secs. The jets generated stagnation pressures up to 1190 MN/m^2 (172,000 psi), and contained 9.8×10^5 joules (7.2×10^5 ft-lb) of energy. Six rock types, viz. French Creek gabbro, Milford Pink granite, Connecticut brownstone, Minnesota dolomite, Indiana limestone and Massillon sandstone, ranging in compressive strength from 390 MN/m^2 to 30 MN/m^2 (56,900 psi to 4,400 psi) were used for the experiments. Only single shot tests were conducted. A number of the French Creek gabbro and Connecticut brownstone specimens split apart; the others were penetrated by a narrow hole. The depth of the hole varied from 3.2 cm to 16.7 cm (1.2 in. to 6.6 in.) depending on the rock type and experimental conditions. The specific energy consumption for these tests varied between 4×10^3 j/cc and 340×10^3 j/cc (51×10^3 ft-lb/cu in. to 4×10^6 ft-lb/cu in.), but these values can be lowered one or two orders of magnitude by traversing the jet or using multiple shots. The specific energy was found to decrease with an increase in the specific pressure (stagnation pressure/compressive strength), up to specific pressures of nearly thirty-five (35). The mechanical properties of the various rocks were determined and correlated with the damage incurred by water jet impingement.

9

Karelin, N. T. "SOME PROBLEMS OF HYDRAULIC TRANSPORTATION OF SOLID MATERIALS THROUGH PIPES", Journal of Mines, Metals & Fuels, June, 1965, pp. 187 -193

KEY WORDS: Hydraulic haulage, Coal, Rock, Slurry, Power consumption (pipeline), India,Doubass,Karaganda Basin, USSR

10

Singhal, R. K. "HYDRAULIC HOISTING OF COAL", Coal Mining & Processing, June, 1970, pp. 44 - 47

KEY WORDS: Hydraulic Mining, Coal, Hydraulic Hoist, Hydraulic Haulage, Sunagawa Mine, Japan, Yoshima Colliery

11

Vereshchagin, L.F., Semerchan, A.A., Maslennikov, M.V., & Sekoian, S.S., "ON THE PROBLEM OF FRICTION OF A STREAM OF WATER AGAINST THE WALLS OF A NOZZLE AT ULTRASONIC SPEEDS," Source Unknown, pp 1472-1473.

KEY WORDS: Jet Cutter

12

Vereshchagin, L.F., Semerchan, A.A., Sekoyan, S.S., "ON THE PROBLEM OF THE BREAKUP OF HIGH-SPEED JETS OF WATER," Source Unknown, pp 38-42, Dec. 1967

KEY WORDS: Jet Cutter

13

Journal of Mines, Metals, & Fuels, ""EXPERIMENTAL PANEL WITH HYDRAULIC COAL LOADING AND HYDRAULIC GRAVITY COAL TRANSPORT AT THE SEAM NO. XI JOGTA UNIT, MUDIDIH COLLIERY, BCCL," Journal of Mines, Metals & Fuels, July 1973, pp. 194-199

KEY WORDS: Hydraulic mining, Hydraulic Haulage, Coal, Explosives, India, Hydromonitor, Productivity, Flume

14

Mathematica, Incorporated, "CONCLUSIONS AND RECOMMENDATIONS: MODIFIED MINING TECHNOLOGIES", Design of Surface Mining Systems in Eastern Kentucky. Task 1. Research and Demonstration of Improved Surface Mining Systems in Eastern Kentucky Coal Fields. Volume 1. Summary, January, 1974, pp. I-71 through I-75, prepared for Appalachian Regional Commission,Ford, Bacon and Davis, Inc., Kentucky Dept. for Natural Resources and Environmental Protection

KEY WORDS: *Coal Mining, Environmental impact, Mining Systems

15

Clancey, James T. and Goode, Claude A.
"Underground Haulage Pipelines" SME Mining Engineering Handbook, Vol. 1, 1973, pp. 14-27 thru 14-34

KEY WORDS: Hydraulic haulage , Hudraulic hoist, Coal, Japan, Sunagawa Mine

16

Automation Products, Inc., "DATA ON SLURRY DENSITOMETERS," Sept. 1975

KEY WORDS: Slurry, Instrumentation & Control, Coal

17

Faddick, R. R., Ph.D., "PIPELINE WEAR FROM ABRASIVE SLURRIES", Presented at the First International Conference on the Internal and External Protection of Pipes, University of Durham, England, September 9-11, 1975, British Hydromechanics Research Association

KEY WORDS: Wear & abrasion, Slurry, Pipeline, Hydraulic Haulage, Coal, Rock, Gilsonite

SUMMARY: Wear on a slurry pipeline is of interest to both the operator and the designer because of its effect on the initial cost and life of the pipeline. Wear due to corrosion and erosion is discussed with examples given to show relative wear rates for various slurries, the effects of particle size and distribution of solids on wear, the effects of slurry velocity on pipe wear, and the relative wear rates of various pipeline linings.
Some recent wear rest results are also provided.

18

Onika, D., "MECHANICAL BREAKING OF ROCKS. CONTINUOUS CUTTING-AND-LOADING MACHINES", from the book Excavation of Mine Openings, MIR Publishers Moscow, 1972, pp. 153-164

KEY WORDS: Mining Machinery, Coal, Roadheader, Mine Development

19

Onika, D., "HYDRAULIC DRIVAGE OF MINE OPENINGS (HYDRAULICKING)", from the book Excavation of Mine Openings, MIR Publishers Moscow, 1972, pp.421-424

KEY WORDS: Hydraulic Mining, Coal, Donbass, Tomashevskaya-Yuzhnaya Mine, Hydromonitor

TRANSLATED

20R

Shavlovskiy, S.S., "INVESTIGATION OF THE EFFECTIVENESS OF JETS FOR HYDRAULIC EXCAVATION," Moscow, 1966, 48 pp., translated April 1970, "ISSLEDOVANIYA EFFEKTIVNOSTI STRUI PRI GIDRAVLICHESKOY VYEMKE"

KEY WORDS: Hydromonitor, Jet Characteristics, Disintegration

ABSTRACT: This work is devoted to the clarification of questions concerning the effectiveness of a hydraulic monitor jet during its action on a massif subject to breaking down. Solutions are presented for the determination of the force of the jet acting on the massif for different shapes of the stope, of the dynamic characteristics of the jet over the section (or path) between the nozzle and the stope and also of regularities in the variation of the diameter and the mean density of jet's liquid. Analyzed are also the variations of jet's dynamic pressures as a result of improvement of the conditions of its formation in the hydromonitor's conduit and nozzle. The influence is shown of liquid dampers in the hydromonitor's conduit and of nozzle diameter on the dynamic pressure of the jet and on its compactness. The study is destined to various scientific research and construction project organizations, and also for all workers of coal mining industry involved in coal hydraulicking.

21

CASALI, J. T., "HEAT DRYING SLUDGE FROM PONDS", Mining Congress Journal, ~~Reprinted~~ , January, 1975

KEY WORDS: Coal, Coal Preparation

22

Prettin, W., Gaessler, H., Dr. "BASES OF CALCULATION AND PLANNING FOR THE HYDRAULIC TRANSPORT OF RUN-OF-MINE COAL ACCORDING TO THE RESULTS OF THE HYDRAULIC PILOT PLANT IN COLLIERY CARL FUNKE.", to be submitted at the Hydrotransport 4 BHRA Conference, May 18-20,1976

KEY WORDS: Hydraulic Haulage, Hydraulic Hoist, Coal, Slurry, Power Consumption (Pipeline)

ABSTRACT: In the period 1971 to 73, Ruhrkohie AG. practiced in its colliery Carl Funke a pilot plant for hydromechanical coal getting and hydraulic transport. In an about 2 km^2 large coalfield 10 to 15 monitors loosened between 2000 and 2500 tons of run-of-mine coal within 24 hours, of which about 50% were hydraulically transported in one operation by piston pumps, type Wirth LK 6 3/4 x 12 from a depth of about 800 m over a distance of about 5700 m to the central washery.

The economical results of the hydro-working were by about 15% better than comparable values of fully mechanized workings of Ruhrkohle AG. The hydraulic winding plant rendered an essential contribution to the improvement of the results. The same had been planned after extensive preliminary investigations and methods of calculations, part of which had been newly developed.

The hydraulic haulage and winding of the coal took place absolutely free of defects and failures, most of it fully automatically, with an about 90% utilization of the daily working time. Run-off mine coals in the size group 0 to 2 mm were continuously transported through 24 hours on 5 working days per week. An extensive know-how could be obtained about the operation of such hydraulic haulage and winding plants. All important technical data were continuously enquired, partly by isotop measuring instruments and registered by a 10-fold recorder.

The results obtained after an analysis of the technical data were compared with theoretically found values according to different methods of calculation usual at present (Fig.1). As for the haulage and winding of water-solids-mixtures of very high concentration which are partly different in their behaviour from Newton's Law of Resistance, data were won for an extension of our methods of calculation. In order to determine the wear and tear in horizontal pipelines, a quantitative relation $\Delta_S = 0.097\ Fr^3$ was found, as a function of Froude's characteristic figure of similarity, for goods of a similar abrasivity according to the Miller Index and for the pipelines made of about the same material. Values calculated according to this formula agree well with actual wear and tear values in six different pipelines (Fig.2). The know-how obtained is being utilized by the Montan Consulting GmbII, a subsidiary of Ruhrkohle AG. for further planning and development work.

23F

Rzhevskiy, V. V."'GORNYY ZHURNAL' I GORNAYA NAUKA" excert from pages 46-52 of GORNYY ZHURNAL, #7, 1975, pp. 50-52.

KEY WORDS: Hydraulic Mining, Mining Systems

E 0024

Link, James M., Allan, Jr. Andrew, Faddick, Robert R., Colorado School of Mines Research Institute USBM Contract Report H0133037 for the Unites States Department of Interior Bureau of Mines "FEASIBILITY OF HYDRAULIC TRANSPORTATION IN UNDERGROUND COAL MINES". May 30, 1975 (To be released by U. S. Bureau of Mines)

KEY WORDS: Hydraulic Haulage, Coal Mining, Hydraulic Mining, Slurry, Economics, Cost per ton, Productivity

49

Nasiatka, T.M., & Badda, F., "HYDRAULIC COAL MINING RESEARCH - TESTS IN A STEEPLY PITCHING COALBED, ROSLYN, WASHINGTON," Bureau of Mines Report of Investigations, 6276, 1963.

KEY WORDS: Hydraulic Mining, Coal, Roslyn No. 9 Mine, Pump, Hydromonitor, Production Rate, Productivity, Western

ABSTRACT: Tests with h-p water jet were conducted in steeply pitching Roslyn No. 5 bituminous coalbed in Roslyn No. 9 mine to determine feasibility of extracting coal from pillars and from solid coal face in development without drilling and blasting; tests showed that hydraulic mining methods were more productive than conventional mining methods in pillar mining; compared with conventional methods, hydraulic mining methods were less productive where coal was relatively hard and equally as productive where coal was relatively soft.

50

Wallace, J.J., Fowkes, R.S., "HYDRAULIC COAL MINING RESEARCH - ASSESSMENT OF PARAMETERS AFFECTING THE CUTTING RATE OF BITUMINOUS COAL," Report of Investigations, 7090, March 1968.

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Disintegration, Jet Characteristics.

ABSTRACT: Jetstream pressure distributions and coal cutting rates were determined for a number of nozzles and under different operating conditions. The jetstream pressure distribution data were fitted to an assumed curvilinear equation by the utilization of a numerical least-squares technique with the aid of a digital computer. Subsequent manipulation of the approximation equation showed that the total force of the jetstream, rather than its maximum pressure of total kinetic energy per unit time, was the most significant quantity affecting the coal cutting rate. A shorter method for assessing the ability of a nozzle to cut coal was found.

51

BUREAU OF MINES
"REPORT OF THE UNITED STATES COAL MINING DELEGATION," May 30-June 16, 1970

KEY WORDS: Hydraulic Coal Mining, Kuzbass, Donbass, Production Rate Productivity, Water Supply, Baidayevskoya-Severnaya, Cost Per Ton

ABSTRACT: This report involves the findings of the U.S. exchange that visited the Soviet Union from May 30 - June 16, 1970. The group selected to make this study was composed of representatives of the coal mining industry, coal-mining equipment manufacturers, and the Federal Government of the United States.

The primary purpose of this mission was a review of the current mining technology in the USSR, both underground and open cast, the equipment used under mining conditions found in that country, and the safety practices that were being followed.

The Tour covered 18 days in the USSR and included three of the coal mining areas, several engineering works, a research institute concerned with safety in mines, and a coal mining exhibit in Moscow. Travel in the USSR approached 8500 miles.

52

Anderson, J.A., "HYDRAULIC METHOD OF MINING COAL AND THE LIKE," Patent No. 3,203,736, August 31, 1965

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Disintegration

ABSTRACT: This invention relates to mining. More particularly it relate to improvements in the method of and means for mining coal, or similar substance, as contained in veins and stratified formations in the earth. The specific method of the mining operation being characterized by use of novel means for cutting, dividing, and disintegrating the vein or formation by means of an extremely high pressure water jet of small diameter discharged against the exposed face of the coal vein.

53

Wancheck, G.A. & Fowkes, R.S., "MATERIALS HANDLING RESEARCH: HYDRAULIC TRANSPORTATION OF COARSE SOLIDS," Bumines Rept. of Investigations, 7283, Aug. 1969

KEY WORDS: Hydraulic Haulage, Slurry, Coal, Power Consumption (Pipeline), Rock, Feeder, Bituminous, Wear & Abrasion, Pipeline

ABSTRACT: The Bureau of Mines constructed a fully automated pilot plant facility to study the hydraulic transportation of solids through a lock hopper feeder system. An equation for the energy requirements to transport coarse solids hydraulically proved applicable to this system. Optimum velocities were obtained from limestone, mine refuse, and bituminous coal. The experimental data, calculations, and graphs show the effect of velocity, specific gravity, and solids concentration on head loss and power requirements. Other data were obtained and evaluated to determine the effect of particle size on head loss. Results are also given for (a) tests using friction reducing polymers; (b) tests using seven test sections of steel alloy pipe to determine their wear characteristics; (c) tests to determine spatial segregation of moving particles; and (d) tests to determine the effect of shape, size, and specific gravity on particle velocity in a horizontal pipeline. The lock hopper feeder system was found practical for continuous hydraulic transportation of the material types and size ranges tested.

54

Singh, M.M., Labus, T.J., Finlayson, L.A., "COAL MINING USING HIGH PRESSURE WATER JETS," Final Report D6062, IITRI, for U.S. Bureau of Mines, Oct. 1973

KEY WORDS: Hydraulic Mining, Coal, Pressure Intensifier, Jet Cutter, Coal Mining, Disintegration , Coal Dust

ABSTRACT: Engineering feasibility of high-pressure water-jet coal mining and degree of dust and noise health hazards associated with this mining technique were studied. A portable water jet device suitable for field use was designed fabricated, and tested. The results indicated that with a hydraulic jet operating at 50,000 and 100,000 psi, the amount of dust produced per ton of coal is less than with conventional miners. The noise levels produced are comparable with noise levels of conventional miners and were not optimized. Thus, it is probable that noise levels can be reduced below that of conventional miners and were not optimized. Thus, it is probable that noise levels can be reduced below that of conventional miners. A miner using several jet units similar to the prototype should be able to mine at rates comparable to conventional mechanical miners. This would allow mining with reduced dust and noise, consequently reducing exposure of operators to the hazards of black lung and hearing loss.

55

Singh, M.M., Labus, T.J., Finlayson, L.A., Silks, W., "DESIGN OF A HYDRAULIC JET COAL MINER," IITRI Report No. D6088 for the Twin Cities Mining Research Center, February, 1974 FINAL REPORT

KEY WORDS: Hydraulic Mining, Coal, Continuous Miner, Mining System Bibliography,

59

Berkowitz, N., "SOME NEWER CONCEPTS OF SOLIDS PIPELINING," Reprinted from Proc. Ironmaking Conference, Am. Inst. Min. Met. Petrol. Engrs., Held in Buffalo, April 1963, pp 567-588

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Power Consumption (Pipeline)

74

Ripken, J.F. & Wetzel, J.M., "APPLIED RESEARCH ON HYDRAULIC DISINTEGRATION OF ROCK FOR RAPID EXCAVATION," Semi-Annual Technical Report sponsored by ARPA, Monitored by the U.S.B.M., Contract No. H0210021, September 1971

KEY WORDS: Disintegration, Rock, Tunneling Machine

ABSTRACT: The subject program intends to establish that high velocity water slugs when repetitively impinged on rock are capable of stressing and disintegrating rock at rates suitable for use in rapid excavation systems

89

Rouse, H., Asce, M., Howe, J.W., Asce, M., & Metzler, D.E., "EXPERIMENTAL INVESTIGATION OF FIRE MONITORS AND NOZZLES," American Society of Civil Engineers, Transactions, Paper No. 2529, pp. 1147-1175, 1951

KEY WORDS: Monitor, Jet Characteristics, Pump

ABSTRACT: Since the inefficiency of fire streams is directly attributable to the initial turbulence of the free jet, attention was given at the Iowa Institute of Hydraulic Research to the design of a fixed monitor, portable monitor, and nozzle that will reduce the turbulence of the flow to a practicable minimum. The underlying principles upon which the designes were based are discussed in this paper, the test facilities are described, the efficiencies of existing and improved units are compared, and design details and performance curves are presented for the recommended forms.

110

Grimley, A.W.T., "UNDERGROUND COAL MINING USING THE HYDRAULIC METHOD," Can. Inst. Min. Metall. Bull., v. 67, # 741, Jan. 1974, pp. 44-47

KEY WORDS: Hydraulic Mining, Coal, Kaiser Hydraulic Mine No. 1, Canada, Mining Plan, Hydromonitor, Flume, Safety, Productivity, Ventilation, Coal Dust, Manpower, Water Supply, Pitching Coal Beds, Monorail, Feeder, Recovery.

ABSTRACT: This paper describes the hydraulic mining methods used in the Balmer coal seam in the East Kootenay coalfield in British Columbia. This seam is approximately 45 feet thick and in this particular area dips at 30 to 60 degrees. The applicability of hydraulic methods is discussed for the mining of medium and thick seams of moderate and steep dip from the point of view of efficiency and safety.

111

Contractor, D.M., "APPLICATION OF FLUID TRANSIENTS TO HYDRAULIC MINING," Transactions of the ASME - Journal of Basic Engineering, Paper No. 71-WA/FE-16, 1972

KEY WORDS: Hydraulic Mining, Jet Characteristics, Hydromonitor

ABSTRACT: Hydraulic mining involves the erosion of a material with a high speed water jet. This technique can be applied to coal mining, tunneling for high speed ground transportation systems & drilling for deep oil wells. A high speed, unsteady jet of water is known to have a much greater potential for hydraulic mining than a steady jet of water. A comprehensive study of mining with unsteady jets would involve three aspects: 1. the hydraulic and mechanical aspects of producing an unsteady jet, 2. the study of the dispersion of the jet, and 3. the response of the material being eroded. This paper deals with the first aspect & studies three different systems for producing unsteady water jets. A computer program was written to calculate the unsteady jet velocities for each system using the method of characteristics. The unsteady jet velocity was integrated & used in a theoretical model to compare the effectiveness of the three different systems. The effect of varying certain design & operating parameters of the system was also studied. Factors affecting the choice of the appropriate system are discussed.

116

Cooley, W.C., "TRANSLATION OF TITLES FROM A SERIES OF USSR PERIODICALS CONCERNED WITH COAL HYDRAULICKING," March 1970.

KEY WORDS: Bibliography

118R

TRANSLATED

Voitsekhovskiy, B.V., Izosimov, V.A., Olen'kov, N.F., "ON THE POSSIBILITY OF APPLICATION OF IMPULSE HYDROMONITOR FOR PULVERIZING ROCKS," Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSR, # 9, 1962, pp. 117-120
"O VOZMOZHNOSTI PRIMENENIYA IMPUL'SNOGO VODOMETA DLYA IZMEL'CHENIYA GORNYKH POROD,"

KEY WORDS: Monitor, Rocks, Disintegration

122

Maurer, W.C., Heilhecker, J.K, "HYDRAULIC JET DRILLING," American Institute of Mining, Metallurgical, & Petroleum Engineers, Inc., Paper SPE-2434

KEY WORDS: Jet Drilling, Water Cannon, Rock, Pump, Pulsating Jet

ABSTRACT: As a result of a detailed survey of over 25 novel drilling techniques, a laboratory study of hydraulic jet drilling was made. In initial tests, a cannon was used to fire 1.45 gal water pulses at rocks at pressures up to 25,000 psi. These tests showed that a threshold nozzle pressure must be exceeded before hydraulic jets will drill rock. Water jets having diameters of 0.2 to 1 in. drilled holes with diameters ranging from 0.8 to 4 in. in sandstone and limestone. These holes, which were 1 to 3 in. deep were drilled in 0.02 to 0.2 seconds. These tests showed that water jets can effectively drill sedimentary rocks.

Following these tests, a 2 in. diameter hydraulic jet drill was tested in a laboratory rig. A high-pressure pump was used to pump water continuously through this drill at pressures up to 13,500 psi. This drill penetrated Carthage marble at 180 ft/hr, Indiana limestone at 280 ft/hr & Berea sandstone at 300 ft/hr. These tests showed that a full-scale hydraulic jet drill (3,000 hp) should drill 8 in. diameter holes in aver-strength sedimentary rocks at rates of 200-300 ft/hr.

TRANSLATED

130 R

Sigayev, E.A., "ISSLEDOVANIYE GIDROOTBOYKI PUL'SIRUYUSHCHIMI GIDROMO-TORNYMI STRYAMI," Gornyy Zhurnal, # 2, 1964
"INVESTIGATION OF HYDRAULIC BREAKING OF PULSATING HYDROMONITOR JETS"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Pulsating Jet, Disintegration, Krasnogorskaya (Prokop'yevskugol Trust), Coal Hardnes Steeply Pitching Bed, Kuzbass

ABSTRACT: Evidence is presented that pulsating water jet, produced by periodical access of air into nozzle is efficient means of breaking coal which could be usually mined by means of blasting; efficient pulsating jet requires pressures of 30 to 40 atm while conventional jet requires pressures of 80-90 atm to perform same work; output of coal under conditions of pulsating jet mining is 16-17 tph.

131

Voitsekhovsky, B.V., et al, "DEVICE FOR BUILDING UP HIGH PULSE LIQUID PRESSURES," Patent 3,412,554, Nov. 26, 1968

KEY WORDS: Water Cannon

ABSTRACT: The present invention relates to devices for building up stati and dynamic liquid pressures of relatively high magnitudes and of pulse form.

133R

Khnykin, V.F., "COMPACTNESS OF HYDRO-MONITOR JETS AND SELECTION OF THE OPTIMUM NOZZLE DIAMETER," Ugol No. 3, 1964

KEY WORDS: Hydromonitor, Jet Characteristics, Hydraulic Mining, Coal

ABSTRACT: Concentration of hydraulic monitor jets and selection of most efficient diameter of nozzle length of initial part of water jet characterizes concentrated effect of jet; length of this part of jet depends on diameter of nozzle and pressure and may be calculated using 3 equations; hydraulic mining of coal is achieved with best results when initial part of jet is longest; equations are derived for determination of most efficient diameter of nozzle.

TRANSLATED

134R

Seretsnyakov, P.Ya., "O TERMINOLOGII SYSTEM GYDROMEKHANIZIROVANNOI RAZRABOTKI UGOL'NLKH PLASTOV," ("On the Terminology of Hydromechanized Exploitation (Hydraulicking) of Coal Seams,") Ugol No. 3, 1964, 3 pgs.

KEY WORDS: Hydraulic Mining, Mining Plan, Coal, Longwall, Coal Mining

139

Summers, D.A., Henry, R.L., "WATER JET CUTTING OF SEDIMENTARY ROCK," Journal of Petroleum Technology, pp 797-802, July 1972

KEY WORDS: Jet Cutter, Rock, Coal Mining, Pump, Jet Characteristics

140

Summers, D.A., Henry, R.L., "WATER JET CUTTING OF ROCK WITH AND WITHOUT MECHANICAL ASSISTANCE," Preprint, Paper SPE 3533, 1971

KEY WORDS: Rock, Jet Cutter

ABSTRACT

The relative efficiencies of a continuous water jet cutting rock in the pressure range 5,000-25,000 psi are evaluated through calculations of the specific energy of breakage. The distance between adjacent cuts for effective kerf removal is determined. Results where the water jet alone is used to excavate the rock are compared with energy values obtained where the jet cuts a kerf which is removed by other mechanical means. The reduction in energy requirements with the second method are illustrated.

142

Anon., "COAL AND ROCK CUTTING BY HIGH SPEED WATER JETS,", No Author, No Source or Date, pp. 51-52

KEY WORDS: Coal, Rock, Jet Cutter

153

Palowitch, E.R., Malenka, W.T., "HYDRAULIC MINING RESEARCH, A PROGRESS REPORT," Mining Congress Journal, Sept. 1964, pp 66-73.

KEY WORDS: Hydraulic Mining, Coal, Electrical Power, Disintegration, Roslyn No. 9 Mine, Roslyn No. 10 Mine, Pitching Coal Bed., Western

ABSTRACT: The U.S. Bureau of Mines has been conducting hydraulic mining research since 1958. This article describes early laboratory studies wherein the effect of nozzle design and water volume & pressure on jet performance were studied. Penetration and cutting rate tests were made on bituminous and anthracite coals to determine the effect of total force, kinetic energy, proximity of the nozzle to the coal, and jet stream traverse speed on the extraction rate of coal. Five field trials are also described.

It was found that while high unit extraction rates were achieved, output per man-shift was not consistently high because of the low percentage of time spent jetting coal. This novel method of mining is particularly advantageous for mining pitching coal beds not amenable to mining by conventional mechanical equipment.

154

McMillan, E.R., "HYDRAULIC JET MINING SHOWS POTENTIAL AS A NEW TOOL FOR COAL MEN," Mining Engineering, pp 41-45, June 1962.

KEY WORDS: Hydraulic Mining, Coal, Roslyn No. 9 Mine, Hydromonitor, Disintegration, Productivity, Western

ABSTRACT: This article describes the U.S. Bureau of Mines Investigations into the use of hydraulic methods for extracting coal in the steeply dipping coal beds in the State of Washington. Initial tests, e.g. nozzle design, were carried out in the laboratory. First tests at the Mine Site took place in August 1959, when pressures of 3500 psi were used, which produced a jet flow of 11 to 12 gpm.

Experiments were carried out at several sites and the results were very encouraging. The equipment used, the tests performed and productivity and time utilization studies are discussed. The author states several advantages of the hydraulic method over convential mining methods, including improved safety conditions, increased productivity and reduced costs.

155

Nasiatka, T.M., "HYDRAULIC PITCH MINING - THE ROSLYN PROJECT," Coal Age, pp 74-78, June 1962.

KEY WORDS: Hydraulic Mining, Coal, Roslyn No. 9 Mine, Hydromonitor, Water Supply, Pump, Western

ABSTRACT: This article describes experiments carried out by the U.S. Bureau of Mines on steeply pitched coal beds. Previously coal had been mined by hand, but using a one-man monitor and pressures of 3500 to 4000 psi, Roslyn pioneering work in hydraulic pitch mining of bituminous coal increased productivity 50 percent over conventional methods with later nozzle designs 17.6 tons of coal per man shift were being mined successfully.

TRANSLATED

157R

Borisenko, A.A., Kovalev, O.V., "GIDRAVLICHESKIE PARAMETRY I OBLAST' PRIMENENIYA GIDROVYMYVA OPEREZHAYUSHCHIKH POLOSTEY," UGOL # 9, pp 61-63, 1968.
"HYDRAULIC PARAMETERS & REGIONS APPLICATION OF HYDRAULIC WASHING OUT OF LEADING CAVITIES," English Translation

KEY WORDS: Hydraulic Mining, Disintegration, Coal Hardness, Coal, Jet Characteristics, Disintegration, Hydromonitor, Jet Cutter, Up-Raise Mining

ABSTRACT. - The washing out of leading cavities is applied in Vorkutsk mines to prevent sudden ejections during development work. To study the disintegration capability of coals with strength factors 0.3, 0.5 and 1, experiments with nozzle diameters of 0.7, 1.5, 2, 4 and 5 mm were carried out during the washing out. The formation mechanism of a cavity is described in the case of low-strength coals and a sketch in Fig.1 shows how the cavity is formed under the action of water jets. The rate of coal washing out is then computed on the basis of the fact that the rate of coal disintegration is dependent on the power of the jets and the strength of coal. The dependence is shown in a diagram of Fig.2, for the above-mentioned coal strength factors. Then, the dependence of the rate of washing out, of water consumption, power of the jet and operational length of the jet on the diameter of the aperture in the nozzle is plotted in Fig.2. Calculations show that for "ejection-vulnerable" seams a low strength factor of the seam (or its separate bands) and a high degree of "disintegrability" are characteristic. Consequently, the hydraulic washing out of leading cavities is applicable for most of the "ejection-vulnerable" seams. The advantage of this method vs drilling consists in that it allows not only to improve the safety factor in this kind of seams, but also to obtain substantial economic implications on account of lowering of costs and time for a prophylactic working out of the seam.

REFERENCES. 1. V. G. Geyger. Teoreticheskiye osnovy raschota strui vody dlya otboyki uglya (Theoretical bases of calculation of a water jet for the breaking up of coal). "Ugol' Ukrainy", No.12, 1959. 2. N. F. Tsyapka, A. M. Chapka. Gidrootboyka uglya na podzemnykh rabotakh. (Hydraulic breaking of coal in underground mining).

TRANSLATED

158R

Muchnik, V.S., "PERSPEKTIVY TEKHNICHESKOGO PROGRESSA PODZEMNOY GIDRAVLICHESKOY DOBYCHI UGLYA," UGOL # 9, pp 13-15, 1969, "OUTLOOK FOR TECHNICAL PROGRESS OF UNDERGROUND COAL HYDRAULICKING"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Disintegration, Krasnoarmeyskaya No. 2 Mine, Production Rate, Kuzbass, Donbass, Baidayevskaya-Severnaya, Pitching Coal Seams, Flat Coal Seams, Roof Support, Hydraulic Hoist, Pump, Feeder, Airlift, Gramoteinskaya No. 3-4, Hydraulic Haulage, Settling, Water Supply, Pressure Intensifier, Mechanical Mining Machine, Dewatering, Water Clarification, Productivity

164

Williams, Ivor L., Buch, J.W., "HYDRAULIC MINING OF ANTHRACITE - EXPERIMENTS AT THE SUGAR NOTCH MINE, WILKES-BARRE, PENNSYLVANIA," Reprinted from Mining Congress Journal, July 1962.

KEY WORDS: Hydraulic Mining, Anthracite, Coal, Hydromonitor, Pump, Pitching Coal Beds, Water Supply, Production Rate., Sugar Notch Mine, Appalachian

ABSTRACT: In experimental hydraulic mining at Pennsylvania anthracite mine, 108 ft of 22 ft wide chamber and 68 ft of 14 ft wide crosscuts have been driven in 6 mo period with 43,211 cu ft of material being mined; rate of cutting averaged 0.914 tons/min for chamber and 0.562 for crosscut; pump operating pressure was 5000 psi using 300 gpm of fresh water.

165

Coal Age, "HYDRAULIC PITCH MINING: THE VICARY CREEK SYSTEM," Coal Age, April 1964, pp 94-99

KEY WORDS: Hydraulic Mining, Coal, Vicary Creek Mine, Canada, Productivity Pump, Manpower, Water Supply.

ABSTRACT: Longhole hydraulic mining of pitching coal is basic method of production at Vicary Creek mine, Coleman, Alberta; system consists essentially of drilling hole down pitch of vein, then replacing drilling head with jet cutting head and retracting drill column with jet in operation to remove coal; coal cut loose by jet falls to flume drift and is carried by water to underground screening and loading plant; two longhole units will produce 2000 tons/24 hr day; pump with 4 1/2 in. diameter pistons delivers 376 gpm at 2700 psi.

166

Lee, Winsor A., "MINING ANTHRACITE BY JET STREAM," pp 9-11.

KEY WORDS: Hydraulic Mining, Coal, Anthracite, Pump, Hydromonitor.

169

Wright, A., "HYDRAULIC MINING - EXPLORATORY TRIALS IN MINING COAL BY A WATER JET AT TRELEWIS DRIFT MINE," The Mining Engineer, July 1961.

KEY WORDS: Hydraulic Mining, Coal, Trelewis Drift Mine, England, Hydromonitor, Pump, Disintegration, Capital Investment, Production Rate, Productivity, Cost Per Ton.

ABSTRACT: Following reports and outstanding claims, particularly from Russia, about hydraulic mining with a water jet as a new technique in coal extraction, it was decided that small scale exploratory trials should be carried out at Trelewis drift mine. The results showed that hydraulic mining could be a promising method of working relatively shallow reserves provided associated conditions were suitable. The potential output per shift of a hydraulic monitor, with its face labour force of two men proved to be 46 tons in heading drivage and 123 tons in pillar extraction with a water pressure of 1200 lb/sq.in. & quantity of 450 gal/min. The method of working involved (1) simultaneous extraction, loading and transport of coal by water, &(2) roof support & movement of face equipment, suggested the use of two monitors, working on a staggered and balanced work cycle, in order to derive maximum benefit from the pumping plant & ancillary manpower. Working conditions were inevitably wet, but could be made tolerable by effective enclosure of the heading near the monitor and by use of protective clothing.

170

Frank. J.N., Chester, J.W., "FRAGMENTATION OF CONCRETE WITH HYDRAULIC JETS," BUMINES Report of Investigations 7572, 1971

KEY WORDS: Pump, Hydraulic Mining, Water Supply

ABSTRACT:

A factorially designed, hydraulic fragmentation experiment using a high-pressure water jet was conducted on concrete blocks. Three levels of pressure, standoff distance, and impact angle and two levels of traverse time and surface condition were used. Three variables were measured: depth of penetration, volume of material removed, and width of slot. Three stepwise linear regression equations were developed from the jet parameters and the physical properties of the concrete. The three basic equations, describing the significant jet parameters and physical properties, were developed into 15 predictor equations, five for each variable investigated. Direct regression equations were also developed for each variable investigated to show the result of increasing or decreasing each significant variable. Energy efficiencies were developed for the experiment and for each significant factorial variable.

173

Kessler, F.M., et al, "HIGH PRESSURE FLUID GUN," Patent 3,207,442, September 21, 1965

KEY WORDS: Pressure Intensifier

ABSTRACT: This invention relates to a gun adapted to shoot a stream or jet of fluid under very high pressures. This type of gun can be used for a variety of purposes, for example, cleaning scale and corrosion from metal surfaces.

175

Khrushchev, G.N., Kuklin, I.S., Sidorov, I.N., Shtukaturov, K.M., "HYDRAULIC CUTTING OF HARD COAL IN MINES OF THE KIZELOVSKI BASIN," Ugol, 1962.

KEY WORDS: Hydraulic Mining, Coal, Coal Hardness, Hydromonitor, Disintegration, Electrical Power, Production Rate, Productivity.

ABSTRACT: Laboratory experience with breaking coal samples using water jet at pressure of 70 to 120 atm; hydraulic pressure used underground ranged from 50 to 120 atm; dependence of efficiency of hydraulic mining on pressure and distance between nozzle and coal face.

176

Geier, V.G., "THEORETICAL PRINCIPLES FOR CALCULATING THE WATER JET FOR COAL BREAKING," Ugol Ukrainy, 1959.

KEY WORDS: Hydraulic Mining, Disintegration, Coal, Jet Characteristics

178R

Vezirov, S.A., Melikaslanov, L.S., Sudorov, O.A., "EKSPERIMENTAL'NYE ISSLEDOVANIYA DEYSTVIYA VYSOKONAPORNOY STRUI NA METALL I PORODY," Azerbaijan Neft Teserrufat, No. 7, 1966, pp. 29-34

("EXPERIMENTAL INVESTIGATIONS OF THE ACTION OF A HIGH-PRESSURE JET ON METAL AND ROCK")

KEY WORDS:

TRANSLATED

180K

Voitsekovskiy, B.V., "USSR SELECTED REFERENCES ON THE SUBJECT MATTER, 'INVESTIGATIONS OF THE BASIC PARAMETERS OF PULSED WATERJETS FOR CUTTING MINING WORKINGS'," No date.

KEY WORDS: BIBLIOGRAPHY

185R

Buldakov, I.I., "ZAVISIMOST' MEZHDU DEYSTVITEL'NOY I RASKHODNOY KONTSENTRATSIYAMI GIDROSMESI PRI GIDROTRANSPORTE V GORNZONTAL'NYKH TRUBAKH," Izvestiya Vysshikh Uchebnykh Zavedeniy, Geologiya i Razvedka, 1973, pp 176-179

KEY WORDS: Hydraulic Haulage, Slurry, Pipeline

194

Franz, Norman C., "HIGH VELOCITY LIQUID JET," U.S. Patent 3524,367, August 18, 1970

KEY WORDS: Jet Cutter

ABSTRACT:

A method for improving the cohesiveness of a high velocity liquid jet by dissolving a long chain polymer in the working liquid which is pressurized and ejected through a discharge nozzle as the liquid jet is described. The improved cohesiveness of the liquid jet particularly increases its depth penetration effectiveness into a work surface and reduces wetting when severing absorptive work materials. Particularly described is the use of a water soluble long chain polymer dissolved in water. The high velocity liquid jet is particularly useful for cutting, separating, piercing or otherwise penetrating various work surfaces to obtain a desired final form or configuration.

195

Cooley, W.C., "PULSED LIQUID JET DEVICE," U.S. Patent 3,784,103, January 8, 1974

KEY WORDS: Water Cannon

ABSTRACT:

A gas spring driven hydraulically cocked pulsed water jet device having a driving piston supported on a tubular member and reciprocable in a cylinder, the piston and tubular member arranged to be cocked by fluid pressure applied to a follower and adapted to be restrained in a cocked position by a locking means during the time the follower is retracted, the lock being arranged to be released to fire the device thereby driving a ram carried on the end of the tubular member into a water filled cavity whereupon the water is caused to be extruded at high pressure and high velocity through a nozzle.

Book 196 R

REFERENCES + TABLE OF CONTENTS TRANSLATED

Pokrovskae, V.N., "PUTI POVYSHENIE EFFEKTIVNOSTI GIDRO TRANSPORTA," Moscow, 1972, "WAYS OF INCREASING THE EFFECTIVENESS OF HYDRAULIC TRANSPORT"

KEY WORDS: Hydraulic Haulage, Slurry, Bibliography

198

TRW, "SYSTEMS ENGINEERING RELATED TO FUTURE UNDERGROUND COAL MINES," from "Underground Coal Mining in the United States - Research and Development Programs," (ML-48), for the Office of Science & Technology, NTIS PB-193-934, June 1970, pp. 6-129 and 6-136 thru 6-139

KEY WORDS: Hydraulic Mining, Coal, Hydraulic Haulage

199

Voitsekhovsky, B.V., "JET NOZZLE FOR OBTAINING HIGH PULSE DYNAMIC PRESSURE HEADS," Patent No. 3,343,794, September 26, 1967

KEY WORDS: Water Cannon

ABSTRACT:

The invention consists in a jet nozzle for obtaining high pulse dynamic pressure heads in installations which utilize the impact of a freely accelerated piston acting on a liquid and forcing the same through a nozzle having an internal cavity which is free of liquid at the instant of impact against the piston and in which the internal cavity is shaped so that the static pressure of the liquid braking the piston remains constant or approximately constant at the entry of the liquid into the internal cavity in the process of braking in order that the pressure is initially rapidly raised up to the maximum active pressure in the impact chamber and then is maintained constant.

212

Whitehead, K.L., duBreuil, F., "REVIEW OF RESPIRABLE DUST RESEARCH AT BCR," Presented at the American Mining Congress, 1973 Coal Convention, May 1973

KEY WORDS: Coal Dust

ABSTRACT: Review of Present status of six mining research programs at BCR (4 funded by USBM & 2 by BCR) on controlling respirable dust in mines. Laboratory tests

226

Richardson, C.A. & Thornton, W.A., "JET CUTTING TECHNOLOGY," A Bibliography, BHRA 1973.

KEY WORDS: BIBLIOGRAPHY

228

Chironis, N.I., Coal Age, "WATER JET MINING OF COAL - A PROMISING TECHNIQUE ON THE WAY," Coal Age, # 3, 1972, pp. 67-71

KEY WORDS: Hydraulic Mining, Coal, Rock, Jet Cutter, Longwall, Mining Machinery

ABSTRACT: Paper reviews breifly the results of the world-wide research in "water-jet" coal mining, also covers "hydraulic" coal mining and discusses work being carried on at the Univ. of Missouri in Rolla, where jet pressures of up to 20,000 psi in cutting of sandstone and 9000 psi in coal cutting are experimented with. In parallel the IIT Research Institute of Chicago is testing super-high pressures over 100,000 psi for mining of coal. Advantages of water jet in: unlimited wear life, efficienty operation, avoidance of sparks, prevention of coal dust problems damage from rebound, are discussed.

TRANSLATED

238R

Okhrimenko, V.A., "HYDROMONITOR OPERATOR, The," 2nd Edition, reworked & completed, Chapter IV, Isdatel'stvo, "Nedra," Moscow, 1967.

KEY WORDS: Hydromonitor, Kuzbass

239

Safety in Mines Research Establishment, "SAFETY RESEARCH," England, 1971

KEY WORDS: Coal, Coal Dust, Explosion Hazard, Spontaneous Combustion, Air Flow, Safety, Health, Jet Cutter

269

Hitachi America, Ltd., "HITACHI HYDROHOIST BROCHURES & LITERATURE," 1973

KEY WORDS: Hydraulic Hoist, Coal, Rock, Slurry.

277R

TRANSLATED

Nirtsiyev, "HYDRAULIC EXTRACTION OF COAL IN THE DONETZ BASIN," Excerpt from the UGOL' naya Promyshlennost' Ukrainskoy SSR, pp 301-331, Moscow 1969, Translated by Terraspace Dec. 1973.

KEY WORDS: Hydraulic Mining, Coal, Production Rate, Donbass, Odesskaya Komsomol' Skaya No. 2 Mine, Yanovskiy #3 Mine, Yanovskiy #4 Mine, Pioneer D1 Mine, Pioneer D2 Mine, Dewatering, Water Supply, Water Purification, Feeder, Hydraulic Hoist, Coal Hardness, Ordzhonikidzeugol No. 4 Mine, Roof, Floor, Pitching Coal Beds, Novo-Grodovka No. 3 Mine, Flat Coal Beds, Explosives, Krasnougol Colliery No. 160, Gidrougol, Tomashevskaya Yzhnaya, Mariya Glubokaya, Toshkovka No. 5-13, Dzerzhinskiy No. 12, Leninugol "Belyanka" No. 7, Krasnormeyskaya # 1 & 2, Kapitalnaya of the Proletarskugol No. 6, Samsonovski No. 1,

278

Buchanan, D.E., "LETTER TO W.C. COOLEY," Sept. 2, 1974 (University of Otago, New Zealand)

KEY WORDS: NEW ZEALAND, Hydraulic Mining, Coal Mining,

288

Schlick, Donald P., "AMERICAN IMPRESSIONS OF HEALTH AND SAFETY IN THE USSR COAL MINING INDUSTRY," Coal Age, January 1974, pp 56-61

KEY WORDS: Safety, Health, Roof falls, Spontaneous Combustion, Coal Dust, Methane, Air Flow (Ventilation),

301

Thompson, T.L., & Wasp, E.J., "COAL PIPELINES - A REAPPRAISAL," ASME, Preprint # 68-PWR-8, 7 pages

KEY WORDS: Coal, Pipeline, Slurry, Hydraulic Haulage, Economics, Black Mesa, Consolidation Coal Pipeline, Gilsonite, Western

ABSTRACT: An analysis of long distance energy transmission by coal pipeline, the paper also reviews coal pipeline state-of-the art technology, gives economic comparison with coal-unit trains and EHV power transmission, and discusses selection of power plant locations.

304

Pritchett, J.W., Riney, T.D., Nayfeh, A.A., "CALCULATION OF ROCK DISINTEGRATION PROCESSES UNDER COMBINED THERMAL AND HYDRAULIC LOADING," Presented at the 3rd Int'l Cong. on Rock Mechanics, Denver, Colo., September 1974,

KEY WORDS: Rock, Disintegration, Jet Cutter

ABSTRACT: A number of theoretical calculations are presented concerning the fluid flow, rock stress, heat transfer, and crack formation occurring when a heated rock target is struck by a high speed water jet. Comparisons are made with classical solutions and with experimental results where available and appropriate.

306

Consolidation Coal Co., "COAL PIPELINES," A Handbook of Facts on a New Industry, 1962, 21 pp

KEY WORDS: Coal, Pipeline, U.S.

309

Journal of Commerce, "CANADA PIPELINE SLATED FOR TRANSPORT OF COAL," Journal of Commerce, Dec. 15, 1969

KEY WORDS: Pipeline, Coal, Slurry, British Columbia

310

Wall Street Journal, "KAISER STEEL UNIT STUDIES SLURRY PIPELINE IN A BID FOR BRITISH COLUMBIA COAL TRAFFIC," Wall Street Journal, Dec. 16, 19

KEY WORDS: Slurry, Pipeline, British Columbia, Coal

313

Kingery, D.S., Doyle, H.N., Harris, E.J., Jacobson, M., Peluso, R.G., Shutack, J.B., and Schlick, D.P.,,"STUDIES ON THE CONTROL OF RESPIRABLE COAL MINE DUST BY VENTILATION," Bureau of Mines Mineral Industry Health Program, Tech. Prog. Rept. 19, Oct. 1969

KEY WORDS: Coal, Coal Dust, Ventilation

ABSTRACT:

Experiments initiated by the Bureau of Mines on August 26, 1969, and recent work of others, have demonstrated the effectiveness of ventilation for controlling concentrations of respirable coal mine dust. Substantial reductions in dust concentrations have been attained by increasing the volume and rate of air movement across the face and by controlling the airflow pattern.

Ventilation experiments conducted by the Bureau using high-pressure fans as auxiliary ventilation units showed that face-generated dust could be effectively controlled in five mines employing continuous mining machines. Additional data was obtained on industry installations in two mines using similar ventilation systems. By maintaining an airflow approaching 100 fpm across the entry, the experimental system reduced the concentration of respirable dust by factors as great as 6.4. In all mines where the system was used the face-generated dust concentrations were reduced to below 3 mg/m^3. Total respirable dust in two cases was above the 3 mg/m^3 value because of the dust content of the intake air. In some mines, depending upon the type of coal being mined and other dust control factors in use, it was possible to obtain concentrations of less than 2 mg/m^3.

315

Zachar, F.R., "FACTORS INFLUENCING THE SELECTION OF MINING SYSTEMS," Presented at the 1969 Coal Convention, American Mining Congress, Pittsburgh, Pa., May 4-7, 1969.

KEY WORDS: Economics, Coal, Productivity.

324

COOLEY, W.C., "CORRELATION OF DATA ON JET CUTTING BY WATER JETS USING DIMENSIONLESS PARAMETERS," 2nd ISJCT, Paper H-4, 1974

KEY WORDS: JET Cutter, Rock, Coal

SL 347

Cooley, W.C., "FABRICATION AND TESTING OF A WATER CANNON FOR ROCK TUNNELING EXPERIMENTS," NTIS No. PB-233-006/AS, Report for the Department of Transportation, Feb. 1974

KEY WORDS: Water Cannon, Rock

ABSTRACT: A water cannon was fabricated and tested to evaluate its effectiveness in disintegrating rock for potential application in hard rock tunneling. Experiments were conducted in the laboratory and in field tests in a dolomitic limestone mine and in a granitic gneiss quarry. As jet stagnation pressures were increased in the range from below 100,000 to 650,000 psi (700 to 4500 MN/m^2), the specific energy for disintegrating rock generally decreased, except for some evidence of a minimum specific energy for Barre granite at a jet pressure near 400,000 psi (2800 MN/m^2). The water cannon tests obtained specific energy values which are competitive with the best rolling cutter tunneling machines. Results to date indicate that practical application of water cannons has high potential in rock tunneling.

351

Brook, N., "WATER JET CUTTING LIKELY TO PLAY A MAJOR ROLE IN ORE MINING," Mining Magazine, June 1972, pp. 450-452

KEY WORDS: Jet Cutter, Pulsating Jet, Pump, Coal, Rock, Monitor, Bituminous Coal, Roof Support, Hydraulic Mining

ABSTRACT: A delegate and contributor to the First International Symposium on Jet Cutting Technology held at the University of Warwick, United Kingdom, April 1975 describes the significance of jet cutting to the mining industry at the present time, and possible future developments in the technique's practical use.

381

Peters, J.F. & Summers, D.A., "PRELIMINARY EXPERIMENTATION ON COAL CUTTING IN THE PRESSURE RANGE 35 to 200 MN/m^2," 2nd ISJCT, Paper H2, 1974.

KEY WORDS: Hydraulic Mining, Coal, Disintegration, Longwall

Summary

This paper describes results of a factorial experiment on coal cutting at a traverse speed of 5 metres/min. with water jets at pressures between 35 to 200 MN/m^2 and nozzle diameters in the range from 0.5 to 1 mm. These results fill a gap in the existing results on coal cutting with water jets and form the basis for the design of a coal cutting machine.

The interrelationship between pressure and nozzle diameter as this effects the specific energy of cutting coal is investigated and it is shown that for a given pump horsepower it is more effective to use a large nozzle diameter and accept a lower effective jet pressures than to increase the jet pressure by use of a smaller nozzle.

382

Glass, G.B., "WYOMING: PRODUCTION SEEN DOUBLING BY 1976," Coal Age, Vol. 79, No. 5, May 1974, pp 96-107

KEY WORDS: Coal, Western U.S., Water Supply

386

Singh, M.M., Labus, T.J., Finlayson, L.A., "FIELD TESTING OF WATER JETS FOR COAL BREAKAGE," 2nd ISJCT, Paper J1, 1974

KEY WORDS: Coal, Disintegration, Pump, Pressure Intensifier, Coal Dust, Noise

Summary

A continuous water jet at pressures of 345 MN/m^2 (50,000 psi) and 690 MN/m^2 (100,000 psi) was operated in an open pit coal mine and the rates of coal production determined. Two traverse speeds, two index distances, and two nozzle diameters were investigated during these tests. The experiments were performed within an enclosure and the dust and noise generated were monitored. The results were quite encouraging, inspite of the lack of optimum conditions for the tests. This paper comments on the data obtained. A design for a continuous mining machine using the water jet technique is briefly presented.

387

Harzer, H., Maurer, H., & Benedum, W., "THE DEVELOPMENT AND PERFORMANCE OF TWO HYDRO-MECHANICAL LARGE-SCALE WORKINGS IN THE WEST GERMAN COAL MINING INDUSTRY," 2nd ISJCT, Paper J2, 1974

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Safety, Coal, Production Rate, Productivity, Cost Per Ton, Jet Characteristics, Mining Plan, Hydraulic Hoist, Carl Funke Mine, Gneisenau Mine, Germany

ABSTRACT:

Since 1962, "wet" coal getting methods have been tried under the conditions of the Ruhr District. The equipment for coal getting and for haulage and winding of the mixture of coal and water have been developed up to the practical stage.

The first monitor, with a weight of 270 kp, was too heavy and bulky. Only the third prototype with 90 kp was adjustable and easily handled. By improvements of the monitors and nozzles, the effective radius of action could be increased from initially 8 m to more than 25 m now. Investigations showed that optimum results could be reached, in case of small distances to the coal face, by small jet diameters (17 to 20 mm) and, in case of larger distances to the coal face, by jet diameters of 22 to 27 mm. Material and the surface properties of the nozzles also have a decisive influence on the quality and the efficiency of the water jet.

In large-scale underground trials as from 1971, the organisational and safety aspects arising from the co-action of 4 to 5 high-pressure pumps to 15 to 25 monitors in a widely branched net of high-pressure pipes had to be investigated.

The methods and the equipment developed during these trials have today reached the practical stage. The results of hydromechanical coal getting are comparable to those of the best fully mechanised coal faces in flat formations. An underground output per manshift of 8 to 10 tons and cost savings of 15 to 20 DM per ton of saleable output are possible.

388

Ljatkher, V.M., Dzugaev, V.V., "IMPACT METHOD OF HYDRO-IMPULSE BREAKING OF ROCKS," 2nd ISJCT, Paper J4, 1974

KEY WORDS: Rock, Pulsating Jet, Jet Characteristics

389

Robeck, R.C., "COLORADO: ENERGY SHORTAGES PROMPT NEW LOOK AT POTENTIAL COAL MARKETS," Coal Age, Vol. 79, No. 5, May 1974, pp 79-86

KEY WORDS: Coal, Western U.S., Bituminous, Anthracite

391

Kaiser Resources, Confidentiality Agreement Required by Kaiser Resources regarding Crow's Nest Mine. (Received from Don Hume 7/10/74.)

KEY WORDS: Hydraulic Mining, Crows Nest Mine, Canada

401

Thurlow, E.E., "WESTERN COAL," Mining Engineering, Vol. 26, # 5, 1974, pp. 30- 33

KEY WORDS: Coal, Western U.S. Seam Thickness

ABSTRACT: The content of this paper is confined to the coal fields and recent developments in eastern North Dakota. Discussed are coal problems, the importance of water supply, geology, and coal itself.

404R

Kuzmich, A.S., "BLIZHAISHIE ZADACHI RAZVITIYA GIDRAVLICHESKOGO SPOSOBA DOBYCHI UGLYA," Ugol # 9, 1964, pp 1-5
"NEAREST PROBLEMS OF THE DEVELOPMENT OF THE HYDRAULIC MINING OF COAL"

KEY WORDS: Hydraulic Mining, Coal, Kuzbass

ABSTRACT: Survey of hydraulic coal mining projects in Soviet Union which proved to be economically more efficient than conventional mining operations; data on performance of various hydraulic coal mines, equipment used, remote control of hydraulic operations, and hydraulic transportation of coal.

405R

Sokolov, V.I., Malyshev, V.P., Stepanov, V.F., "SOVERSHENSTVOVANIE TEKHNOLOGII UGLEDOBYCHI I POVYSHENIE PROIZVODITELNOSTI TRUDA NA GIDRO-SHAKHTE 'POLYSAEVSKAYA-SEVERNAYA'", Ugol # 9, 1964, pp 6-9
"IMPROVEMENT OF COAL PRODUCTION TECHNOLOGY AND INCREASE IN LABOR PRODUCTIVITY AT HYDROMINE 'POLYSYEVSKAYA-SEVERNAYA'"

KEY WORDS: Hydraulic Mining, Polysayevskaya-Severnaya, Coal, Kuzbass

ABSTRACT: 10 yr experience with hydraulic mining of two coal beds, 2.4 and 3.4 m thick, and dipping at 6 to 8°; during early period mining involved combination of blasting with hydraulicking of coal; hydraulic coal getting was introduced in 1957; reconstruction of mine is expected to increase annual output of coal from 450,000 to 750,000 tons and average output/miner mo will reach 200 tons; layout of development workings and dewatering of coal.

406R

Buravlev, A.I., Karlin, P.I., "PUTI POVYCHENIYA NADEZHNOSTI TEKHNOLO-GICHESKOGO PROTSESSA NA YANOVSKOM GIDRORUDNIKE," Ugol # 9, 1964
"WAYS OF INCREASING THE RELIABILITY OF THE TECHNOLOGICAL PROCESS IN THE YANOVSKIY COLLIERY"

KEY WORDS: Hydraulic Mining, Coal, Yanovskiy Mine, Donbass

ABSTRACT: Analysis of difficulties encountered in operation of hydraulic mine designed to produce 3,000,000 tons of anthracite per annum; effect of system of mining and rate of driving development workings on effic-iency of hydraulic mining.

407R

Shapovalov, A.D., Neyenburg, V.E., Gumennik, Ya.Ya., "OPYT RABOTY GIDRORUDNIKA PIONER (DONETSKII BASSEIN)" Ugol # 9, 1964, pp 14-17
"OPERATING EXPERIENCE OF THE HYDROMINE 'PIONEER' (DONBASS)"

KEY WORDS: Hydraulic Mining, Coal, Donbass

ABSTRACT: Mine was designed to produce 900,000 tons of coal per annum, however, in 1963, average daily output was only 1530 tons; monthly output per miner was 30.9 tons; account of performance of hydraulic equipment.

408R

Golland, E.B., Terekhin, A.I., "NEKOTORYE VOPROSY SOVERSHENSTVOVANIYA TEKHNOLOGII GIDRAVLICHESKOY DOBYCHI UGLYA NA GIDROSHAKHTE 'KRASNOGORSKAYA' I OSVOENIE PROETNYKH POKAZATELEY," Ugol # 9, 1964, pp 18-22
"SOME QUESTIONS RELATING TO TECHNOLOGY IMPROVEMENT OF HYDRAULIC MINING OF COAL IN THE HYDROMINE 'KRASNOGORSKAYA' AND MASTERING OF PROJECT INDICATORS,"

KEY WORDS: Hydraulic Mining, Coal, Krasnogorskaya, Kuzbass, Donbass, Pioneer D-1 & D-2

ABSTRACT: Some problems of improving operations of hydraulic coal mining in Krasnogorskaya mine and reaching coals outlined in project; six coal beds in anticline dip 45 to 80° and range of 1.5 to 8.5 m in thickness; system of mining involved hydraulic sublevel coal getting with controlled discharge; equipment used and roof control; suggested changes in operations expected to increase efficiency of mining.

409R

Krivchenko, A.A., Tsyapko, N.F., "SOVERSHENSTVOVANIE GIDROOTBOIKE UGLYA," Ugol # 9, 1964, pp 23-25
"IMPROVEMENT OF HYDRAULIC BREAKING OF COAL,"

KEY WORDS: Hydraulic Mining, Coal, Disintegration

ABSTRACT: Efficiency of hydraulic mining as determined by amount of energy used to mine definite amount of coal, taking into account coefficient characterizing coal failure; improvement of hydraulic mining efficiency through use of automatic and remotely controlled monitors.

TRANSLATED

410R

Nikonov, G.P., Karachentsev, "ISSLEDOVANIE GIDROOTBOIKI UGLYA TONKIMI VYSOKONAPORNYMI STRUYAMI," Ugol # 9, 1964, pp 26-27
"INVESTIGATION OF HYDRAULIC BREAKING OF COAL BY THIN HYDROMONITOR JETS,"

KEY WORDS: Hydraulic Mining, Coal, Disintegration, Hydromonitor, Jet Cutter, Pump, Odesskaya-Komsomolskaya Colliery No. 2, Coal Hardness, Donbass, Anthracite

ABSTRACT: Experiments with use of thin water jets, generated at pressures up to 500 atm, to make concentric cuts in coal massif with subsequent use of water jets at 30 to 40 atm to loosen coal; results of testing various types of monitors.

411R

Teodorovich, B.A., "SOVERSHENSTVOVANIE SISTEM RAZRABOTKI PRI GIDRODOBYCHE," Ugol # 9, 1964, pp 28-31
"IMPROVEMENT OF WORKING OUT SYSTEMS IN HYDRAULIC MINING"

KEY WORDS: Hydraulic Mining, Coal

ABSTRACT: 29 systems were designed, 14 of which are already used in hydraulic coal mines; characteristics given of longwall system retreating to dip, room and pillar system and sublevel hydraulic mining.

412R

Prognimak, D.Ya., "MEKHANOGIDRAVLICHESKAYA VYEMKA UGLYA," Ugol # 9, 1964, pp 32-33
"MECHANOHYDRAULIC EXTRACTION OF COAL"

KEY WORDS: Hydraulic Mining, Coal

413R

Kodentsov, A.Ya., Savkov, K.V., "PROVEDENIE PODGOTOVITELNYKH VYRABOTOK NA GIDROSHAKHTAKH," Ugol # 9, 1964, pp 33-37
"CONDUCTING DEVELOPMENT WORKINGS IN HYDROMINES"

KEY WORDS: Hydraulic Mining, Coal, Mine Development

ABSTRACT: Experience with driving of development workings in Donets basin using special cutter loaders and supports; details on construction of coal handling drift under various geological conditions

414R

Timoshenko, G.M., Gruba, V.I., Logvinov, N.G., Permyakov, N.G., Scavutskii, S.O., Shmorin, M.Ya., "AVTOMATIEATSIYA TEKHNOLOGICHESKIKH PROTESSOV PRI GIDRODOBYCHE," Ugol # 9, 1964, pp 37-42
"AUTOMATION OF TECHNOLOGICAL PROCESSES IN THE COURSE OF HYDRAULIC MINING,"

KEY WORDS: Hydraulic Mining, Coal

ABSTRACT: Hydraulic system includes h-p pumping station, water pipe lines, monitors, channels and pipes for coal slurry, coal pumping stations, coal lifts, and coal preparation plant; design of equipment for automatic control of various elements of hydraulic system.

415R

Smoldyrev, A.E., "GIDRAVLICHESKIY TRANSPORT NA GIDROSHAKHTAKH I PUTI EGO SOVERSHENSTVOYANIYA," Ugol # 9, 1964, pp 42-45
"HYDRAULIC TRANSPORT IN HYDROMINES AND WAYS TO ITS IMPROVEMENT"

KEY WORDS: Hydraulic Haulage, Coal, Hydraulic Mining, Wear & Abrasion

ABSTRACT: Hydraulic transportation in hydraulic mines and means of improvement; existing equipment for hydraulic handling of coal able to create head of 350 to 500 m and having capacity up to 2000 cu m/hr; possibility to increase wear resistance of equipment and selection of appropriate hydraulic system involving use of new equipment.

416R

Pavlov, M.S., Belous, V.G., Zelik, V.I., "VSPOMOGATELNYI TRANSPORT PO GORIZONTALNYM I NAKLONNYM VYRABOTKAM GIDROSHOKHT," Ugol # 9, 1964, pp 46-48
"AUXILIARY TRANSPORT OVER HORIZONTAL AND INCLINED HYDROMINE WORKINGS"

KEY WORDS: Hydraulic Haulage, Coal

417R

Geyer, V.G., "Galushko, M.K., Mulin, N.V., "SISTEMY GIDROPODBEMA UGLYA IZ SHAKHT ERLIFTNYI PODBEM I PODBEM S KAMERNYMI PITATELYAMI", Ugol # 9, 1964, pp 49-53
"AIRLIFT AND HOISTING WITH CHAMBER FEEDERS"

KEY WORDS: Hydraulic Hoist, Airlift, Feeder, Coal, Donbass, Hydraulic Haulage, Productivity

ABSTRACT: Airlift and lift equipped with container feeders; experience with hydraulic handling of coal to surface under conditions of Donbass; pressure in air lift system never exceeds 8 atm; when vertical distance of transportation is greater than 300 m, additional stages of air lift are installed; in another system of lift, volume of containers-feeders ranges from 0.5 to 120 cu m; sets of feeders make possible vertical handling of coal along vertical distance of 320 m; capacity of containers-feeders reached 100 to 120 tons of dry coal/hr.

418R

Melamed, Z.M., "PODBEM SO SHNEKOVYMI PITATELYAMI," Ugol # 9, 1964, pp 53-55
"HOISTING WITH SCREW FEEDERS"

KEY WORDS: Hydraulic Hoist, Coal, Feeder, Hydraulic Haulage, Donbass

ABSTRACT: Lift with screw feeders; results of testing h-p and l-p screw feeder supplying coal to hydraulic handling system under conditions of Donets basin; study was concerned with rate of filtration of liquid through friable compressed material, minimum required rate of coal supply to hydraulic system, and dimensions of screw feeder serving hydraulic lift.

419R

Ofengenden, N.E., Il'in, A.E., "SOVERSHENSTVOVANIE UGLESOV I NASOSOV DLYA GIDROSHAKHT," Ugol # 9, 1964, pp 55-59
"IMPROVEMENT OF SUCKERS AND PUMPS FOR HYDRAULIC MINES"

KEY WORDS: Hydraulic Mining, Pump, Hydraulic Hoist

ABSTRACT: Improvement of coal pumps and pumps for hydraulic mines, technical characteristics of pumps for hydraulic transportation of coal; coal makes up to 20% of mixture handled by pumps at rates of 350 to 2000 cu m/hr and creating heads of 80 to 450 m

420R

Nikitin, V.N., "POVYSHENIE IZNOSOSTOIKOSTI I NADEZHNOSTI GIDROOBORUDOVANIYA Ugol # 9, 1964, pp 59-61
"INCREASE OF DURABILITY AND RELIABILITY OF HYDRAULIC EQUIPMENT"

KEY WORDS: Hydraulic Mining, Coal

421R

Guterman, V.M., Garber, M.E., Gamol'skaya, Z.M., "O POVYSHENII IZNOSOSTOIKOSTI DETALEI OBORUDOVANIYA RABOTAYUSHCHEGO V GIDROABRAZIVNOI SREDE'", Ugol # 9, 1964, pp 61-63
"INCREASE IN DURABILITY OF PARTS OF THE EQUIPMENT OPERATING IN HYDRO-ABRASIVE MEDIUM."

KEY WORDS: Hydraulic Haulage, Coal, Wear and Abrasion, Slurry

ABSTRACT: Reliability and wear resistance of hydraulic equipment; recommendations concerning use of wear resistant materials and means of protection against wear of parts in multistage coal pumps and protection against wear of parts in multistage coal pumps and coal-handling valves, pipes, and chutes; selection of steel and alloys for manufacture of wear resistant parts in hydraulic equipment.

422R

Kollodiy, K.K., Borodulin, V.A., Nazarov, P.G., "PEREPABOTKA UGLEI DOBYVAEMYKH GIDRAVLICHESKIM SPOSOBOM," Ugol # 9, 1964, pp 64-69
"REWORKING OF COALS EXTRACTED BY THE HYDRAULIC METHOD"

KEY WORDS: Hydraulic Mining, Coal, Coal Preparation

423R

Tolkatser, D.Ya., "ISSLEDOVANIE EKONOMICHESKOI EFFEKTIVNOSTI SKHEM RAZMESHCHENIYA I TRANSPORTIROVANIYA PORODY PRI GIDRODOBYCHE," Ugol # 9, 1964, pp 69-72
"INVESTIGATION OF THE ECONOMIC EFFICIENCY OF SCHEMES OF DISPOSITION AND TRANSPORTATION OF ROCKS IN THE COURSE OF HYDRAULIC MINING"

KEY WORDS: Economics, Hydraulic Mining, Coal, Hydraulic Haulage, Rock Hydraulic Stowing

ABSTRACT: Rock handling in hydraulic mines; investigation of economic efficiency of systems of distribution and transportation of rock under conditions of hydraulic mining; means of hydraulic transportation and lift of waste rock; stowage of waste rock in hydraulic mines.

424R

Borisenko, L.D., "SREDSTVA GIDRAVLICHESKOGO TRANSPORTA I PODBEMA PORODY," Ugol # 9, 1964, pp 72-74
"MEANS OF HYDRAULIC TRANSPORT AND HOISTING"

KEY WORDS: Hydraulic Haulage, Hydraulic Hoist, Coal

425R

TRANSLATED

Muchnik, V.S., "VOPROSY TEORII PROEKTIROVANIYA GIDROSHAKHT," Ugol # 9, 1964, pp 75-80
"QUESTIONS OF THEORY OF HYDROMINE PROJECTING"

KEY WORDS: Hydraulic Mining, Coal, Mining Plan, Economics, Kuzbass Productivity, Fluming, Hydraulic Haulage

ABSTRACT: Formula is derived for calculation of miner's labor efficiency in given section of hydrualic coal mine; selection of mine field dimensions taking into consideration factors affecting labor efficiency.

TRANSLATED

426R

Perov, I.V, "ULUCHSHIT' PROEKTIROVANIE GIDROSHAKHT I USKORIT'SOZDANIE IENOSOTOIKOGO GIDROOBORUDOVANIYA," Ugol # 9, 1964, pp 80-82
"IMPROVING HYDROMINE PLANNING AND ACCELERATING THE CREATION OF WEAR-RESISTANT HYDRAULIC EQUIPMENT"

KEY WORDS: Hydraulic Mining, Coal, Economics, Mining Plan., Donbass , Pioneer Mine, Yanovskiy Mine, Dewatering, Odesskaya No.2 Mine, Wear & Abrasion, Privol'nyanskaya-Severnaya Mine #7, Belyanka No.5, Productivity, Anthracite, Hydraulic Hoist, Krosnoormeyskaya No. 2, Samsonovskaya No. 1, Molodogvardeyskaya mine,Coal pumps, Flume

427R

Abramov, Yu.G., "PROEKT GIDROSHAKHTY S RAZDEL'NOI VYDACHEI KRUPNOGO KLASSA ANTRATSITA I GIDROTRANSPORTOM SHTYBA NA ELEKTROSTANTSIYU," Ugol # 9, 1964, pp 82-86
"PROJECT OF HYDROMINE WITH SEPARATE OUTPUT OF COARSE RANK-ANTHRACITE AND HYDRAULIC TRANSPORT OF CULM TO THE ELECTRIC POWER PLANT"

KEY WORDS: Hydraulic Mining, Coal, Hydraulic Haulage, Anthracite, Donbass, Productivity, Conveyor

ABSTRACT: Planning hydraulic mine with separate hoisting of lump anthracite and hydraulic transportation of fines to electric power plant; it is intended to increase annual output of hydraulically mined coal in Donbass to 12,600,000 tons; this involves construction of four hydraulic mines with annual production of 1,800,000 to 3,000,000 tons of anthracite; anthracite of plus 6 mm size will be hoisted in cages, skips, and by means of conveyors, while hydraulic lift will handle fines of less than 6 mm in diameter; design of hydraulic systems and methods of mining.

428R

Delyagin, G.N., Kantorovich, B.V., Karachentsev, V.I., Onishchenko, A.G., "SZHIGANIE VODOUGOL'NYKH SUSPENZII NA OPYTNO-PROMYSHLENNOI USTANOVKE," Ugol., # 9, 1964, pp 86-87
"BURNING COAL SUSPENSIONS IN WATER ON A PILOT-INDUSTRIAL INSTALLATION"

KEY WORDS: Slurry, Coal

429R

Gan, G.S., Grechishkin, D.K., Bondar', V.A., Skripka, V.K., Boldyrev, E.N., Pashchenko, N.P., Syroezhkin, P.V., Klimov, D.D., "GIGIENICHESKIE USLOVIYAI BEZOPASNOST' TRUDA NA DONETSKIKH GIDROSHAKHTAKH," Ugol # 9, 1964, pp 87-88
"HYGIENIC CONDITIONS AND SAFETY OF LABOR IN DONETS' HYDROMINES "

KEY WORDS: Coal, Coal Mining, Safety

430R

Lindenau, N.I., Myasnikov, A.A., "NEKOTORYE VOPROSY POVYSHENIYA BEZOPASNOSTI RABOT NA GIDROSHAKHTAKH KUZBASSA" Ugol # 9, 1964, pp 89-91
"SOME QUESTIONS OF WORK SAFETY IMPROVEMENT ON KUZBASS' HYDRAULIC MINES"

KEY WORDS: Hydraulic Mining, Coal, Coal Mining, Safety, Kuzbass

431R

Gokhman, B.M., "O NORMALIZATSII TEPLOVYKH USLOVII V VYRABOTKAKH GLUBOKIKH GIDROSHAKHT," Ugol # 9, 1964, pp 91-93
"ON THE STANDARDIZATION OF THERMAL CONDITIONS IN THE WORKINGS OF DEEP HYDROMINES"

KEY WORDS: Hydraulic Mining, Coal, Temperature

432R

Surnachev, A.A., Smetana, N.Ya., "GIDRAVLICHESKAYA DOBYCHA UGLYA V CHEKHOSLOVAKII," Ugol # 9, 1964, pp 93-96
"HYDRAULIC MINING OF COAL IN CZECHOSLOVAKIA"

KEY WORDS: Hydraulic Mining, Coal, Czechoslovakia

ABSTRACT: Experience in hydraulic mining of 0.6 to 0.7 m thick coal bed in Ostrava basin; layout of hydraulic system, equipment used, data on performance of hydraulic coal mining, and plans for future development.

433R

TRANSLATED

Khvoshevskii, N.M., Litvinenko, A.S., "SYSTEM OF SUBLEVEL HYDROBREAKING OF COAL WITH FLEXIBLE METAL COVERING IN THE KOKSOVAYA COLLIERY," Ugol # 1, 1965, pp 24-27
"SISTEMA PODETAZHNOY GIDROOTBOYKI S GIBKIM METALLICHESKIM PEREKRYTIYEM V SHAKHTE KOKSOVAYA-1"

KEY WORDS: Hydraulic Mining, Mining Plan, Coal, Koksovaya # 1, Donbass, Roof support, Coal Hardness, Roof, Floor, Explosives, Hydraulic Hoist, Sluicing (Flume), Economics, Production Rate, Productivity, Cost Per Ton

ABSTRACT: Experience with mining thick coal bed in Kuznetsk basin; coal bed ranges in thickness from 15 to 65 m; angle of dip is 70 to 80°; heights of sublevels proved to be most economical when they ranged from 4 to 5 m.

434R

Aleinikov, A.A., "DETERMINATION OF OPTIMUM PRESSURE AND PRODUCTIVITY OF HYDROMONITOR BREAKING DOWN OF COAL," Akademia Nauk Ukrainskoi SSR, TRVOY Institute Gornogo Dela, No. 13, Voprosy Gornogo Dela, pp 32-47, Kiev, 1963 "OPREDELENIYE OPTIMAL'NOGO NAPORA I PROIZBODITEL'NOSTI GIDROMONITORMOY OTBOYKI UGLYA"

KEY WORDS: Hydraulic Mining, Hydromonitor, Coal, Mining Plan

ABSTRACT:

Due to the fact that a large number of influencing factors and their close relationship hinder considerably the determination of optimum parameters of working out and technological schemes in hydromechanization, the Author indulges in very elaborate calculations, taking into account some of the data provided by VNIIGidrougol' and DonUGI. Thus, the elementary and average hydromonitor productivity and optimum pressure are obtained. Despite the fact that subsequent research can possibly provide some more precision, it is felt that it could not influence a great deal on the present method of determination of hydromonitor breakage parameters.

References: 1. N. F. TSYAPKO, A. M. Chapka Gidrootboyka uglya na podzemnykh rabotakh (Hydraulic Breaking of Coal in Underground Workings). Gosgortekhizdat, 1960. 2. Report by Donugi for the year 1961 ...

435R

Bashkov, A.I., "INSTITUTU DONGIPROUGLEMASH - 25 LET," UGOL # 10, pp. 69-70, 1968.
"25th ANNIVERSARY OF THE DONIPROUGLEMASH"

KEY WORDS: Hydraulic Mining, Coal, Donbass

TRANSLATED

437R

Nozhkin, N.V., Kostin, V.A., Terent'ev, B.D., Gromov, V.A., Savenko, L.V., Shalnov, N.A., "DEGASSING WITH HYDRAULIC DISMEMBERMENT OF A GROUP OF SEAMS IN THE DONBASS CONDITIONS," UGOL # 5, 1969, pp 65-68
"DEGAZATSIYA S GIDRAVLICHESKIM RASCHLENENIYEM GRUPPY PLASTOV V USLOVIAKH DONBASSA"

KEY WORDS: Coal Mining, Mining Plan, Coal, Methane, Coal Dust, Longwall, Safety

ABSTRACT: It is shown by practical application that using an appropriate advance hydraulic disjunction of a group of seams, degassing of a coal-bearing massif can be achieved at deep horizons without even the necessity of evacuating the water present in it. On the average gas abundance of a winning face near the hole was lowered by 45%, and immediately near the hole - twice; gas emission behind the cutting machine dropped by 5- 8 times and dustiness - by two times. To improve further the realization of directed hydraulic disjunction of seams through vertical holes, concomitant pumping of water and increase of the radius of influence of the hole, also applying vacuum evacuation, are indicated.
Principal Bibliographic Reference* : KSENOFONTOVA, A. I. NOZHKIN, N.V. Opyt zablagovremennoy dgazatsii s ispol'zovaniyem sposoba napravlennogo gidravlicheskogo raschleneniya plasta (Experiment of Advanced Degassing with the Application of the Method of Directed Hydraulic Disjunction of the Seam). "UGOL'" No.2, 1966.

TRANSLATED

438R

Shavlovskii, S., "IMPROVEMENT OF JET EFFICIENCY,""POVYSHENIE EFFECTIVNOSTI STRUI," Sovietskii Shakhter, No. 6, pp 32, 1965.

KEY WORDS: Hydraulic Mining, Hydromonitor, Coal, Jet Characteristics, Yanovskiy No. 4, Ordzhonikidzeugol Trust No. 4, Donbass

439R

Glushikhin, F.P., Bessonnikov, V.A, Pekarskii, D.G, "REZHIM RABOTY MECHANIZI-RAVANNYKH GIDRAVLICHESKIKH KREPEI," ("POWERED HYDRAULIC SUPPORTS,") UGOL No. 5, May 1969, pp 43-46

KEY WORDS: Hydraulic Roof Supports

ABSTRACT:

These experiments were carried out in a series of mines according to the theoretical work by Kuznetsov (ref.2). Because of the peculiarities of powered supports and of nonuniformity of manifestations of mine pressure, the operational resistance must exceed the maximum actual loads on the roof by 1.3 to 1.5 times. The averaged magnitudes of loads and roof yielding did not reflect the true interaction's regularity with the roof. The above averaging is valid only for the cycle of support operation. The degree of irregularity of mine pressure manifestation and the values of roof shifts are the two most objective factors characterized by a curve of roof and support interaction.. The method described allows to define the boundaries of the safe lowering of the resistance and support operation conditions as early as at the outset of experiments. (Relevant ref.(2)): S. T. KUZNETSOV.- Voprosy metodiki i rezul'taty eksperimentov po posledovatel'nomu snizheniyu soprotivleniya mekhanizirovannykh krepey. (Questions of Method and Results of Experiments on the Sequential Lowering of Resistance of Powered Supports). Trudy VNIMI, sb.73, L. Izd-vo VNIMI, 1968.

440R

Lukyanov, P.F., Pleskov, P.M., Bolotov, R.P., "PROYAVLENIYA GORNOGO DAVLENIYA PRI RAZRABOTKE MOSHCHNOGO KRUTOGO PLASTA NAKLONNYMI SLOYAMI S GIDROZAKLADKOI GOREL'NIKAMI," ("MANIFESTATIONS OF ROCK PRESSURE WHEN WORKING OUT A STEEP SEAM BY INCLINED STRATA WITH HYDRO-STOWING BY MATERIALS FROM CONE-SHAPED DUMPS,") UGOL # 8, 1968, pp. 41-42

KEY WORDS: Hydraulic Stowing

ABSTRACT:

The hydraulic stowing by waste pile material has a series of advantages over stowing with crushed rocks. These advantages are described. The experiment was carried out on seam IV of the "Krasnogorskaya" hydromine. Comparing this experiment's data with those conducted by VNIMI with crushed hard rock stowing, it should be noted that the zone of coal pillar's squeeze, the shift of its borderline part and the absolute shifts of the roof with waste pile material stowing were found to be 2 to 3 times smaller than with crushed hard rock stowing.

441R

Boitsov, Yu.P., Pokrovskaya, V.N., "ON THE CONSISTENCY OF THE PULP FOR HYDRO-STOWING PACKING," Ugol # 9, 1968, pp. 38-40
"O KONSISTENTSII PUL'PY DLYA GIDROZAKLADKI"

KEY WORDS: Hydraulic Haulage, Slurry, Dewatering, Hydraulic Stowing

ABSTRACT:

Since the effectiveness of the work of the stowing complex in case of hydraulic stowing depends in many respects on pulp or slurry consistency, the latter must be assured in various conditions, which are described and computed in this work. Various types of thickeners are considered but tests have shown that the two-stage schemes of thickening are the most efficient. The operation efficiency of a stowing installation is also dependent on the constancy of slurry consistency, which is assured by its permanent control. The latter is also examined in detail.

TRANSLATED

449R

Bretosh, R.A., & Stetsenko, Z.A., "K VOPROS USTANOVLENIA PARAMETROV GIDRAVLICHESKOI DOBYVAEMOSTI UGLEI DONETSKOGO BASSEINA," pp 38-47
"QUESTION OF ESTABLISHING PARAMETERS OF HYDRAULIC 'EXTRACTABILITY' OF DONETZ BASIN COALS"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Water Supply, Distinegration, Jet Characteristics, Coal Hardness

ABSTRACT:

This paper studies in depth the parameters allowing to determine the advisability of switching from the standard to hydraulic exploitation of coal. While even at the present level of hydraulic production of coal, the advantages of the method have been clearly established, it is obvious that the latter can be achieved only in the case, when the calculation and the projecting of hydraulic breaking and transport are scientifically substantiated. The principal conclusion of the authors is that, whencalculating the required water pressure it is neccesary to start from the value of the parameter K, which reflects the nature of hydraulic disintegration of coals and takesinto account the state of the coal in the massif. The establishment of the parameter K must be made for all coal seams of the Donbass. The classification of the seams by parameter K provides the possibility to substantiate scientifically the solution of the questions of projecting hydraulic breaking either for new mines under construction or for mines being transferred from standard to hydraulic method of exploitation. (In reading the whole text it was impossible to define exactly what the parameter K really is). There are 9 references all dated 1960 or earlier. It seems that the following two are the most essential: 1. N. F. TSYAPKO, A. M. CHAPKA. Gidrootboyka yglya na podzemnykh rabotakh (Hydraulic Breaking of Coal in Underground Workings, Ugletekhizdat, 1960 and 9. IGD AN SSSR Report or Account on the theme No. 38, stage 2, M. 1960. (IGD AN SSSR Otchet po teme No.38, etap 2, M. 1960).

TRANSLATED

450K

Nikonov, G.P., Ishchuk, I.G., "K Voprosu Otsenki Razrushaemosti Uglya Struèi Gidromonitora," pp 27-31, Ugol # 1, 1965
"ON THE QUESTION OF ESTIMATING THE FRAGMENTATION CAPABILITY OF COALS BY HYDROMONITOR JETS"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Coal Permeability Coal Hardness, Water Injection, Donbass, Disintegration, Zimoryevskiy #63, Nagolichinskaya # 4, Odesskaya # 2, Dayevskaya # 3, Privol'nayanskaya Severnaya # 4

ABSTRACT: Problem of evaluating break-down of coal by jet of hydraulic monitor; experiments with coal in place indicate that water-absorbing properties of coal bed are general factor characterizing physical and mechanical properities of coal; design and use of device for measuring permeability of rocks in place; formula is derived for determination of monitor efficiency depending on specific absorption of water by coal bed under given head at nozzle.

451

Hitachi, America, "TEST ON AUTOMATING THE HYDRAULIC TRANSPORT OF RAW COAL AT SUNAGAWA COLLIERY," Coal Mining Research Center (Japan, pp 1-33, Report 68.

KEY WORDS: Hydraulic Haulage, Hydraulic Hoist, Coal, Economics, Sunagawa Mine, Japan

452

Hitachi, America, Uchida, K., Yamaguchi, T., Yamada, Y., Sakamoto, M., "INVESTIGATION OF HYDROHOIST FOR PUMPING BAUXITE SLURRY," Hitachi Review, Vol. 19, No. 5, pp 185-190

KEY WORDS: Hydraulic Hoist, Rock, Slurry, Japan

ABSTRACT: Research and development were successful on a new type of hydrohoist for pumping high-temperature bauxite slurry. This slurry hydrohoist makes it possible to pump slurry at high-pressure, with high efficiency and without such troubles as abrasion. Such pumping is impossible with conventional slurry pumps.

453

Hitachi America, Terada, S., "HYDRAULIC CONVEYING OF GRANULAR SOLIDS IN PIPES: RESEARCH AND APPLICATION," Hitachi Review, May 1964, Vol 16, No. 11, pp 42-46

KEY WORDS: Hydraulic Hoist, Coal, Pump, Power Consumption (Pipeline), Rock, Japan

454

Hitachi America, Sakamoto, M., "HYDRAULIC TRANSPORT OF GRANULAR SOLIDS BY HITACHI HYDRO-HOIST," Hitachi Review, Vol. 16, No. 11, pp 439-446.

KEY WORDS: Hydraulic Hoist, Sunagawa Mine, Japan, Coal, Power Consumption (Pipeline)

455

Hurlburt, George Hall, "EXPERIMENTS IN HYDRAULIC ROCK CUTTING," Thesis submitted to the University of California, Los Angeles, 1974.

KEY WORDS: Hydraulic Mining, Hydromonitor, Rock, Disintegration

ABSTRACT: A theory of hydraulic rock cutting was tested by conducting experiments on four different rocks in the laboratory. The tests involved directing a stationary high speed water jet of small diameter onto a moving rock target. The slot thus cut in the rock was measured to determine an average depth.

The theory of hydraulic rock cutting provides an analytical expression for the depth of slot. This expression depends on jet parameters, rock traversing speed, and the physical properties of the rock. These rock properties were measured in the laboratory using standard tests.

The accuracy of the theoretical model, and thus the tenets of the theory, was examined by comparing measured slot depths to slot depths predicted by the theory. The theory was found to hold well for one of the rocks tested, Wilkeson sandstone, but further work will be necessary, by way of modification of the theory, to improve the correlation between observed results and predictions of the theory.

456R

TRANSLATED

Chermenskii, G.P., "LETTER OF MARCH 1972 TO DR. COOLEY, TERRASPACE."

KEY WORDS: Bibliography, Hydraulic Mining, Water Cannon, Production Rate, Coal

457R

TRANSLATED

Russian - "HYDROMONITOR GMDTS - 3" Spristavkoi, PPG-2, Ministerstvo Ugol' noi Promyshlennosti SSSR, Tekhnicheskoe Upravlenie, VNII Gidrougol', Novokuznetsk, 1968

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor

458R

"Nurok, G.A., Lyashevich, V.V., Kuligin, V.I., "SOVERSHENSTVOVANIE GIDRAVLICHESKOGO TRANSPORTA POLUSKAL'NYKH POROD NA RAZREZAKH KUZBASSA," UGOL # 11 pp 27-30, 1973 :"IMPROVEMENT IN THE HYDRAULIC TRANSPORT OF SEMI-ROCKY FORMATIONS IN THE PITS OF THE KUZBASS"

KEY WORDS: Hydraulic Haulage, Rock, Power Consumption (Pipeline) Jet Characteristics, Kuzbass, Slurry, Kemerovougol, Krasnobrodskiy, Wear

ABSTRACT. Investigations carried out in the Kuzbass have demonstrated the high efficiency of hydraulic transport during the excavation of semi-rocky formations and their mechanical crushing prior to hydraulic transport. It was shown, using the latter system of transport that, cost of 1 m^3 of semi-rocky material was 0.35 rub vs. 0.70 rub when using trucks. The specific capital expenditures constituted respectively 0.25 and 0.37 rub, while labor productivity increased twofold. However, due to high energy consumption and the intensity of pipe and conduit wear and tear, some modification of hydrodynamic characteristics of coarse material and of transporting liquid was found to be one of the most promising directions for the solution of this problem. This could be done at the expense of pulverization of the rock in transport or in process of transport. Application of carrying media with increased density could also be applied. - In this regard the application of circulating schemes, when transporting lump material, which allow to produce a loading of the carrying medium by way of accumulation of thin fractions of rock forming as a result of its crushing during hydraulic transport, was made. Two such schemes are shown in Fig.1.

Follow extremely complex mathematical computations based upon the fact that accumulation and regeneration of the weighting compound constitute cyclical processes whose duration is equal to the time of hydraulic mixture's displacement over a closed system. The results are plotted in a series of graphs showing the variation of the length of hydraulic transport as a function of different parameters that cannot be clearly expounded short of a complete translation. However, the conclusion reached suggests that the economic analysis conducted for typical conditions of hydraulic installations in the Kuzbass has shown that rock pulverisation with the increase of the distance of transport results in a general lowering of expenditures and increase of the optimum size of the rock during crushing in the preparation process.

459R

Shadrin, A.P., "VLIYANIE TEKHNICHESKOGO PROGRESSA NA PROFESSIONAL'NYAYU STRUKTURU RABOCHIKH KADROV SHAKHT KUZBASSA," UGOL, pp 48-49, 1973
"EFFECT OF TECHNOLOGICAL PROGRESS ON THE PROFESSIONAL STRUCTURE OF KUZBASS MINE PERSONNEL"

KEY WORDS: Mining Machinery, Coal Mining, Gramoteinskaya, Polysayevskaya,

460R

Luk'yanov, P.F., Pleskov, P.M., Serebrennikov, B.V., "MEKHANIZATSIYA OCHISTNYKH RABOT PRI RAZRABOTKE KRUTYKH PLASTOV KUZBASSA A GIDRAVLICHESKOY ZAKLADKOY," Ugol # 8, pp 30-33, 1973
"MECHANIZATION OF STOPINGS DURING THE EXPLOITATION OF KUZBASS' STEEP SEAMS WITH HYDRAULIC STOWING"

KEY WORDS: Hydraulic Stowage, Coal, Kuzbass, Pitching Coal Beds

TRANSLATED 461 R

Sal'nikov, V.R., "OPYT I PERSPEKTIVY PRIMENIYA GIDROMEKHANIZATSII NA KRUTBYKH PLASTAKH V KUZBASSE," Ugol # 7, pp 9-11, 1973
"EXPERIENCE AND OUTLOOK REGARDING THE APPLICATION OF HYDROMECHANIZATION OF STEEP SEAMS IN THE KUZBASS"

KEY WORDS: Hydraulic Mining, Coal, Kuzbass, Economics, Cost Per Ton, Coal Dust, Pitching Coal Beds, Recovery, Mining Plan, Taybinskaya Mine, Dewatering, Coal Preparation, SLurry, Krasnogorskaya, Tyrganskaya, Koksovaya, Productivity, Pump, Safety, Settling, Conveyor, Spontaneous Combustion, Severnyy Maganak, Nogradskaya, Voroshilov, Production Rate, Donbass

ABSTRACT. One way of increasing labor productivity in mines exploiting steep seams is the introduction of the hydraulic method, of which a recent positive experiment is evident in the Prokop'yevsko-Kiselev region of Kuzbass. Currently, steep seams are exploited by the hydraulic method in a series of mines of which the range of improvement in labor productivity is shown in the graph of Fig.1, by comparison with mines exploited by standard method. The hydraulic method of exploiting coal by undergound technology is the safest. With such a technology the dust pollution is 5 to 10 times lower than in standard mines with comparable mine geology conditions and within the limits of sanitary norms. The subsequent mastering and improvement of hydraulic exploitation of steep seams allowed to lower the exploitation losses of coal to the level of standard technology mines, such as the case is in "Krasnogorskaya" (29.2 and 29.0 respectively). The same advantage with regard to hydraulicly-exploited mines is shown in the area of self-combustion of steep seams. On the basis of many years' experience the technical counsel of VNII Gidrougol' commissioned the implementation of technical projects for the construction of blocks of hydraulic production of coal to 1,000 tons/day in several variants: with total dehydration on the surface; with separation of coarse ranks of coal and dehydration of fines underground. Both variants have been fufilled for certain mine-geology conditions in "Taybinskaya" mine. - Follows a detailed description of analogies and differences between the standard and hydraulic mining methods. The technological scheme of the hydraulic production complex with dehydration of coal on the ground and underground in mines with standard technology is shown in Fig.2 and the main technological indicators of the completed projects are compiled in a table. This paper appears to be of major importance for the current task of Terraspace Inc. Complete translation with diagrams, figures and tables is therefore recommended.

462R

Parkhomenko, A.I., Khaikin, M. Ya., Beseda, I.P., "PRIMENENIE UZKOZAKHVATHYKH SHNEKOVYKH KOMBAINOV S SHIRINOI ZAKHVATA 0,4m," UGOL UKRAINY # 2, pp 14-15, 1974
"APPLICATION OF NARROW-WEB SCREW FEED CUTTER LOADERS WITH WEB WIDTH OF 0.4M"

KEY WORDS: Coal, Anthracite, Coal Mining, Mining Machinery

ABSTRACT: The basic directions of coal industry development in USSR point to the requirement of new, improved narrow-web cutter-loaders and plough installations with better perfected executive bodies, assuring the efficient mining of hard coals and anthracites with substantial decrease in fines of culm. Mass produced 1K-101 and 2K-52 combines with screw feed as executive body yield lowest results as far as the quality of produced coal is concered. These devices have, however, advantages in their adaptability to mine geology conditions of the face. Various tests with these machines are described in different mines. When operating with the 2K-52 cutter-loader with 0.4 m web width, the yield of grade 0 - 6 mm constituted 31.3%, which is 10% lower than with operation at 0.8 m web width. At the same time the yeild in coarse grades of more than 25 mm increased by 2 to 3%. Tables 1 and 2 show a compilation of experimental data for all grades from 150 to 0 mm and for the different indicators. From the above it is concluded that the application of screw feed cutter-loaders with 0.4 m web width results in substantial improvement in the variety of content of produced coal, facilitates labor conditions in the face, assures an effective mining of coal in ejection-prone seams when working out faces with pillar extraction by dip.

463R

Rozhnov, B.V., "GIDROPYATA MNOGOSTUPENCHATOGO," UGOL UKRAINY #4, 1973, pp.38
"HYDRAULIC TOE OF A MULTISTAGE PUMP"

KEY WORDS: Pump, Hydraulic Mining

ABSTRACT Exploitation in hydromines of multistage centrifugal pumps with one-sided disposition of working wheels' suction apertures has demonstrated that the discharge device (hydraulic toe) is the weak component. With the view of improving its operating efficiency and its application, besides centrifugal vortex or whirling and axial pumps, UkrNIIGidrougol' undertook the construction and test of a hydraulic toe, schematized and described in Fig.1 for a multistage pump. The new hydraulic toe was tested in a ten-stage whirling pump MVN with 2980 revolutions per minute and a maximum value of axial force near 2000 kgs. the power loss in the hydraulic toe constituted about 4%. The results of tests have demonstrated that this kind of construction responds to requirements set forth to discharge devices to sensing unbalanced hydraulic axial forces of the rotors of screw and multistage centrifugal, whirling and axial pumps.

464R

TRANSLATED

Luk'yanchenko, E.S., Semenov, L.G., Kalyuzhnyy, A.S., Zhuchenko, V.I., "ISPYTANIYA EKZPERIMENTAL'NOGO GIDROMONITORNOGO SKVAZHINNOGO AGREGATA AGS-1," UGOL UKRAINY # 5, pp 34-36, 1973,
"TESTS OF THE EXPERIMENTAL HYDROMONITOR BOREHOLE AGGREGATE AGS-1"

KEY WORDS: Hydraulic Mining, Hydromonitor, Coal, Mining Plan, Pitching Coal Beds, Mining System, Samsonovskaya No. 1, Roof, Floor, Coal Hardness, Bore-hole Mining, Donbass

ABSTRACT. This type of unit, worked out by UkrNIIGidrougol', is designed for boring and mining coal from holes by high pressure water jets. The experimental unit AGS-1 was manufactured in 1970 and is described in detail in Fig.1. The tests were carried out in the "Samsonovskaya" No.1 hydromine in conditions of an "ejection-prone" seam of 0.36 to 1.6 m thickness with 5 to 60 deg. dips. The roof and soil are constituted by clay and clay-sandy rocks, basically of average steadiness, with coal strength factors varying between 0.3 to 0.8. Tests, divided in two stages, are described in detail and do not permit abstracting short of complete translation. The same goes for the technical characteristics of the whole installation. The conclusions drawn from these experiments are that with the aid of the hydraulic unit AGS-1 drilling of holes to 150 m in coal seams from bottom up is possible at 5 to 90 deg angles of dip. Hydraulic drilling is also possible for length of up to 100 m with 3 to 10 deg. angles of rise and by strike of the seam. As the control is remote, assurance of safety is an important factor, particulary as regards coal and gas ejections. There are a number of other advantages, among which is the possibility of supplying a large amount of water along holes with high speed (1.5 to 3 m^3/min), which reduces to minumum the cases of squeeze and breaking of bore bit during the boring of the stoping.

TRANSLATED

465R

Ofengenden, N.E., Tsai, A.A., Chadin, V.I., Rozhkov, V.P., "PROMYSHLENNYE ISPYTANIYA OPYTNOI PARTII UGLESSOV 12U10M," UGOL UKRAINY, #6, pp 37-38, 1973
"INDUSTRIAL TESTS OF THE EXPERIMENTAL GROUP OF COAL SUCKERS 12U10M"

KEY WORDS: Hydraulic Mining, Coal, Pump, Slurry Pump, Hydraulic Haulage, Hydraulic Hoist

ABSTRACT. This paper gives the description of an improved version of the mass-produced coal sucker 12U10, designated as 12U10M. It is designed for the hydraulic transport of coal and other coarse materials up to 90 mm. Schematized in Fig.1 with all its technical characteristics, coal sucker 12U10M constitutes a horizontal single-stage centrifugal pump with an axial liquid feed line and is distinguished by its steady operational characteristics. By comparison with the 12U10-model, it is more efficient (by 3 to 7%) and it has better indicators of reliability and lifetime. It was recommended to mass production.

466R

Ostapenko, A.F., Krivchenko, A.A., Pashchevskiy, A.B., Derkach, K.F., Mel'nikov, I.I., "PROMYSHENNYE ISPYTANIYA PROKHODCHESKOGO KOMGAINA (YAINOVATETS -1)," Ugol Ukrainy, #9, 1973, pp. 26-27
"INDUSTRIAL TESTS OF THE ROAD-HEADER 'YASINOVATETS-1'"

KEY WORDS: Coal Mining, Donbass, Rock, Hydraulic Mining Machine, Mining Machinery, Mine Development, Coal Dust

ABSTRACT. The most promising cutter-loaders allowing to disintegrate rocks of strength factor f = 8, are those with a cutting (milling) instrument. Related to such a type may be the roadheader "Yasinovatets-1", which is designed for the mechanization of horizontal and inclined (to 15 deg) workings, by roughly 10.8 m^2 cross-section in rocks of f = 8 strength (eventually to f = 10 - 11). This roadheader is schematized in Fig.1 with a table giving all its technical characteristics. Average tempi (rates) of about 5 m with maxima up to 16 m were recorded during the tests. Average monthly advance (without taking into account the downtime) was 86 m, while the labor productivity was 0.36 per output, vs what would have been by standard bole blasting method in similar conditions (0.13-0.15). The dust suppression efficiency was 90 to 92%. However, at working spots it was still somewhat too high. There are some shortcomings, among which the control of the direction of conducting the extraction (use of laser has been proposed to that effect).

467R

Fomenko, T.G., Kondratenko, A.F., Perlifonov, A.G., "SGUSHCHENIYE KHVOSTOV FLOTATSII V SGUSTITELE S OSADKOUPLOTNITELEM," Ugol # 1, pp 51-53, 1973
"THICKENING OF FLOATATION TAILINGS IN A THICKENER WITH A SLUDGE PACKER"

KEY WORDS: Coal Preparation, Dewatering

TRANSLATED

468R

Mel'nikov, V.I., Ryzhenko, V.I., Bondar', N.P., "PROMYSHLENNYE ISPBTANIYA BIMETALLICHESKIKH TRUB DLYA GIDROTRANSPORTA UGLYA I PORODY," UGOL # 3, pp. 37-38, 1973. "INDUSTRIAL TESTS OF BIMETALLIC PIPES FOR THE HYDRAULIC TRANSPORT OF COAL AND ROCK"

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Rock, Wear and Abrasion, Pipeline, Hydraulic Stowing, Krasnaya Oktyabr Mine, Economics, Pioneer Mine (Krasnoarmeyskugol Combine), Donbass

ABSTRACT. Transport of abrasive loose (quick) materials by means of pipe-lines or conduits has in a number of cases a series of technological and economic advantages and tends to expand. The adverse effect of wear and tear has, however, a negative impact. This shortcoming can be avoided by plating the inner surface of pipes by materials resistant to wear. With this in view, beginning with 1971 special wear-resistant bimetallic pipes were manufactured by rolling method from 30 + X12 steels. Wear resistance was determined by tests, while the relative durability was computed mathematically. Tests have shown that the resistance to wear of bimetallic pipes is from 3 to 6.7 times higher than that of the St.3. Besides, bimetallic pipes do not result in any difficulties at exploitation. The actual economic efficiency in the application of bimetallic pipes made of 30 + X12 steel over 1000 slurry pipelines constitutes: at hydraulic stowing of crushed rock in the mine 1 - 2 "Krasnyy Oktyabr'" — 30 thousand rubles per annum and during transport of undressed coal of rank GSP in the mine "Pioner" — 1.7 thousand rubles p.a. Recommendation to serial production of such bimetallic pipes was issued by the Interdepartmental Commission.

469R

Selivra, A.A., Kovalev, V.K., Semenyuta, G.M., Sderzhikov, B.S., "REZUL'TATY ISPYTANII VODOKOL'TSEVOGO VAKUUM-NOSOSA HB-50," UGOL UKRAINY # 1 pp 44-45, 1973
"RESULTS OF THE TESTS OF THE ANNULAR WATER VACUUM PUMP NV-50m"

KEY WORDS: Hydraulic Hoist, Pump, Coal, Donbass, Methane, Explosion Hazard, Safety

ABSTRACT. The vacuum pump NV-50 m is designed for suction, compression and transport of dangerously explosive methane-air mixture in mine degassing installations. It is shown in the block-diagram of Fig.1 with its technical characteristics. Calculations of its dimensions were made according to ref.1. Its exploitation characteristics after factory tests are plotted in the graph of Fig.2. Ref.1.- A. A. Selivra. Raschet optimal'nykh razmerov vodokol'tsevogo vakuum-nasosa na zadannuy podachu (Calculation of optimum dimensions of an annular water vacuum pump for a pre-assigned feed). Sb. "Gornaya elektromekhanika i avtomatika, vyp.17, izd-vo Khar'kovskogo Universiteta, 1970.

TRANSLATED

470R

Reka, Ya. D., Varshavskiy, Yu.I., "NASOSNYE USTANOVKI 1UGN DLYA GLU'INNOGO UVLAZHIENYA UGOL'NYKH PLASTOV," UGOL UKRAINY # 11, 1973, p 25.
"PUMPING INSTALLATIONS 1UGN FOR IN-DEPTH MOISTENING OF COAL SEAMS"

KEY WORDS: Hydraulic Mining, Coal, Pump, Donbass, Water Infusion, Coal Mining, Economics

ABSTRACT. Since the most promising method of preliminary coal moistening in the massif consists in water injection into the seam through 23 - 30 m long holes drilled from the face perpendicularly to the plane of the stope, a special pumping installation IUGN was created for coal seams to 18 deg. dip and a thickness from 0.7 to 2 m of any hardness and for any mine category for any gas and dust conditions.- Most interest was shown to exploitation of high pressure pumps (to 300 kg/cm^2). The IUGN pump station is schown in Fig.1. After one year operation the parameters were compiled in the table with comparison of those of a former pumping installation GB-354, to the clear advantage of the former. Emphasis is given to the quality of stainless steel and other materials used by IUGN.For example, lifetime of valves was 600 hours longer, with annual saving being near 17,000 rubles.

TRANSLATED

471R

Karabak, V.A., "EKONOMICHESKAYA OTSENKA POTER' UGLYA PRI PODZEMNOI RAZRABOTKE V KUZBASSE," UGOL # 12, pp 18-21, 1968
"ECONOMIC APPRAISAL OF COAL LOSSES DURING UNDERGROUND MINING IN THE KUZBASS"

KEY WORDS: Coal Mining, Kuzbass, Economics, Coal, Recovery, Cost per ton Hydraulic Mining, Pitching Coal seams

TRANSLATED

472R

Fomenko, T.G., Pogartseva, E.M., "DVIZHENIE TVERDYKH TEL V SREDE I OPREDELENIE SKOROSTI IKH PADENIYA," UGOL # 12, 1968, pp 53-55
"MOTION OF SOLID BODIES IN THE MEDIUM AND DETERMINATION OF THEIR FALL VELOCITY"
KEW WORDS: Hydraulic Hoist, Slurry, Coal, Pipeline, Rock

473R

Nurok, G.A., Litvin, I.F., Shilykovskiy, V.S., "PROMYSHLENNYE ISPYTANIYA NOVOGO METODA PROISVODSTVA GIDROVSKRYSHNYKH RABOT," UGOL # 11, pp 48-51, 1968
"INDUSTRIAL TESTS OF A NEW METHOD OF PRODUCTION IN HYDRAULIC STRIP MINES"

KEY WORDS: Hydraulic Mining, Coal, Disintegration, Rock

475

Nephew, Edmund A., "THE CHALLENGE AND PROMISE OF COAL," Technology Review, Dec. 1973, pp 21-29

KEY WORDS: Coal, Coal Mining, Production Rate, Economics

476

Wallace, J.J., Price, G.C., Ackerman, M.J., "HYDRAULIC COAL MINING RESEARCH: EQUIPMENT AND PRELIMINARY TESTS," Report of Investigations 5915, Bureau of Mines, 1961

KEY WORDS: Hydraulic Mining, Coal, Mining Plan, Pump, Production Rate, Hydromonitor, Disintegration

ABSTRACT: Hard Pittsburgh bed coal can be mined hydraulically from solid face at water pressures of 4000 psi; coal was penetrated to depth of 4 ft in 20 sec with 225 gal of water/min coming from 3/8 in nozzle at 4000 psi pressure; difficulty was encountered in cutting binders; rate of mining depended upon water pressure, size and shape of nozzle, rate at which water jet was moved through coal, depth of cut and mining plan.

477R

Iofa, M.B., Korobko, F.V., KHAIDAKIN, V.I., CHERKASHIN, V.S., "SEPARATSYA MELKOGO UGLYA V KASKADNOM TREKHPRODUKTOVOM GIDROTSIKLONE, UGOL # 7, pp 60-63, 1968
"FINE COAL SEPARATION IN A CASCADE THREE-PRODUCT CYCLONE SEPARATOR"

KEY WORDS: Coal Preparation

478R

Nurok, G.A., Chaplin, B.N., Mednikov, N.N., Bogatyrev, V.P., Lindenau, N.I Litvin, I.F., "TEKHNOLOGIYA OTKRYTOY DOBYCHI UGLYA S PRIMENENIEM GIDRAVLICHESKIKH SPOSOBOV RABOT V KUZBASSE," UGOL # 6, pp 37-41, 1968
"TECHNOLOGY OF OPEN PIT COAL MINING WITH APPLICATION OF HYDRAULIC METHODS IN KUZBASS"
KEY WORDS: Hydraulic Mining, Coal, Coal Mining, Kuzbass, Open Pit, Pump

ABSTRACT

The new technology applied in Kuzbass for the past 10 years is based upon the combination of hydraulic methods of coal disintegration and transportless systems of mining in open pit mines in their development stage. It allowed to disintegrate bedrock heaps by hydromonitor jets observing the required continuity in extraction and shift/hard argillites and sandstones in a heavy clayey carrying medium at pressure loss decrease in pipes of large diameters. This is made possible by imparting temporary heaps a special shape, packing bedrock and clayey material in an alternating manner, thus permitting their subsequent washout and hydraulic transport in a heavy carrying medium. Fig.1 shows the working out of rocky formations with crushing and hydraulic transport. A sketch in Fig.2 describes the lateral washout. Figs 2 and 3 provide a general view of the face during washing out by hydromonitor. Figs 4 and 5 give the view of group installations of respectively coal suckers and pumping stations in the Bachatsk quarry. Thanks to constructive applications of the new technology the productivity of hydraulic installations in Kuzbass quarries increased by 180%., the complexity of developing works decreased by 3 to 4 times and their volume — by 1.5 times, while the cost of hydraulic extraction decreased by 2 to 2.5 times, assuring the extension of the season of operations from 5 to 8 months, all this in severe winter conditions of Siberia. The new method is expected to have a great economic impact on further developments. Fi.6 shows the flowsheet of pressureless water saturation and washout of plastic formations and Fig.7 is a general view of an open-pit bench after application of pressureless washout. These methods were applied industrially in the Bachatsk and Krasnobrod quarries. For the mine geology conditions of the former, water saturation of the bench 20 - 25 m high takes place during 3 - 4 months, whereupon the endurance properties of plastic rocks decrease by 3 to 4 times. Moreover, consumption of water and electric power is curtailed, labor consumption in the washout decreases and so do the expenditures on washing out operations. On the whole, this new technology is very promising and its application all over Siberia and in the Far East quarries will no doubt result in a high economic effect.

479R

TRANSLATED
UGOL, "POL'SKOE VNESHNETORGOVOE PREDPRIYAIE TSENTROZAP - GIDRAVLICHESKUYU VRUBOVUYU MASHINU WSH-60," UGOL # 5, 1968
"THE POLISH ENTERPRISE 'TSENTROAP' FOR FOREIGN TRADE WILL SUPPLY YOU ON YOUR REQUEST A HYDRAULIC COALCUTTER WSH-60"

KEY WORDS: Hydraulic Mining Machinery, Coal

ABSTRACT: Advertisement for Hydraulic Coalcutter WSH-60

480R

Bogomolov, N.A., Nechushkin, G.M., Proskurin, A.P, Adam, O.V., Klushin, A.V. Gustaitis, B.S., Romanov, M.P., "NOVYY NASOS DLYA UCHASTKAVOGO VODOOTLIVA SHAKHT I REZUL'TATY EGO PROMYSHLENNYKH ISPYTANIY," UGOL # 4, pp 45-46, 1968
"A NEW PUMP FOR SECTIONAL PUMPING OF MINES & RESULTS OF ITS INDUSTRIAL TESTS

KEY WORDS: Hydraulic Hoist, Pump, Coal,

TRANSLATED

481R

Vyzhevskiy, V.D., "REZUL'TATY NABLYUDENIY ZA SMESHCHENIEM KROVLI V OTKATOCHNOM SHTREKE PRI POLNOY ZAKLADKE VYRABOTANNOGO PROSTRANSTVA LAVY GIDROVLICHESKIM SPOSOBOM," UGOL # 2, pp 27-29, 1968
"RESULTS OF OBSERVATIONS OF ROOF SHIFT* AT COMPLETE STOWING OF THE WORKED-OUT SPACE OF THE STOWING FACE BY HYDRAULIC MEANS"

KEY WORDS: Hydraulic Stowing, Coal Mining, Roof

ABSTRACT. The * stands for a missing "HAULAGE ROADWAY", where the roof tends to move (shift) when complete stowing by hydraulic method takes place in the worked-out space of the face. Various experiments by means of instruments were undertaken in order to ascertain the values,— of roof shift from the time of seam extraction to the erection of the stowing body, of roof shift above the stowing massif, of the total displacement of the roof from the moment of seam extraction to the "damping" process of stowing massif or body setting. The measurements were performed in the haulage roadway of a specific seam at 300 m in depth. The hydraulic stowing was carried out following the winning face's advance directly from the through cut. Observations of roof shifts were made by means of a series of equidistant stakes. The whole method cannot be described in an abstracted form and should eventually be translated cover-to-cover. Fig.1 is a diagram illustrating the disposition of contour reference points, Fig.3 is a graph of roof subsidence based upon the numerous measurements and the table of page 28 summarizes the results. The magnitude of roof subsidence from the time of seam extraction to the erection of the stowing body is generally 3 times less than with hand stowing of a rock band.

482R

Gorbachev, D.T., Vereshchagin, V.P., Ladut'ko, I.Ya., Adamidze, D.I., "PRIMENENIE PNEVMOPATRONOV DLYA OTBOIKI UGLYA NA SHAKHTE "SEVERNAYA" V KUZBASSE," UGOL # 1, pp 58-60, 1968
"APPLICATION OF 'PNEUMATIC CHUCKS' OR HIGHLY COMPRESSED AIR FOR THE EXTRACTION OF COAL IN KUZBASS"

KEY WORDS: Coal Mining, Disintegration

483R

Kuz'mich, A.S., Biryukov, R.A., Skopin, S.G., Yakovlev, N.I., Gontov, A.E., Bolotov, R.P., "MEKHANIZIROVANNAYA VYEMKA UGLYA MOSHCHNYKH KRUTYKH PLASTOV S GIDRAVLICHESKOI ZAKLADKOI," UGOL # 4, 1969, pp. 33-39.
"MECHANIZED EXTRACTION OF COAL FROM THICK STEEP SEAMS WITH HYDRAULIC STOWING"

KEY WORDS: Hydraulic Haulage, Sluicing (Flume), Hydraulic Stowing, Coal, Coal Mining, Economics

ABSTRACT. All attempts to apply the mechanized extraction of coal from steep thick seams in a region of Kuzbass failed to find an industrial application thus far for some unknown reasons, while in France an original solution to this problem was found: Coal mining in the winning stope is achieved by a cutter-loader (combine) moving over a freshly stowed sand, while the steep and thick seams are worked out by double faces. The problem in Kuzbass consisted in using coarse material instead of sand for stowing. To solve it, experiments were carried out with testing units, which resulted in recommendation of using a special 4PU (PK-7) cutter-loader and later applied in mine conditions. Fig.1 gives a general scheme of workings in the experimental sector of the Krasnogorskaya hydromine with a coal seam 8 m thick and 47 deg. dip. The experiment is described with great details. The stowing massif's granulometric composition is compiled in Table 2 and its compression properties are shown in Fig.2, both in the pilot experiment and in the mine. The technological cycle in the stope consisted of: coal mining by the combine, hydraulic washing out of the coal along chutes, setting the supports, the erection of barriers and transfer of chutes, finally stowing the worked out space. As the combine is caterpillar-mounted, the values of stowing massif setting under the weight of the combine during maneuvering (static load) at its passage through measuring stations are important; they are compiled in Table 3. The values of setting of the stowing body under the weight of the combine during coal mining (dynamic loads) are compiled in Table 4. In both cases the setting under the left caterpillar track is substantially greater than under the right one. The maximum setting under the operating combine was 109 mm and the average — 34 mm. The profile of the stowing massif and the value of the settings for various working conditions is shown in Fig.3.- The whole technology of coal mining in winning faces by the 4PU-combine with hydraulic stowing is schematized in Fig.4. The scheme is described in great details and does not lend itself to abstracting. Table 5 compiles the computed technoeconomic indicators that can be obtained with a seam 3.5 m thick, a length of 400 mm for the double face, and a 1.35 m working width of the combine. Obviously, for a good comprehension of this technology, if warranted, only a cover-to-cover translation could provide it.

484R

Rzhevskiy, V.V., "O RAZVITII OTKRYTOY DOBYCHI UGLYA V SSSR," UGOL # 4, pp 46-51, 1970.
"ON THE DEVELOPMENT OF OPEN PIT COAL MINING IN USSR"

KEY WORDS: Coal Mining, Open Pit, Kuzbass

485R

Zheltonozhko, Yu.V., Batmanov, Yu.K., Drobnov, I.E., "TSELESOOBRAZNOSTI SODERZHANIYA REZERVNYKH OCHISTNYKH ZABOEV NA SHAKHTAKH DONBASSA," Ugol # 3, 1970, pp. 24-27
"ON THE EXPEDIENCY OF UPKEEP OF RESERVE (OR STANDBY) STOPINGS IN THE DONBASS MINES"

KEY WORDS: Coal Mining, Donbass, Mining Plan

486

Capp, J.P., Elder, J.L., Pears, C.D., Lowe, R.W., Plants, K.D., Fies, M.H., "UNDERGROUND GASIFICATION OF COAL, HYDRAULIC FRACTURING AS METHOD OF PREPARING A COALBED," Report of Investigations 5666, Bureau of Mines, 1960

KEY WORDS: Coal

ABSTRACT:

This experiment, one of a series on underground gasification of coal, was an investigation by the Federal Bureau of Mines of hydraulic fracturing as a means of increasing the air acceptance of a coalbed to permit introducing combustion air and removing product gases. Specific objectives of the investigation included: (1) Fracturing a coalbed; (2) determining the distance the coal was physically affected; (3) ascertaining the effect of the fracture on air acceptance of the coalbed; and (4) gasifying the coal.

487

Price, George C., Badda, Frank, "HYDRAULIC COAL MINING RESEARCH, DEVELOPMENT MINING IN A STEEPLY PITCHING COALBED, ROSLYN, WASHINGTON," Report of Investigations 6685, Bureau of Mines, 1965.

KEY WORDS: Hydraulic Mining, Coal, Roslyn No. 10 Mine, Mining Plan, Hydromonitor, Productivity, Economics, Production Rate, Western

ABSTRACT: Gives results of a study in the Roslyn No. 5 coalbed to determine the feasibility of mining hydraulically the portion of the coal bed that was steeply pitching. All of the experimental mining was done while advancing raises and rooms. A Bureau-developed hydraulic mining machine was used successfully in the pitching coalbed. It consisted of a remotely controlled monitor mounted on a self-advancing roof-support unit of the type commonly used for roof support in longwall mining systems. The coal-cutting rates averaged 0.73 and 0.54 tons per minute in raise and roof mining, respectively, while using water volumes of up to 230 gpm at a pressure of 4,000 psig. Productivity averaged 4.7 and 5.2 tons per man-shift for raise and room mining, respectively, compared with 7.5 and 8.5 tons per man-shift, respectively, by conventional handmining methods.

488

Malenka, Wilbert T., "HYDRAULIC MINING OF ANTHRACITE," "ANALYSIS OF OPERATING VARIABLES," Report of Investigations 7120, U.S. Dept. of Interior, Bureau of Mines, April 1968

KEY WORDS: Hydraulic Mining, Coal, Anthracite, Hydromonitor, Water Infusion, Disintegration, Hydromonitor

ABSTRACT: Modified factorial experiment was used to determine effect of operating factors in hydraulic mining of anthracite; seven basic factors at various levels were considered; significant factors were found to be pressure-volume, pattern, and jet traverse speed; mining data were programmed for computer and prediction equation was determine from print-out information based on hydraulic "jumbo" operating parameters and characteristics of anthracite; source of error is discussed.

490R

Semenov, L.G., Kessariiskiy, G.V., Kretinin, N.T., Gumenyuk, V.D., "BEZLYUDNAYA VYEMKA UGLYA S POMOSHCH'YU AGREGATA GBD-3, UGOL UKRAINY, 1973 pp 27.

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Pitching Coal Beds, Donbass

491

Bureau of Mines, U.S., "EXPERIMENTAL HYDRAULIC MINER," 1 page, designed and manufactured by J.H. Fletcher & Co. for the Bureau of Mines.

KEY WORDS: Hydraulic Mining, Hydromonitor, Coal, Anthracite

492C (CZECH)

Riman, Prof. Dr. Alois, "FOUNDATIONS OF DEEP MINING," (MINING METHODS), Copy from Mining Eng. Text Book, pp 296-303, in Czech - Title is Zaklady Doby'vacich Metod Kamenouhelny'ch Dolech.

KEY WORDS: Hydraulic Mining, Hydromonitor, Hydraulic Mining System, Mining Plan, Czechoslovakia, Kladno Basin, Ostravě

493R

Chikov, V.G., "DOZIRUYUSHCHEYE USTROYSTVO DLYA OBRAZOVANIYA PORODNYKH I UGOL'NYKH GIDROSMESEY," Ugol # 2, 1972, pp 46-48
"DOSING APPARATUS FOR THE FORMATION OF ROCK AND COAL HYDRAULIC MIXTURES"

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Hydraulic Hoist, Feeder, Rock

ABSTRACT The question of dosing slurry components is of particular importance because the productivity and efficiency of hydraulic transport installations improves with the increase of slurry consistency. This is why UkrNIIgidrougol created a universal hydraulic dosimeter represented in Figure 1 reproduced here as variant GDU-300 described in detail. The dependence of slurry density on the position of the slide valve, which is the regulating part of the device is plotted in Fig.2. Two different performing devices are described and calculations are made on the basis of investigations establishing a dependence which allows to determine the productivity of the ground pumping station over the range h = 0 to 300 mm of GDU-300 slide valve course and the consumption of the pump. During the operation of the ground pump a stable vacuum is assured in the intake conduit. While the operation as a whole is beset with a series of difficulties, it has also many advantages, which are enumerated. This installation can be successfully used at hydraulic transport of various soils, coal, rock, sump cleanning ofthe skip shafts with the aid of hydraulic hoists and coal suckers.

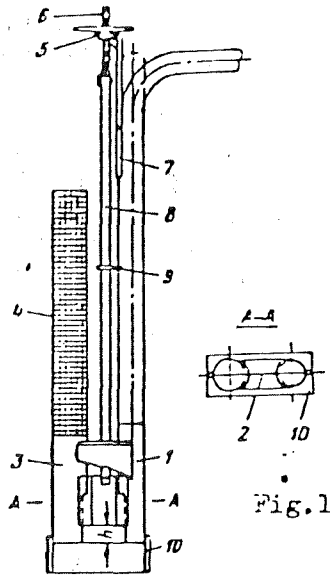


Fig.1

494R

Bragin, B.F., "ELEKTROGIDRAVLICHESKOYE UPRAVLENIYE ZADVIZHKAMI DLYA SHAKHTNYKH VODOOTLIVOV GLUBOKIKH GORIZONTOV," Ugol # 4, 1972
"ELECTROHYDRAULIC CONTROL BY VALVES FOR MINE WATER DRAINS OF DEEP HORIZONS"

KEY WORDS: Water Supply, Hydraulic Mining, Coal

495R

Petrakov, A.I., Golitenko, M.M., Krivorot'ko, O.D., "RAZRUSHENIE GORNYKH POROD VYSOKONAPORNYMI IMPULSNYMI VODYANYMI STRUYAMI," UGOL # 3, pp 42, 1972
"DISINTEGRATION OF ROCKS BY HIGH PRESSURE PULSED WATER JETS,"

KEY WORDS: Hydraulic Mining, Water Cannon, Coal, Rock, Mine Development, Roadheader

ABSTRACT

First of all reference is made to a series of foreign publications presenting methods of working with rock disintegration by high pressure water jets, among which that of the Illinois Technological Institute of Scientific Research (Eng. & Mining J., vol.172, 1971), the firm "Exotech", The Oak Ridge Institute working on the creation of a hydraulic cutter-loader with jet pressure of 400 - 700 atm. emerging from a nozzle 3 to 6 mm in diameter. According to the "Financial Times" such water can cut a slot in a single shot 12.5 mm in depth of a limestone and up to 6 mm in granite. In the Soviet Union no less than 10 organizations were busy in creating water cannons between 1960 and 1969 to wind up with the water cannon by Dongiprouglemash This water cannon (IVD) achieves liquid's pressure up to 10,000 atm in the shaft, while water jet is ejected from the nozzle with a speed of 1250 m/sec. Water volume per shot: 1.1 lit. The water cannon produces 9 to 10 shots per minute or up 600 shots per hour. The pressure of compressed gas in the receiver reaches 50 atm. The leading up of the piston is achieved by high pressure water realizing a circulation. Besides being automated the water cannon operator may produce solitary shots. There were a number mine tests as a result of which it was established that the pulsed water cannon is capable of disintegrating coal underground & rocks of clayey and sandy shales with f = 5. Fig.1 shows a cross section of a face during tests, in which coal is in black bands (1), coaly and clayey shale intercalations are shown in (3) and (4), (2) is probably a sulphureous layer and (5) is a sandy shale. Fig.2 gives a sketch of a disposition of the working in the rocky formation for tests of the IVD cannon installed on a self-propelled carriage of a PK-3m combine. On the basis of the experiments carried out with the available combines 4PU and PK-9r with application the IVD-water cannon, a roadheader was created with the following characteristics: productivity 150-200 m/month, working's cross section area 7 to 12 m^2; strength factor of rocks being crushed up to 12 (after Protod'yakononv scale); installed power 110 - 130 kw; water consumption 30 - 50 lit/min; weight of the machine 12 - 15 tons.

496 R

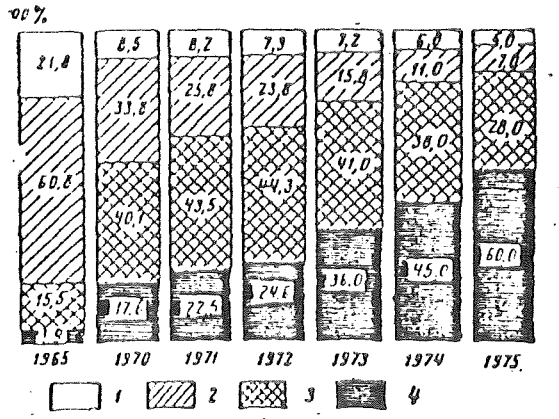
Khydosoystev, H.M., "UGOLNAYA PROMISHLENNOST," UGOL # 5, pp 2, 1972.
"COAL INDUSTRY"

KEY WORDS: Hydraulic Mining, Coal, Production Rate, Productivity

ABSTRACT

This long report has an essentially political character, emphasizing the party achievements. This summary is entirely devoted to the technical aspects of the progress made, with the proper illustrations.

During the year 1971 8 millions tons of coal were produced against the 7 millions projected and compulsory. Coal production in the Republic is now getting close to 210 millions t. By comparison with 1970 the rise in labor productivity increased by 1.6 times. The entire accretion of coal production is assured on account of rise in labor productivity with substantial decrease of the number of workers. The technical overhaul and mine re-equipment continued at an accelerated rate. The schemes of work mechanization and the graph of labor productivity increase are shown respectively in Figures 1 and 2 hereafter.



Seam mining: 1)by cutting machines; 2) wide-web comb.BUG hydr.washout andplane-scrapers; 3) narrow-web combines; 4)complexes with power supports

Fig.1

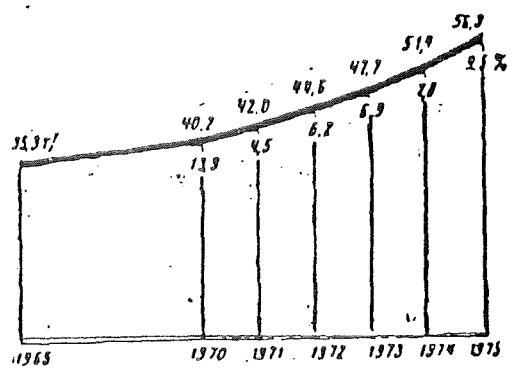


Fig.2

Rise of labor productivity

497R

Medvedkov, V.I., Gorbachev, A.S., Grekov, B.F., "ISPYTANIE KOMBAINA K-56MG S GIDROTURBINNYM PRIVODOM, UGOL # 10, pp 55, 1972
"TEST OF THE K-56MG-COMBINE WITH A HYDRAULIC TURBINE DRIVE"

KEY WORDS: Hydraulic MINING Machinery, Kuzbass, Continuous Miners, Coal

ABSTRACT

An experimental sample of the K-56MG combine provided with an explosion-proof hydraulic turbine drive, of which the parameters are described in Table 1, was tested in the "Yubileynaya" mine. These tests were conducted under different conditions in development workings of cross sections from 3.9 - 10.3 m^2 over a coal seam of simple structure, 2.2 - 2.4 m thick. A total 2,125 m of workings were driven during the period of tests with a total production of coal of more than 17,000 tons. The tests are described in great detail with appropriate tables impossible to summarize short of cover-to-cover translation which does not seem to be justified at this stage of the survey. On the basis of the industrial tests the combine K-56MG with the hydraulic turbine drive was recommended for industrial production.

499R

Pokrovskaya, V.N., Boitsov, Yu.P., "OPREDELENIE OPTIMAL'NYKH PARAMETROV GIDRAVLICHESKOGO TRANSPORTIROVANIYA," UGOL # 7, 1971, pp 37.
"DETERMINATION OF OPTIMUM HYDRAULIC TRANSPORT PARAMETERS"

KEY WORDS: Hydraulic Haulage, Coal

500R

Kucherskiy, L.V., "K VOPROSU O KONTROLE ZAPYLENNOSTI RUDNICHNOGO VOZDUKHA" Ugol, # 11, pp 70-71, 1971
"TO THE QUESTION OF DUST POLLUTION CONTROL OF MINE AIR (A DISCUSSION)"

KEY WORDS: Dust, Coal, Air (Ventilation)

501R

Bronshteyn, B.E., Lutsik, P.P., "K VOPROSU O VOSMOZHNOSTI VYYEMKI UGLYA POD GIDROTEKHNICHESKIMI SOORUZHENIYAMI," Ugol # 4, 1971
"QUESTION OF THE POSSIBILITY OF COAL MINING UNDER HYDROTECHNOLOGICAL INSTALLATIONS"

KEY WORDS: Coal Mining, Water Supply

TRANSLATED 502 R

Geier, V.G., Kostenko,A.G., Kachura, M.I., "VYSOKOPROIZVODITEL'NAYA GIDRAVLICH ESKAYA SISTEMA TRANSPORTIROVANIYA I PODBEMA GORNOI MASSY IZ ZHAKHT BOL'SHOI GLUBINY," UGOL # 5, 1971, pp 45-46.
"A HIGHLY PRODUCTIVE HYDRAULIC SYSTEM OF HOISTING AND TRANSPORT OF ROCK MASS FROM MINES OF GREAT DEPTH"

KEY WORDS: Hydraulic Haulage, Mining Plan, Coal, Donbass, Pump, Flume, Hydraulic Hoist, Rock, Airlift, Krasnoarmeyskaya No. 2, Samsonovskaya No. 1, Production Rate.

ABSTRACT

In view of the remaining relatively low labor productivity despite high accomplishments by complex mechanization in stoping, the authors point to the need of improving automated processes of transport from very deep mines, the shortcomings inherent to the latter and the high labor consumption for the development workings constituting the principal cause of poor labor productivity. For further improvement of coal production it is indispensable, first of all, to expand within the mines the hydraulic transport of coal with airlift in conjunction with the complex mechanized workings in the stopes or winning faces.

The authors then describe the airlift that was first created in 1967 in the hydromine "Krasnoarmeyskaya", which assures a delivery of up to 700 t/h of rock mass from a 320 m depth, or better than 9,000 tons/day. They further describe the one installed in the "Samsonovskaya" No.1 mine, with daily delivery of more than 4,000 tons from a depth of 725 m. The system assures an uninterrupted transport from the faces to the preparation plant for coal, as well as for the rock obtained from the drivage (Fig.1) Technologically , this system is ready for a complex automation and "cybernetization" of the control.

After that the authors discuss in considerable detail the advantages of the system from both the technical and economic viewpoints. Analysis of the operating hydromechanized transport systems in the Donbass collieries has shown that, within the bounds of mining sectors, the gravity hydraulic transport by way of troughs or chutes was found to be the most efficient. In the "Krasnoarmeyskaya" No.2 mine this form of transport assures a constant, trouble-free intake and a continuous transport of coal from faces with loads of more than 1,000 tons of coal. These stopings are equipped with combines K-52SR.

The authors then discuss in detail the economic aspects of the operations evaluating data with various machineries (such as coal suckers ZGM-2M). and a diagram in Fig.2 showing the comparison of the domain of the effective use of the conveyer and pressure hydraulic systems of transports as a function of the costs. They conclude that in connection with the creation and introduction to expoitation of the airlift hoisting system, the problem of the efficiency of hydraulic transport is at present resolved.

Although the airlift is power-consuming and costly (as is shown in the detailed Tables 1 and 2), it assures, nevertheless, a substantial slash in the costs by comparison with the standard conveyer-belt transport and skip hoisting of coal, when used in conjunction with inexpensive self-flowing or gravity transport, or using low pressure coal sucking underground transport. The final conclusion of the authors is that the advantages and the efficiency of the airlift system in conjunction with hydraulic transport allow to recommend this system for the future mines with high concentration of workings.

505

Muchnik, V.S., Teodorovich, B.A., Mulin, N.V., Tasapko, N.F., Kostin, S.A., Andrew, U.Ts., "THE UNDERGROUND HYDRAULIC EXTRACTION OF COAL IN THE KUZNETSK BASIN, Ugleteknisdat, Moscow, 1953, pp, 6, 7, 9-20.
This is incomplete - copier broke down.

KEY WORDS: Hydraulic Mining, Coal, Mining Plan, Roof Support, Crusher, Hydraulic Hoist, Mine Development

506R

TABLE OF CONTENTS AND LITERATURE TRANSLATED

Slavutskii, S.O., Antonov, V.A., Tsvirko, P.P., "OTKRYTYE GORNYE RABOTY GIDRAVLICHESKIM SPOSOBOM," (Open Pit Mining by the Hydraulic Method), Publisher Nedra, Moscow 1965, pp 121-133, 224-226

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Open Pit, Hydraulic Haulage, Rock, Water Supply, Coal Preparation, Economics

ABSTRACT: Chapter 1, Remote Control and Automation of Hydromonitors:
Automation of all operations of hydraulic mining, by 1965, was not fully accomplished, except for special operations and design of necessary control and measuring instruments.
First stage toward automation of hydromechanized open pit mining was marked by construction of various types of hydromonitors such as GS-1, GMN-250s, and GMSD-300, Suction pump 2GM-2m, and automatic floating hydraulic (suction) pump.
Fig. 43 (p. 122) illustrates a general view of the hydromonitor GMSD-300 on catepillar, with plane drawing in Fig. 44. Fig. 45 (p. 125) is electrica diagram for aforesaid hydromonitor, with detailed technical data. Fig. 46 (p. 126) shows general view of GS-1 hydro monitor. Fig. 47 (p. 127) shows hydraulic (suction) pump LSH 2000/60 with detailed technical data on capacity, lift in meters, suction range, working speed, types of motors, and various dimensions of the unit.

507R

Nikonov, G.P., "BUDUSHCHEE OTKRYTYKH GORNYKH RAZRABOTOK," Izdatel'stvo, Nauka, Moscow, 1972, pp. 91-98
"The Future of Hydromechanization," in Future of Open Pit Mining

KEY WORDS: Hydraulic Mining, Rock, Open Pit, Coal Mining, Economics, Hydraulic Haulage, Kuzbass

ABSTRACT: Outlines past experience at various mining sites in the USSR, and future forecasting regarding output, cost, equipment, and methods.
Provided data, based on Kuzbass and Magnitogorsk Magnetic Anomaly (KMA) mining areas; indicate much broader use of hydromechanization in the future in place of conventional equipment.

509R

TABLE OF CONTENTS- PARTIALLY TRANSLATED

Fridman, B.E., "RAZRABOTKA ROSSYPNYKH MESTOROZHDENIY' GIDROMEKHANIZATSIEY," "The Use of Hydramechanization on Mining Scattered Deposits, Moscow, 1957, pp. contents & references.
"Mining of Placer Deposits by Hydromechanization"

KEY WORDS: Hydraulic Mining, Hydromonitor, Pump, Rock, Hydraulic Hoist

ABSTRACT: Textbook on present practice in mining of placer deposits by hydromechanization. Outlines various problems such as water supply for hydraulic units; design, construction of equipment; domestic and foreign new machines and instruments used in hydromechanization.

510R

TABLE OF CONTENTS- PARTIALLY TRANSLATED

Russkii, I.I., "OTVAL'NOE KHOZYAISTVO KAR'EROV," Izdatel'stvo, Nedra, Moscow, 1971, pp. 3, 134-137, 236-239, Contents
"TAILING MANAGEMENT OF OPEN PIT MINING"

KEY WORDS: Hydraulic Mining, Hydromonitor, Open Pit, Rock

ABSTRACT: Outlines various problems of tailing operations, organization and mechanization of refuse disposal work at open pit mining.
Detailed description of slurry (pulp), hydromonitors, suction, (hydraulic) pumps, and pertinent technology.
Comprehensive list of sources

511R

Chinakal, N.A., "SOVERSHENSTVOANIE SISTEM RAZRABOTKI SO SHCHITOVYMI PEREKRYTIYAMI," Akademiya Nauk SSSR, Sibirskoe Otdelenie, Institut Gornogo Dela, Izdatel'stvo Nauka, Sibirskoe, Novosibirsk, 1965. pp. 128-143
"THE TESTING RESULTS OF A DOUBLE PANEL WITH TIMBER SUPPORTING HEADING"

KEY WORDS: Mining Plan, Hydraulic Mining, Krasnogorskaya, Hydromonitor, Roof Support, Coal, Economics, Kuzbass

512R

Mel'nikova, N.V., "TEKHNIKA OTKRYTYKH GORNYKH RABOT ZA RUBEZHOM," Ugletekhizdat, Moscow, 1956, 258-284
"OPEN PIT MINING TECHNOLOGY ABROAD"

KEY WORDS: Hydraulic Mining, Hydromonitor, Open Pit, Coal Mining, Pump, Rock, Hydraulic Haulage

513

Washington Post, Editor "THE COAL IN THE DEEP MINES," July 17, 1974

KEY WORDS: Coal Mining, Economics

514-R

Nikonov, G.P., "OPYT GIDROMEKHANIZATSII OTKRYTYKH GORNYKH RABOT,"
("The Experiments with Hydraulics and Mechanization of Open Pit Mining,")
Mining Institute, USSR Academy of Sciences Laboratory for Open Pit Mining, Ugletekhizdat, Moscow, 1956.

KEY WORDS: Hydraulic Mining, Open Pit, Rock

ABSTRACT: Development methods with graphical output for the 1947-1955 peric (in million m^3). In Fig. 2, graphical output by various organizations and different types of operation, such as by the floating suction (hydraulic) pumps, hydromonitors. Total volume (in million m^3) achieved by hydro-

521

Dahl, H.D. & McCain, D.L., "CONTINUOUS UNDERGROUND SLURRY TRANSPORT OF COAL," Mining Congress Journal, May 1974, pp 30-55 (also presented at the 1974 Coal Convention, Underground Service Operations Session, May 8.)

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Pump, Mining Plan, Health & Safety, Productivity

ABSTRACT: After several years of development, hydraulic transportation of coarse coal appears ready to contribute to improvements in productivity while contributing to miners' health and safety and reducing maintenance problems. A prototype system replacing belt and rail haulage has been in operation for several months in a West Virginia coal mine; installation of the complete prototype system, including face haulage, is expected this year.

522

Mueller, Walter (Jr.), "UNDERGROUND COAL MINING FACES TECHNOLOGIC TRANSITION IN DECADE AHEAD," Mining Engineering, October 1972, pp 59-62

KEY WORDS: Coal Mining, Longwall, Roof Supports, Continuous Miners

523

Beatty, W.B., "JAPANESE STEEL INDUSTRY DOMINATES OUTLOOK FOR WESTERN COKING COALS... A REVIEW OF DEVELOPING PACIFIC COAST SUPPLIES AND A SURVEY OF WORLD RESERVES," Coal Age, Nov. 1972, pp 88-94.

KEY WORDS: Hydraulic Haulage, Coal, Economics, Western, Coking

524

Yancik, J.J., "SOME IMPRESSIONS AND OBSERVATIONS OF SOVIET COAL MINING," Mining Engineering, pp 63-67, July 1974

KEY WORDS: Productivity, Production Rate, Cost Per Ton, Capital Investment, Safety, Coal, Donbass

525

Strishkov, V.V., Markon, G. & Murphy, Z.E., "SOVIET COAL PRODUCTIVITY: CLARIFYING THE FACTS & FIGURES," Mining Engineers, May 1973, pp 45-49

KEY WORDS: Coal, Coal Mining, Production Rate, Coking, Donbass, Kuzbass,

526

Feenstra, R., Pols, A.C., Steveninck, J.Van, "TESTS SHOW JET DRILLING HAS PROMISE," Oil & Gas Journal, July 1, 1974, pp 45-57

KEY WORDS: Rock

527

Coal Age, "PENNSYLVANIA ACTION - A PROGRAM FOR COAL DEVELOPMENT IN THE STATE," Coal Age, June 1974, pp 76-77

KEY WORDS: Coal, Coal Mining, Anthracite, Appalachian

ABSTRACT: Summary reports of the Pennsylvania Action Conference in Harrisburg, April 1974. The conference was the culmination of an in-depth statewide study of the energy situation in Pennsylvania. Summaries are from five engineering and four coal task forces in their particular fields.

528

Coal Age, "MECHANICAL, HYDRAULIC, PNEUMATIC OPTIONS IN DEEP-MINE TRANSPORT," Coal Age, July 1974, pp 61-77

KEY WORDS: Hydraulic Haulage, Coal, Japan, Robinson Run Mine (W.Va.), Sunagawa Mine, Appalachian

529

Coal Age, "COAL-SLURRY PIPELINES....A RAPIDLY GROWING TECHNIQUE," Coal Age, July 1974, pp 96-98

KEY WORDS: Hydraulic Haulage, Slurry, Coal, Western, Black Mesa Pipeline

530

Coal Age, "HYDRAULIC COAL HOISTING...IN PRINCIPLE AND PRACTICE," Coal Age, November 1973, pp 60-64

KEY WORDS: Hydraulic Hoist, Coal, Sunagawa, Japan, Slurry, Feeder

ABSTRACT: Paper describes a system called Hydrohoist that has been developed in Japan for transportation (horizontal and vertical) of coal in the form of a slurry by means of a driving fluid which is not in contact with the driven slurry. Specifications and dimensions of an installation at the Mitsui-Sunagawa Coal Mine, moving 100 tons/hr of 30 mm diameter coal over the total distance of 2281 m that includes a vertical lift of 515 m are given.

531

Fly, A.B., "SUBSURFACE HYDRAULIC MINING THROUGH SMALL DIAMETER BORE HOLES," 1st International Conference on the Hydraulic Transport of Solids in Pipes, Sept. 1-4, 1970, Paper B1

KEY WORDS: Hydraulic Mining, Bore-Hole Mining, Rock, Slurry, Pump, Economics, Hydraulic Hoist

ABSTRACT: This paper presents the equipment and techniques developed to mine subsurface mineral deposits through 16 in. boreholes entirely by hydraulic methods.

534

Dokunin, A.V. & Onika, D.G., "HYDRAULIC UNDERGROUND MINING," ("GIDRO-MEKHANIZATAIYA PRI PODZEMOY RAZRABOTKA"), from The Coal Industry of the Polish People's Republic (Ugol'naya Promyshlennost' Pol'skoy Narodnoy Respubliki), Moskva, 1957, pp 430-442, Translated for Branch of Bituminous Coal Research, Division of Bituminous Coal, Bureau of Mines, 12 pp.

KEY WORDS: Hydraulic Mining, Mining Plan, Hydraulic Haulage, Coal, Poland, Serzha Mine, Yan Mine, Hydromonitor, Crusher, Sluicing (Flume), Water Purification, Dewatering, Production Rate, Siersza, Czeladz,

535

Froy, R., "THE TESTS ON UNDERGROUND MINING & HYDRAULIC TRANSPORT IN THE POLISH COLLIERIES," Revue de 1' industrie, 1958, pp 215-229, translated, 1 page

KEY WORDS: Hydraulic Mining, Hydromonitor, Coal, Hydraulic Hoist, Hydraulic Haulage, Hydraulic Hois, Poland

536

Wasp, E.J., Thompson, T.L, "SLURRY PIPELINES - ENERGY MOVERS OF THE FUTURE," Nov. 1, 1973, prepared for presentation at the Interpipe 73 Conference, Houston, Texas.

KEY WORDS: Hydraulic Haulage, Pipeline, Slurry, Coal, Black Mesa Pipeline, Western U.S., Gilsonite, Canada, Economics, Consolidation Coal Pipeline, Water Supply, Capital Investment

538

National Coal Board, "THE COAL-MINING INDUSTRY OF THE USSR," Report by a Technical Delegation of the National Coal Board, July 1963, pp 24 & 38.

KEY WORDS: Coal, Coal Mining, Hydraulic Mining, Hydromonitor, Kuzbass, Donbass, Hydraulic Haulage, Slurry, Walton Colliery Pipeline (England), Trelewis Drift Mine (South Wales), Safety, Air Flow, Coal Dus Water Infusion

ABSTRACT: A visit was made to the USSR by members of the National Coal Board and also a member of the Ministry of Power. Objectives of the visit were: (1) to see the latest developments in the mechanisation and remote control of coal-getting machinery and ancillary equipment; (2) to learn something of the latest results of research and design work carried out at the Mining Research & Design Institutes to which very considerable effort is being devoted in the Soviet Union; (3) to study the techniques being developed in the Soviet Union to deal with the problem of sudden outbursts of gas. The findings are contained in this report.

539

Korol, Prof. D., "INFLUENCE OF HYDRAULIC GETTING ON MECHANICAL COAL PREPARATION, From Przeglad Gorniczy, Year 12, No. 12, Dec. 1956, pp 460-462, National Coal Board Translation No. A.1446/AB

KEY WORDS: Hydraulic Mining, Coal, Poland, Hydraulic Haulage, Coal Preparation, Coal Hardness, Dewatering, Hydraulic Hoist, Slurry Siersza, Czeladz, Debiennsko

541

Crosland, R., "COAL AND STONE CUTTING WITH SMALL HIGH PRESSURE WATER JETS," National Coal Board, Sept. 1965

KEY WORDS: Hydraulic Mining, Coal, Rock, Jet Characteristics, Disintegration

ABSTRACT: For the year 1959 a sum of money was provided for the purpose of continuing development work on water jets of hydraulic mining, but more specifically to cover investigations with small high pressure jets of 3000 to 6000 psi used by an American and a German firm.

Initial work was aimed at producing a compact, long range jet of water and this was found to be greatly dependent on nozzle shape and finish. Some experience of these factors had been gained in previous work on large, medium pressure jets of water as are now being used in the hydraulic mining district at Trelewis Drift, South Wales.

For the smaller jets now under consideration two types of tests were used to compare the shape and form of jet obtained with different designs of nozzle. This report describes these tests and presents results of the studies.

542

National Coal Board, "EXPLORATORY TRIALS IN HYDRAULIC MINING AT TRELEWIS DRIFT MINE," Sept. 1961

KEY WORDS: Hydraulic Mining, Coal, Trelewis Drift Mine (South Wales), Hydromonitor, Pipeline, Sluicing (Flume), Manpower, Hydraulic Haulage, Safety, Slurry, Dewatering, Mining Plan, England

ABSTRACT: Hydraulic mining as considered in this report relates to the direct use of a jet of water to cut or break down coal at the face, & subsequent utilization of the energy of the flowing water to load & transport the coal from the working area by open flumes. The technique is much the same as that adopted for mining alluvial deposits, but for mining coal higher pressures and smaller quantities of water are used.

The method was first seriously considered by the Board after their Technical Mission returned from Russia in 1956. Three sites were considered for carrying out exploratory field trials and of these Trelewis drift mine was chosen as conditions were most suitable. Design of the layout & equipment was undertaken by a team of Headquarters engineers, who also supervised installation & execution of the trials, & development & manufacture of the hydromonitor was undertaken at the Board's Central Engineering Establishment. Site work on installation of the plant started in August 1958 & hydraulic mining trials were carried out from June 1959 until Sept. 1960 when the work was stopped.

543

Gvozdek, G. & Macura, L., "HYDRAULIC MINING IN SOME DEEP PITS IN CZECHOSLOVAKIA," From Uhli, No. 12, Dec. 1958, pp 397-404, Translated by the National Coal Board, # A.1683

KEY WORDS: Hydraulic Mining, Czechoslovakia, Ostrave, Siersza, Czeladz, Kladno, Slurry, Dewatering, Hydraulic Haulage, Poland, New Zealand, Canada, Australia, Mining Plan, Pump, Pipeline, Hydromonitor, Sluicing (Flume), Manpower, Production Rate, Cost Per Ton, Electrical Power, Water Supply, Hydraulic Hoist, Feeder, France, Merleback Pit Pipeline, Seam Thickness,

ABSTRACT: This article briefly surveys the development of hydraulic mining and mining methods in Czechoslovakia. It deals with hydraulic deep-pit mining at the Czechoslovak Army Mine I in Karvina and describes its machiner. It treats the dewatering of slurries: and finally describes the hydraulic transport of coal from the face to the preparation plant at the surface, at the Stalin II Pit.

544

Markus, M.N., "IMPROVING THE TECHNOLOGY OF HYDRAULIC MINING," From Ugol, Year 33, No. 1, January 1958, pp 4-5, National Coal Board Translation # A.1592.AB

KEY WORDS: Hydraulic Mining, Coal, Explosives, Polysayevskaya-Severnaya Mine, Roof, Tyrganskie Uklony Mine, Hydromonitor, Electrical Power,

545

Galperin, M.I., "NEW METHODS OF DISRUPTING MINE STRATA," From Mekhanizatsia, Year 11, No. 3, March 1957, pp 23-24, National Coal Board Translation # A.1576/AB.

KEY WORDS: Hydraulic Mining, Hydromonitor, Electrical Power, Rock, Coal, Disintegration, Slurry

546

Nikonov, G.P., "SELECTING A RATIONAL TECHNOLOGICAL SYSTEM OF BREAKING UP SURROUNDING STRATA BY A WATER JET WHEN USING HYDRAULIC MINING IN OPENCAST MINES," From Ugol, Year 31, No. 11, Nov. 1956, pp 26-32, National Coal Board Translation # A.1525/SEH

KEY WORDS: Hydraulic Mining, Hydromonitor, Coal, Jet Characteristics, Disintegration, Open Pit, Electrical Power, Hydraulic Haulage, Rock

547

Belov, Yu.D., Kunyaev, E.V., Okhrimenko, V.A., "STRATA PRESSURE IN LEVEL SEAMS WORKED BY HYDRAULIC MINING," Ugol, Year 35, No. 1, Jan. 1959 pp 33-38, National Coal Board Translation # A.1741/JG

KEY WORDS: Hydraulic Mining, Kuzbass, Coal, Polysayevskaya-Severnaya Mine, Flat Coal Beds, Roof Support, Mining Plan, Roof, Floor

548

Sharapov, V.V., "HYDRAULIC MINING AS ONE OF THE MOST IMPORTANT MEANS OF FULFILLING THE OBJECTIVES OF THE CURRENT SEVEN-YEAR PLAN," From Ugol, Year 34, No. 3., March 1959, pp 23-29, National Coal Board Translation # A.1816/SEH

KEY WORDS: Hydraulic Mining, Coal, Economics, Capital Investment, Polysayevskaya-2 Mine, Gramoteinskaya 3-4 Mine, Kuzbass, Production Rate, Manpower, Cost Per Ton, Mining Plan, Tyrganskie Uklony Mine, Ziminka 3-4 Mine, Krasnogorskaya Mine, Tomusinskaya 1-2 Mine, Koksovaya No. 1 Mine, Moskvich Delta Mine, Privolnyanskaya-Yuzhnaya Mine, Coal Dust, Novo-Volynsk Pipeline, Roof Support, Recovery, Hydromonitor, Explosives, Hydraulic Haulage, Donbass, Sluicing (Flume), Pump, Hydraulic Stowing, Feeder, Yanovsky Mine (Lugansk)

549

Boyd, W.T., "MINING AND TRANSPORTING COAL UNDERGROUND BY HYDRAULIC METHODS: A LITERATURE SURVEY," Bureau of Mines Info. Circular 7887, 1959.

KEY WORDS: Bibliography, Hydraulic Mining, Coal, Mining Plan, Donbass, Kuzbass, Coal Hardness, Hydraulic Haulage, Feeder, Pump, Czechoslovakia, Poland, Germany, England, Japan, France, Slurry, Water Infusion, Sluicing (Flume), Roof Support, Pitching Coal Beds, New Zealand, Polysayevskaya-Severnaya, Tyganskiye Uklony, Hydromonitor

ABSTRACT: Experience with mining and transporting coal by hydraulic methods in the Soviet Union, New Zealand, and other countries; condition in many bituminous coal deposits in the U.S. may be favourable for economic coal extraction, using high pressure water jets.

550

McCain, D.L., Umphrey, R.W., "CONTINUOUS UNDERGROUND COAL HAULAGE BY HYDRAULIC TRANSPORT," Hydrotransport 3, BHRA, Golden Colorado, May 1974, Paper A6, pp. A6-69-75

KEY WORDS: Hydraulic Haulage, Coal, Consol's Humphrey No. 7 Mine, Pipeline, Robinson Run Mine, Crusher, Economics, Slurry, Pump, Power Consumption, Appalachian.

SUMMARY:

Hydraulic transport of coarse coal has replaced conventional mechanical haulage in a West Virginia underground coal pilot installation. Increased productivity is expected to result from the continuous nature of the hydraulic transport system, while health, safety, and maintenance problems are reduced.

551

Marusich, Steven, "LETTER TO WILLIAM C. COOLEY CONCERNING HYDRAULIC COAL MINING IN CZECHOSLOVAKIA," May 29, 1973, 2 pages

KEY WORDS: Hydraulic Mining, Coal, Czechoslovakia

552 R

Dictionary - definition of hydraulicking in Russian

KEY WORD: Hydraulic Mining

553 R

Bremsberg, Encyclopedia listing of.

KEY WORD: Hydraulic Mining

555R

Karagodin, L.N. & Krigman, R.N., "RASCHETNO-EKSPERIMENTAL'NOE OPREDELENIE PARAMETROV NAGNETANIYA VODY V UGOL'NYY PLAST CHEREZ GLUBOKIE SKVAZHINY, Ugol # 2, 1967
"MATHEMATICAL AND EXPERIMENTAL DETERMINATION OF THE PARAMETERS OF WATER INJECTION INTO THE COAL SEAM THROUGH DEEP HOLES"

KEY WORDS: Coal, Water Infusion

ABSTRACT

This whole study is based upon the premise that, as a result of a number of investigations in the Donbass, it is shown that the conditions of moistening, performed to prevent ejections must result in the increase of filtration characteristics of the seam, and, consequently in the increase of gas emission from the holes. This leads to extremely cumbersome mathematical calculations based upon the equations of unsteady fluid and gas filtration in a porous medium. The practical determination of injection parameters was made on the basis of data of research on two seams in three different mines. Both the theoretical and practical results are compiled in a cumbersome table. In general, all the comparable practical values correspond fairly well with the theoretical. The noticeable deviations are linked with water bursts in a limited section long before the passage of the whole water front. It is concluded that the described method of determination of these parameters is fully acceptable for its practical application. It is, however, this analyst's opinion that at this stage of the survey, any further evaluation of the study is of only marginal interest.

556R

Korin, V.N., "NOVYE MASHINY DLYA UGOL'NOY PROMYSHLENNOSTI V TEKUSHCHEM PYATILETII," Ugol # 2, 1967, pp. 33-37
"NEW MACHINES FOR COAL INDUSTRY IN THE CURRENT FIVE YEAR PLAN"

KEY WORDS: Mining Machinery, Coal, Hydraulic Roof Supports, Continuous Miners

ABSTRACT

During the period 1965-1969 nearly 130 denominations of new machines in the form of experimental-industrial samples were manufactured only for the mechanization of development and winning workings of heavy type. Of these 80 models were marked for mass production, while more than 40 obsolete models were rejected. During that period a series of narro-web cutter-loaders were built (1K-52SH, KU-60, EK-52, K-58, MK-64 for flat or gently slanting seams, and also UKR-1 and "Komsomolets" for thin and steep seams), a series of feeding mechanisms with hydraulic drives for the combines and hydraulically-fixed supports (OMKT, MK, M-87, M-100, M-81 and KTUO, plough installations USB-2M and UST, mobile-shaking-face conveyers (SP-63, SP-48, and SP-46), roadheaders (PK-7, PK-9 and "Karaganda 7/15), apron shaking conveyers P50 and P65 and other machines. However, the rates of realization of mass production of most of the above machines was slowed down due to the beginning of broad application of hydraulic drives nearly in all stoping machines and power supports, for the production of which coal machine shops were not prepared.

New projects had to be envisaged for the five-year plan 1966-1970 to cope with this situation. The increase in the volume of production of the most important mining equipment planned for the current five-year plan is indicated in the table of page 34. The paper describes with much detail all these machines for general mining with no special emphasis on its hydraulic aspects. Therefore, this paper is of only marginal interest for the current survey of hydraulic underground mining by Terraspace, Inc.

557R

Nurok, G.A., Bogatyrev, V.P., Gorin, R.F., "OPYT PRIMENENIYA BEZNAPORNOGO NASYSHCHENIYA GLINSTYKH POROD DLYA POVYSHENIYA EFFEKTIVIOSTI IKH GIDRO-MONITORNOGO RAZMYVA," Ugol # 1, 1967, pp. 30-33
"EXPERIMENT OF APPLYING PRESSURELESS SATURATION OF CLAYEY ROCKS TO INCREASE THE EFFICIENCY OF THEIR HYDRAULIC WASHOUT"

KEY WORDS: Hydraulic Mining, Rock, Water Infusion

558R

TRANSLATED

Saretskiy, L.I., "UCHET DOBYCHI UGLYA NA GIDROSHAKHTAKH," Ugol # 2, 1974, PP 46-48, "RECORD OF COAL PRODUCTION IN HYDROMINES,"

KEY WORDS: Slurry, Rock, Coal, Hydraulic Mining, Economics, Hydraulic Haulage, Production Rate, Yubileinoye, Coal Preparation, Instrumentation

ABSTRACT:

In order to improve the recording of coal production the author deems it necessary to introduce a more perfected, automated method of accounting, which would be different from the one presently used and based upon accounting the percentage of final products' output in the preparation plants, thus incorrectly reflecting coal losses in the mine. The scheme is presented in Fig.1 and foresees the installation of automatic scales on concentrates and supplied coal conveyers, with special devices at rock pressure slurry conduits. On the whole this paper has little relevance in that it does not deal directly with questions of undergound hydraulic mining.

559R

Krivtsov, A.T., Shteynberg, V.A., Buydenko, P.A., "TSENTRALIZATSIYA VODOOTLIVNYKH USTA NOVOK GRUPPY SHAKHT," Ugol # 5, 1974, pp. 41-44
"CENTRALIZATION OF PUMP-OUT SYSTEMS FOR A GROUP OF MINES"

KEY WORDS: Water Supply, Coal Mining

TRANSLATED

560R

Gilula, M.D., Novikov, B.A., "OPROGNOZIROVANII POKAZATELEY PRI TEKHNIKO-EKONOMICHESKOM OBOSNOVANII SOZDANIYA NOVOY TEKHNIKI," Ugol # 2, 1974, pp 44-46
"FORECASTING ECONOMIC INDICATORS ON THE BASIS OF TECHNO-ECONOMIC SUBSTANTIATION OF THE CREATION OF NEW TECHNIQUES"

KEY WORDS: Coal Mining, Economics, Mining machinery

561R

Nurok, G.A., "GIDROMEKHANIZATSIA OTKRITIKH RABOT," From the Book (in Russian) by E.F. Sheshko, "OTKRITAYA RAZRABOTKA MESTOROZHDENIY POLEZNYKH ISKOPAEMYKH," Moskva, Ugle Tekhizdat, 1957, 492 pp.
"HYDROMECHANIZATION OF OPEN-PIT OR QUARRY WORKINGS" From Book "Open-Pit Mining of Economic Mineral Deposits.

KEY WORDS: Hydraulic Mining, Coal, Rock, Hydraulic Haulage, Open Pit

562

Daily, A.F., "HYDRAULIC MINING," Section 8.5-9, pp 522-527, in the Book "Surface Mining," Edited by E.P. Pfleider, Aime, New York, 1968

KEY WORDS: Hydraulic Mining, British Columbia

ABSTRACT: Brief Summary of hydraulic mining methods

563

Osborn, E.F., "COAL AND THE PRESENT ENERGY SITUATION," Science, Vol. 183, pp 477-481, Feb. 8, 1974,

KEY WORDS: Coal, Coal Mining, Recovery, Methane

564

Muchnik, V.S., "UNDERGROUND HYDRAULIC EXTRACTION OF COAL," From Mekhanizatsiya Trudoyemikh i Tyazhelykh Rabot, No. 2, 1953, pp 10-12, National Coal Board Translation # A.572/A.B.

KEY WORDS: Hydraulic Mining, Coal, Sluicing (Flume), Kuzbass, Tyrganskie Uklony Mine, Hydromonitor, Manpower, Production Rate, Hydraulic Hoist, Pump, Crusher, Mining Plan

565

Gnilorybov, Ya. I. & Okhrimenko, V.A., "EFFECT OF COAL HARDNESS & FRACTURE ON THE EFFICIENCY OF HYDRAULIC MINING," ("Krepost' uglya i treshchinovatost' plastov kak faktory, vliyayushchiye na effektivnost' gidrootboyki"), Puti Povysheniya Effektivnosti Podzemnoy Gidrodobychi Uglya, Chapter III, Pages 68-93, Moscow 1959, Translated for the Bureau of Mines

KEY WORDS: Coal, Coal Hardness, Hydraulic Mining, North Polysayevskaya Mine, Productivity, Disintegration, Hydromonitor, Kuzbass

566

Hope, J.M., "A REVIEW OF HYDRAULIC COALMINING IN NEW ZEALAND," Mining and Quarrying Conference, School of Mines & Metallurgy, University of Otago, August 1956, Paper 71, 6 pp.

KEY WORDS: Hydraulic Haulage, Coal, New Zealand, Sluicing, Slurry, Seddonville (Hydro Coal Mines, Ltd), Seddonville (Rodgers Bros. Mine), Berlins (Glen Crag Opencast Mine), Seddonville (Charming Creek Mine), Hydraulic Mining, Stockton (Fly Creek Mine), Productivity, Buller District (Buller Gorge Rahui Mine), Economics, Production Rate, Cost Per Ton, Manpower, Electrical Power, Westport District, Cardiff Bridge Mine

567

Buchanan, D.E., Watson, W.B., "OPENCAST COAL MINING BY HYDRAULIC METHODS," Mining and Quarrying Conference, School of Mines & Metallurgy, University of Otago, August 1956, Paper #68, 11 pp

KEY WORDS: Hydraulic Mining, Coal, Hydraulic Haulage, New Zealand, Buller District (South Island, N.Z.), Open Pit, Charleston Mines, Westport District, Water Supply, Berlins (Glen Crag Opencast Mine), Pipeline, Hydromonitor, Sluicing (Flume), Slurry, Mining Plan, COal Preparation, Comet Mine, Stockton (Fly Creek Mine), Dewatering, Pipeline

ABSTRACT: This general article on open-cast coal mining makes brief reference to the use of high pressure water jets for coal winning.

568

Duncan, P.J., "UNDERGROUND SLUICING ON THE BULLER COALFIELD," Mining Conference, School of Mines & Metallurgy, University of Otago, May, 1953, Paper 41, 17 pp

KEY WORDS: Hydraulic Mining, Hydraulic Haulage, Coal, New Zealand, Productivity, Buller District (South Island, N.Z.), Cascade Creek Denniston Mines 1 & 2), Sluicing (Flume), Explosives, Mining Plan, Hydromonitor, Water Pollution, Water Supply, Slurry, Buller District (Buller Gorge), Seddonville (Hydro Coal Mines, Ltd.), Roof, Floor, Recovery, Charleston Mines, Economics, Wear & Abrasion, Hydraulic Hoist, Slurry, Power Consumption (Pipeline), Coal Preparation, Safety,

ABSTRACT: In this paper, written in 1948 as a thesis at the Otago School of Mines, an attempt is made to describe the method of underground sluicing in coal mines: possible extensions and improvements are also noted. The method appears to have originated in New Zealand, but is must be remembered that it has not been applied on a large scale.

571

Muchnik, V.S., "MASTERING THE TECHNOLOGY OF UNDERGROUND HYDRAULIC EXTRACTION OF COAL IN INDUSTRIAL PRACTICE," Ugol, Year 27, No. 4 (313), April 1952, pp 12-14, Scientific Abstracts, Issue # 5, August 1952, p. 6, No. 13, National Coal Board Tranlsation # A350/A.B., 5 pp

KEY WORDS: Hydraulic Mining, Coal, Tyrganskiye Uklony, Kuzbass, Hydromonitor, Sluicing, Hydraulic Hoist, Coal Hardness, Productivity, Roof Support, Production Rate, Manpower, Mining Plan

572

Narayana, V.S., "LETTER TO DR. W. C. COOLEY, TERRASPACE, REGARDING HYDRAULIC MINING IN INDIA," July 30, 1974, 2 pp.

KEY WORDS: Hydraulic Mining, Coal, Hydraulic Haulage, Rock, Hydraulic Stowing, India

585

MINING ENGINEERING, "FIRMS TO INVESTIGATE 800-MILE COAL PIPELINE," Mining Engineering, Vol. 26, No. 8, August 1974, pp 10.

KEY WORDS: Slurry, Coal, Pipeline, Hydraulic Haulage

586

BIBLIOGRAPHY, "COAL REFERENCES FROM DOCUMENTS IN TERRASPACE'S MAIN LIBRARY," 1974

KEY WORDS: Bibliography

591R

Dovba, A.S., "TEKHINCHESKIY PROGRESS I TRUD NA PREDPRIYATIYAKH PO DOBYCHE UGLYA," Izdatel'stvo 'Nedra', Moscow, 1973
"TECHNICAL PROGRESS AND LABOR IN ENTERPRISES CONNECTED WITH THE PRODUCTION OF COAL."

KEY WORDS: Coal, Safety, Coal Mining,

ABSTRACT:

Expounded in this book are the results of investigations of basic trends in the development of coal industry in connection with the technical progress, the advanced rate in the rise of strip mining of coal, the concentration of production on the basis of reconstruction of old coal producing enterprises and construction of new ones, fit with more advanced technology and the influence of these factors on the specific labor consumption in coal mining.

Moreover, the book analyzes the influence of technological progress on the conditions and improvement of labor safety in coal mines and prospection pits. The variations are investigated in the structure of qualitative composition of mine and prospecting pit' workers, and the tendencies are examined in the formation of workers professions' outlook in connection with the application of more perfected types of machinery and equipment.

594R

Shevelev, F.A., "TABLITSY DLYA GIDRAVLICHESKOGO RASCHETA STAL'NYKH, CHUGYNNYKH, ASBESTOTSEMENTNYKH, PLASTMASSOVYKH I STEKLYANNYKH BODOPROVODNYKH TRUB," Stroyizdat, Moscow, 1973
"TABLES FOR THE HYDRAULIC COMPUTATION OF PIPES FOR WATER CONDUITS MADE OF STEEL, PIG IRON, ASBESTOS-CEMENT, PLASTIC, AND GLASS."

KEY WORDS: Pipelines

ABSTRACT:

As the title indicates this memoir (110 pp) reproduces revised tables for the hydraulic calculation of pipes for water conduits and is the fifth complementary edition of earlier published works.

595

Baker, J.M., "HYDRAULIC MINING OF GILSONITE AND ITS APPLICATION TO COAL EXTRACTION," Paper Presented at the Annual Meeting of the American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., San Francisco, Feb. 15-19, 1959, SME Preprint # 5953

KEY WORDS: Hydraulic Mining, Coal, Sluicing (Flume) Pump, Hydraulic Haulage, Gilsonite, Hydromonitor, Jet Characteristics, Disintegration, Western U.S.

596

Gol'din, Yu.A., Mikhalyuk, P.P., Frolov, V.S., "COAL CUTTING BY A RING-TYPE JET HEAD," Soviet Mining Science, No. 3, May-June, 1970, pp 286-290 English Translation by Consultants Bureau, New York

KEY WORDS: Coal, Jet Cutter, Disintegration, Jet Characteristics, Hydraulic Mining

597

Timme, A.A., "SELECTING EFFECTIVE PRESSURES FOR BREAKING DONBASS COALS BY HYDROMONITOR JETS," Soviet Mining Science, No. 6, Nov.-Dec. 1970, pp 692-696 English Translation by Consultants Bureau, New York

KEY WORDS: Coal, Hydraulic Mining, Donbass, Hydromonitor, Yanovskiy, Production Rate, Disintegration, Odesskaya-Konsomo'skaya No. 2, Dar'evskaya Zimorgor'e

ABSTRACT: The results of many field and laboratory experiments, revealed that the working pressure for hydraulic cutting of coal should be determined by three main factors; the energy capacity,productivity, and specific flow rate of water. The value of the working pressures thus obtained will be effective for the giving pit seam.

598

Moskvitin, V.V., "MECHANISM OF HYDROABRASIVE WEAR OF PIPELINES," Soviet Mining Science, No. 5, Sept-Oct. 1970, English Translation by Consultants Bureau, New York, pp 558-561

KEY WORDS: Slurry, Wear & Abrasion, Hydraulic Haulage, Coal, Rock

599

Shpitbaum, I.M., "THEORETICAL DETERMINATION OF THE POWER CONSUMPTION AND PRODUCTIVITY OF HYDRAULIC MINING," Soviet Mining Science, No. 4, July-Aug., 1972, pp 406-411, English Translation by Consultants Bureau, New York

KEY WORDS: Hydraulic Mining, Pulsating Jet, Coal, Coal Hardness, Disintegration, Rock, Jet Characteristics, Kuzbass, Donbass

600

Gal'perin, L.R., "THE FLOW RATIO IN THE MIXER OF A PIPELINE FEEDER," Soviet Mining Science, No. 5, Sept.-Oct. 1972, pp 530-534, English Translation by Consultants Bureau, New York

KEY WORDS: Hydraulic Haulage, Slurry, Feeder, Sluicing (Flume), Coal, Roc

601

Kovalev, O.V., Kalimov, Yu.I., Shishkin, V.P., Nikolaeva, L.A., Gusel'niko L.M., "SELECTING THE CONDITIONS FOR HYDRAULIC WORKING OF CAVING-RESISTANT ROOFS IN THE PECHORA COALFIELD," Soviet Mining Science, No. 6, Nov.-Dec. 1972, pp 621-624, English Translation by Consultants Bureau, New York

KEY WORDS: Coal, Hydraulic Mining, Roof, Permeability, Rock, Roof Support

602

Shtele, V.I., Malakhov, V.E., Posokhov, G.E., "THE INFLUENCE OF THE PARAMETERS OF THE MINING SYSTEM ON THE COST OF COAL WON BY MECHANIZED CUTTING WITH STOWING," Soviet Mining Science, No. 6, Nov.-Dec. 1972, pp 710-711, Translation by Consultants Bureau, New York

KEY WORDS: Coal, Coal Mining, Economics, Pitching Coal Seams

603

Dmitriev, G.P., "HYDRAULIC TRANSPORTATION OF DENSE LOOSE MATERIALS," Soviet Mining Science, No. 1, Jan.-Feb. 1971, pp 127-130, English Translation by Consultants Bureau, New York

KEY WORDS: Hydraulic Haulage, Slurry, Rock, Coal, Power Consumption (Pipeline)

606

Baev, Kh.A., "GAS EMISSION, EVOLUTION OF HEAT, AND SPONTANEOUS COMBUSTION OF COAL IN COLLIERIES," Soviet Mining Science, No. 5, Sept.-Oct. 1971, pp 574-577, English Translation by Consultants Bureau, New York

KEY WORDS: Coal, Methane, Spontaneous Combustion, Coal Mining, Air Flow (Ventilation), Temperature, Safety

607R

Muchnik, V.S., Soldatenko, A.V., Golland, E.B., Istomin, I.E., "UCHET DOBYCHI I POTER' UGLYA PRI GIDRAVLICHESKOY TEKHNOLOGII," Tematicheskiy Sbornik, Voprosy Gidravlicheskoy Dobychi Uglya, Novokuznetsk, 1970.

KEY WORDS: Hydraulic Mining, Kuzbass, Coal, Polysayevskaya-Severnaya, Krasnogorskaya, Gramoteinskaya, Baidayevskaya-Severnaya, Ziminka 3-4, Tomusinskaya, Hydromonitor

608R

Puzryrev, I.E., Khvoshchevskiy, N.M., Proshkin, A.I. & Sal'nikov, V.P., "PROVEDENIE I KREPLENIE PODGOTOVITEL'NYKH VYRABOTOK NA GIDROSHAKHTAKH KUZBASSA," Novokuznetsk, 1969

WORDS: Hydraulic Mining, Coal, Kuzbass, Gramoteinskaya 3-4, Produc-ity, Baidayevskaya-Severnaya, Krasnogorskaya

609R

Odinokov, B.P., Coin, V.V., Soldatenko, A.V., "SOVERSHENSTVOVANIE SISTEM RAZRABOTKI PLASTOV POLOGOGO PADENIYA," Novokuznetsk, 1969

KEY WORDS: Hydraulic Mining, Coal, Kuzbass, Gently Pitching Seams, Mining Machinery, Baidayevskaya-Severnaya, Economics

611R

Karachentsev, V.I., Kodentsov, A.Ya., Burov, M.Z., "GIDROMEKHANIZATSIYA NA SHAKHTAKH," Moscow 1963.

KEY WORDS: Hydraulic Mining, Coal

612R

Kodentsov, A.Ya., Tereshchenko, A.S., "POSOBIE DLYA RABOCHEGO GIDROUCHASTKA,"Moscow, 1961

KEY WORDS: Hydraulic Mining, Coal

613R

TRANSLATED

Razgil'deev, G., "VYGODNAYA TEKNOLOGIYA," Socialist Industry, Nauka-Proizvodstvu, October 4, 1973
"PROFITABLE TECHNOLOGY," The All-Union Scientific Research Institute Hydrocoal, Novokuznetsk

KEY WORDS: Coal, Hydraulic Mining, Kuzbass, Donbass, Production Rate, Productivity, Coal Dust, Economics, Prokopi-Kiselev Region, Krasnogorskaya, Tyrganskaya Mine, Taybinskaya Mine, Hydraulic Haulage, Amortization Yubileinoye Mine

614R

TRANSLATED

Chermenskiy, G.P., "LETTER TO DR. W.C. COOLEY, TERRASPACE, INC." August 12, 1974

KEY WORDS: Hydraulic Mining, Coal, Mine Development, Kuzbass

615R

Karpov, G.S., Vaganov, P.V., "OBOSNOVANIE NORM UDEL'NOGO RASKHODA VODY I EE NAPORA PRI GIDRAVLICHESKOM SPOSOBE RAZRABOTKI ROSSYPEY," Gornyy Zhurnal, No. 12, 1973, pp 15-18
"SUBSTANTIATION OF NORMS OF SPECIFIC WATER CONSUMPTION AND ITS PRESSURE DURING THE HYDRAULIC METHOD OF PLACER EXPLOITATION."

KEY WORDS: Hydromonitor, Hydraulic Mining,

SUMMARY

In view of the obsoleteness of the norms established in 1960 regarding the standardization of specific water flows and of pressure selection at hydromonitor nozzles, the authors propose new methods, improving the technological basis for same, which are based upon the classification of formations by the value of their hydraulic breaking capability. - This paper refers mainly to all sorts of placer and alluvial deposits, such as gold, in the first place.

616R

TRANSLATED

Asatur, G.K., Severin, L.P., "OPYTNYE DANNYE PO ENERGOEMKOSTI PROTESSA GIDROOTBOYKE MINERAL'NYKH ISKOPAEMYKH," Gornyy Zhurnal, No. 11, 1973, pp 28-31.
"EXPERIMENTAL DATA ON THE SPECIFIC ENERGY OF THE PROCESS OF HYDRAULIC BREAKING OF MINERALS"

KEY WORDS: Hydraulic Mining, Coal, Rock, Disintegration, Coal Hardness

617R

Biryukov, B.N., "PLANETARNO-ROTORNYY NASOS DLYA TRANSPORTIROVANIYA PUL'PY I RASTVOROV," Gornyy Zhurnal, No. 1, 1974, pp 82-86
"PLANETARY-ROTOR PUMP FOR TRANSPORT OF SLURRIES AND SUSPENSIONS."

KEY WORDS: Pump, Slurry

Summary:

A planetary-rotor hydraulic pulsator is worked out to achieve membrane drive allowing to obtain a very compact pump construction. It scheme is shown in Fig.1., with detailed description of its operation. The advantages of this hydraulic pulsator are in that its working elements are completely isolated from the transported liquid and are constantly in heavy lubrication. The volumetric constant of the hydropulsator is quite high, thus assuring a high productivity with small dimensions and low rotation velocity. In short, the feature is in the execution of the hydraulic pulsator.

620

Cook, L., "PRACTICAL APPLICATION OF HYDRAULIC MINING AT RAHUI BULLER COALFIELD," Paper 31, Mining Conference, School of Mines & Metallurgy, University of Otago, May 1953,

KEY WORDS: Coal, Hydraulic Mining, Sluicing (Flume), Dewatering, Wear & Abrasion, Economics, Hydraulic Hoist, Hydraulic Haulage, New Zealand, Buller District (Buller Gorge Rahui Mine), Hydromonitor

ABSTRACT: "Hydro-mining" has in recent years been developed in small workings both on the surface and underground in the Buller field.

The layout is generally similar in all mines: water is conveyed from a source of supply in pipes to the working faces where it is used to wash down the shot coal which is conveyed by flume to the bin. Mechanical details vary, of course, from one mine to another.

Hydro-mining on the Buller coalfield has been developed on a trial and error basis by practical miners, nevertheless the method has been outstanding successful, and has resulted in the economical working of areas that would not have been exploited with conventional truck haulage.

The author points out that the success achieved in these relatively small operations suggest the possibility of extending the system to large mines.

621

Seaton, D., "HYDRAULIC MINING OF COAL," Paper 32, Mining Conference, School of Mines & Metallurgy, University of Otago, May 1953,

KEY WORDS: Hydraulic Mining, Coal, Seddonville (Rodgers Bros. Mine), Seddonville (Charming Creek Mine), Sluicing (Flume), Hydraulic Haulage, Hydraulic Hoist, Feeder, New Zealand, Hydromonitor, Water Supply

ABSTRACT: Transporting of coal from the face to bins by fluming has been practiced on the West Coast for some years. Where grades are favorable & water under pressure available it has much to commend it and no other method can compete in cheapness with it.

It has been applied to mines which have been previously worked with trucks on the bord-and-pillar system and has permitted reworking of areas where pillars have been badly extracted.

As yet the method is only in the development stage and application of specially designed pumps and elevators may permit wider application.

Sluicing coal is done on the same principles as that of gravel sluicing in gold mining. The coal being washed from the working face after blasting by a jet of water and carried away by the water down a flume.

No shoveling is done by the miners & the only heavy work done is the setting of props & disposing of stone left behind after sluicing or from falls of the roof.

The coal is moved from the working face by the water at a high rate and often in greater quantity than the flume can handle,a miner then stands in the entrance to the flume to stop the large lumps. The miner working the nozzle may assist the coal into the flume with an iron rake from a position behind the nozzle and close to safe ground. The second miner helps the coal move down the flume with a shovel.

The water is turned off periodically and the miners break the coal on the heap to a size small enough to allow it to pass down the flume, stone being moved to the side at the same time.

622

BHRA, "THE HYDRAULIC TRANSPORT OF SOLIDS IN PIPES, A BIBLIOGRAPHY," 1970

KEY WORDS: Bibliography, Hydraulic Haulage, Pipelines

ABSTRACT: The aim of this biblography has been to collect the extensive literature available on the hydraulic transport of solids in pipes and pipelines and present it in an organized form. The publications contains 1030 references arranged chronically in specific subject groups and a brief graphical analysis of the literature output over a span of 20 years (1950-1969) is presented. Abstracts are included for the majority of items, and subject and author indexes are provided.

623

Jagodzinski, R., Piazza, R.W., Godin, R.L., "HYDRAULIC DECOKING - DESIGN VERSUS CUTTING TIME," ASME, Preprint # 70-Pet-5, 7 pages

KEY WORDS: Hydromonitor, Disintegration, Pump, Coking, Borehole Mining, Up-Raise Mining

ABSTRACT: To establish hydraulic design criteria that can be used as reference in designing new hydraulic decoking installations. That there is a need in the industry for such reference criteria is apparent when referring to the wide variances in the final design conditions of the most recent decoking installations.

624

Cook, L., "HYDRAULIC VERTICAL SEAM UNDERGROUND MINING: COMET MINE," Paper 69 at the Mining and Quarrying Conference, School of Mines & Metallurgy, University of Otago, August 1956,

KEY WORDS: Coal, Hydraulic Mining, New Zealand, Westport District, Buller District (Comet Mine), Sluicing (Flume)

625

Stott, J.B, "THE IMPORTANCE OF HUMIDITY IN THE SPONTANEOUS HEATING OF COAL," Paper 64 Presented at the Mining & Quarrying Conference, School of Mines and Metallurgy, University of Otago, August 1956.

KEY WORDS: Coal, Spontaneous Combustion, New Zealand

627

Muchnik, V.S., "UNDERGROUND HYDRAULIC COAL-MINING IN THE UNION OF SOVIET SOCIALIST REPUBLICS," Paper 69 Presented at the Mining and Quarrying Conference, School of Mines & Metallurgy, University of Otago, August 1956

KEY WORDS: Coal, Hydraulic Mining, Hydromonitor, Pump, Sluicing, (Flume), Pipeline, Crusher, Pitching Coal Seam, Settling, Coal Preparation Hydraulic Hoist, Kuzbass, Polysayevskaya-Severnaya, Tyrganskiye Uklony

628

Moynihan, T., "THE FUTURE OF HYDRAULIC COAL MINING," Paper 70 Presented at the Mining & Quarrying Conference, University of Otago, August 1956

KEY WORDS: Hydraulic Mining, Coal, New Zealand, Buller District (Comet Mine), Air Flow (Ventilation)

630

Keown, G.K., "LONGWALL MINING AND HYDRAULIC STOWING AT MANGAPEHI COLLIERY," Paper 73 Presented ath the Mining & Quarrying Conference, School of Mines and Metallurgy, University of Otago, August 1956

KEY WORDS: Coal, Hydraulic Stowing

631

Partel, W.C., "HYDRAULIC STOWING AT NORTH MEREBACH COLLIERY, SARRE ET MOSELLE," Paper 58 Presented at the Mining & Quarrying Conference, School of Mines & Metallurgy, University of Otago, August 1956

KEY WORDS: Hydraulic Stowing, Slurry, France

635

Steele, D.J., "SOME IMPRESSIONS OF THE COAL INDUSTRY OF POLAND, 1972," The Mining Engineer, April 1973, pp 327-339

KEY WORDS: Coal, Hydraulic Hoist, Poland, Coal Mining, Hydraulic Stowing, Longwall, Manpower, Economics, Productivity, Bituminous, Methane, Yan (Jan) Czechoslovakia,

SYNOPSIS

THE paper, which follows a visit to Poland in March/April 1972, describes the geology of the coalfields and indicates the available reserves of bituminous and brown coal. Trends in production statistics since 1945 are discussed and the future development of the coal industry is outlined. Technical details relating to underground mines constitute the major part of the paper whilst reference is also made to the work of the Research and Development Establishments and of the Mining Academies.

636

Whittaker, B.N., "THE COAL MINING INDUSTRY OF THE USSR, The Mining Engineer July 1974, pp 463-469

KEY WORDS: Coal, Donbass, Kuzbass, Coal Mining

ABSTRACT: A visit was made by the author to the USSR in 1973. The purpose of the visit was to gain impressions of the coal mining industry of the USSR, make observations on any major difference when compared to the UK, particularly in respect of education and training, and report on strata control research, developments, and practice. Findings are discussed in this report.

637

Ignatieff, A., "COAL POSITION AND OUTLOOK IN CANADA 1971," The Mining Engineer, July 1971, pp 695-696

KEY WORDS: Canada, Coal, Hydraulic Mining, Pitching Coal Seam, Hydromonitor, Sluicing (Flume)

638

USGS, "COMMITTEE REQUEST FOR INFORMATION ON SURFACE MINING OF BITUMINOUS COAL BEDS THAT DIP 15 DEGREES OR MORE IN THE APPLACHIAN REGION," Memorandu from the United States Geological Survey, Kenneth J. Englund, Geologist, to Norman Williams, Joint Senate-House Committee on Strip Mining Legislation, August 29, 1974

KEY WORDS: Coal, Appalachia, Pitching Coal Seam, Open Pit, Production Rat

639

Ewing, G.H., "DEVELOPMENTS IN COAL SLURRY PIPELINE DESIGN," ASME, Preprint # 64-WA-PID-7, 5 pages

KEY WORDS: Coal, Pipeline, Slurry, Hydraulic Haulage, Consolidation Coal Pipeline, Pump, Western

ABSTRACT: The successful operation of the Consolidation Coal Company 108-mile, 10-in-dia. coal slurry pipeline in Ohio proved the economic and technical feasibility of coal pipelining. It was, however, necessary to make a number of major developments, as described in this paper, before a large-diameter, long-distance coal slurry line design could be finalized.

646

Bak, E., "SELECTECTED ARTICLES ON HYDRAULIC MINING AND HYDRAULIC TRANSPORT OF SOLIDS," Published for the Department of the Interior, Przeglad Gorniczy Vol. 16, No. 10, 1960, pp 502-506, 1964, pp 1-8.

KEY WORDS: Hydraulic Mining, Hydraulic Haulage, Sluicing (Flume) Hydromonitor, Coal, Dewatering, Pump, Feeder

647

Skinderowicz, F., "TYPICAL TECHNICAL SOLUTIONS OF A LOADING POINT DURING GRAVITY HYDRAULIC TRANSPORTATION OF COAL," Published for the Department of the Interior, Wiadomosci Gornicze, Vol. 10, No. 3, 1959, pp 88-92, 1964, pp 9-13.

KEY WORDS: Hydraulic Haulage, Dewatering, Sluicing (Flume), Coal.

648

Avlasenko, Yu., "HYDRAULIC HAULAGE OF COAL IN PIPELINES," From Master Uglya, No., 9, p 9, 1960, In "Selected Articles on Hydraulic Haulage and Hoisting in Mining, OTS 63-11092, pp 1-2.

KEY WORDS: Hydraulic Hoist, Feeder, Novo-Grodovka No. 3 Mine, Ordzhonokidseugol Trust No. 4 Mine, Slurry, Donbass

649

Geier, V.G. and Gruba, V.I., "IMPROVEMENTS AND CALCULATIONS FOR THE SUCTION SYSTEM IN HYDRAULIC HAULAGE INSTALLATIONS," From UGOL, Vol. 36, No. 9, pp 36-40, 1961, In "Selected Articles on Hydraulic Haulage and Hoisting in Mining, OTS 63-11092, pp 3-10.

KEY WORDS: Slurry, Hydraulic Haulage, Crushing.

ABSTRACT: Pumping of Coal slurry produced during hydraulic coal mining; problem of plugging is eliminated by new design of intake; calculation of of intake openings

650

Kazakov, N.I., "INSTALLATION FOR HYDRAULIC HAULAGE OF HARD AND ABRASIVE ROCKS," From Gornyi Zhurnal, No. 9, pp 44-47, 1959, In "Selected Articles on Hydraulic Haulage and Hoisting in Mining, OTS 63-11092, pp 11-15.

KEY WORDS: Hydraulic Haulage, Feeder, Belkina-Ventilyatsionnaya Mine Slurry, Manpower, Wear & Abrasion, Rock, Kuzbass

651

Kuprin, A.I. and Da-Dzhun, Chen, "EXPERIMENTAL INVESTIGATIONS ON THE BASIC PARAMETERS OF HYDRAULIC HAULAGE OF COAL AND ROCK MIXTURES IN FLUMES," From Izvestiya Vysshikh Uchebnykh Zavedenii, Gornyi Zhurnal, No. 1, pp 5-12 1961, In "Selected Articles on Hydraulic Haulage and Hoisting in Mining, OTS 63-11092, pp 16-23.

KEY WORDS: Hydraulic Haulage, Coal, Rock, Sluice (Flume), Pump, Slurry, Kuzbass, Stalin Mine

652

Mogilevskii, V.I., "IMPROVEMENTS IN HYDRAULIC HAULING SYSTEMS," From Ugol Ukrainy, Vol. 5, No. 4, pp 23-24, April 1961, In "Selected Articles on Hydraulic Haulage and Hoisting in Mining, OTS 63-11092, pp 24-26.

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Krasnoluchugol Trust No. 160 Mine, Sluicing (Flume), Ordzhonikidzengol Trust No. 4 Mine, Pump, Feeder, Dneprogiproshakht, Donbass.

653

Pshenichnyi, I.D. and Trainis, V.V., "HYDRAULIC HAULAGE OF LUMP COAL IN FINE-COAL SLURRY," From Ugol, No. 7, pp 48-53, 1960, In "Selected Articl on Hydraulic Haulage and Hoisting in Mining, OTS 63-11092, pp 27-37.

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Power Consumption (Pipeline)

ABSTRACT:

Experimental installation for handling coal of up to 40 to 50 mm diameter in slurry consisting of up to 80% of particles smaller than 50 micron through 104.5mm diameter pipe; maximum content of coal in slurry was 300-400 g/liter; method requires less electric power than method involving use of water as transportation medium.

654

Trainis, V.V., "HYDRAULIC HAULAGE OF RUN-OF-MINE COAL," From Ugol, Vol. No. 9, pp 40-41, 1961, In "Selected Articles on Hydraulic Haulage and Hoisting in Mining, OTS 63-11092, pp 27-37.

KEY WORDS: Hydraulic Haulage, Slurry, Wear & Abrasion, Power Consumption (Pipeline), Coal

ABSTRACT: Determination of parameters of hydraulic transportation of coa under pressure; formulas for calculation of loss of hydraulic head during flow of slurry, critical flow velocity, coefficient of resistance during free fall of solid particles in aqueous medium, and loss of head during flow of pure water.

655

Borecki, M., Radowicki, T., "Hydraulic Transportation of Coal Using Feeder System of the Main Institute of Mining," Przeglad Gorniczy, No. 10-11, 1959, pp 487-501, Department of the Interior, 1964, pp 1-26.

KEY WORDS: Hydraulic Haulage, Coal, Feeder, Poland, Slurry, Pump, Power Consumption (Pipeline), Siersza, Czeladz, Debiennsko, Andaluzja

656

Borecki, M., Radowicki, T., "HIGH PRESSURE HYDRAULIC TRANSPORTATION OF COAL," Prace Glownego Instytutu Gornictwa, Ser. A., No. 226, 1958, pp 3-44, Department of the Interior, 1964, pp 27-112

KEY WORDS: Hydraulic Mining, Hydraulic Haulage, Crushers, Feeder, Pump, Water Supply, Debiensko Mine, Poland, Power Consumption, Dewatering. Sierszа, Yan (Jan), Slurry Pump,

ABSTRACT:

The numerous advantages of feeder water transport have inclined in 1954 the Polish Mining Institute to undertake the investigations in order to solve this problem. The analysis of the ways known from literature of introducing coal into the pipeline under pressure has shown their unsuitability for industrial purposes and a necessity arose to develop a solution based on new principles. As a result of investigations a one-chamber-feeder was designed, where the pressure vessel, before pouring the coal load, is being cut off (by means of valves) from the pressure space, emplied of water and then charged with a coal load. After closing the inlet flap in the pressure vessel and opening the valves to the transport pipeline, the worm in the vessel begins to turn forcing the coal load into the stream of transporting water. The working cycle of the feeder comprises following operations:

1. cutting the pressure vessel off the transporting system by closing the water valve and the coal-water valve,
2. compensating the pressure in the vessel with the atmosphere pressure by resetting the three-way cock,
3. letting out the water from the pressure vessel (to make place for coal) by opening and then by closing the outlet valve,
4. washing down the coal hopper into the vessel by opening the inlet,
5. pouring in the filling up water and then closing the hopper outlet and the inlet flap,
6. equalising the pressures in vessel and in pipeline by resetting the three-way cock,
7. introducing the coal load from the vessel to the transporting pipeline by opening the water and the coal-water valves and starting the coal worm,
8. cutting the feeder off the transporting pipeline by switching off the worm and closing the water and coal-water valves with simultaneous washing the valve seat with water.

In the experimental phase extensive tests have been made on valves working under very difficult conditions due to the presence of coal and stone in water. Rubber seats are applied as well as closing device in form of cylinder which allows the seats to be washed during the closing. A strong water stream acting on the seat removes the eventual coal pieces from it. The inlet flap was tightened with rubber gasket. To equalize the pressures and remove the air from the vessel a cock with spindle in roller bearings was developed. The individual feeder elements are started by means of servomotors and automatic control mechanism. In order to exclude faulty connections the electric blocking of individual operations is introduced. In order to establish the suitability and running infallibility of the introduced solutions, investigations of the prototype installation on the surface have been made under the conditions closely approaching those of underground work. The flowing resistances of the coal mixture were obtained by means of small diameter pipeline. In successive tests the faults of the arrangement were eliminated. Gradually with more and more positive working results the pressure was raised by lengthening the throttling pipeline, the output was increased and so was the thickening of the transported mixture, till to obtain the pre-established parameters of installation:

Working pressure	64 atm
Output	100 t/h
Granulation	0 - 100 mm
Diluting of mixture	3,5:1 - 2 : 1

The installation was placed in the Debiensko colliery at a distance 5,000 m from the shaft and at a depth of 310 m. After the starting period the same indices have been obtained in the work underground as at the surface. The installation is working for 8 months showing the infallibility of operation under the pre-established running conditions and transporting 100 t/h of coal. In the paper a feeder solution based on the experience from the prototype installation is presented. Also the indications concerning the application of feeder water transport in the existing mines are given. The theory of feeding the coal to the pipeline and the method of choosing the working parameters of the transporting pipeline are given. The power problems of water transport are examined and the formulae of power consumption of water transport are presented.

656 CONTINUED

657

Vorobjev, B.M., Deshmukh, R.T., "HYDRAULIC STOWING OF GOAF," from "Advance Coal Mining, Chapter 25, Asia Publishing House, India, 1966, pp. 577-640.

KEY WORDS: Hydraulic Stowing, Hydraulic Haulage, Pipeline, Hydromonitor, Coal, Poland, Germany, Czechoslovakia, China, USSR, India, France, Hungary, Flume, Kuzbass, Wear & Abrasion, Conveyor, Shortwall, Dewatering, Water Purification, Settling, Pump, Rock

658

Vorobjev, B.M., & Deshmukh, R.T., "UNDERGROUND HYDRAULIC MINING," Part IV Special Methods, Chapter XXXIII (33), From Advanced Coal Mining, pp 770-819.

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Mining Plan, Pitching Coal Beds, Flat Coal Beds, Sluicing (Flume), Hydraulic Haulage, Hydraulic Hoist, Pump, Disintegration, Coal Hardness, Production Rate, Cost Per Ton, Manpower, Productivity, Coal Dust, Electrical Power, Recovery, Polysayevskaya Severnaya Mine, Kuzbass

659

Vorobjev, B.M. & Deshmukh, R.T., "PROJECTING COLLIERIES WITH UNDERGROUND HYDRAULIC MINING," Chapter 37, pp 884-901 from the book "Advanced Coal Mining," Vol. 2, India, 1966

KEY WORDS: Hydraulic Mining, Coal, Hydraulic Transportation (Haulage), Hydraulic Hoist, Kuzbass, Luganskaya No. 1, Donbass, Water Supply, Slurry, Slurry Pump, Hydromonitors, Baidaevskaya Severnaya, Ventilation, Economics, Capital Investment, Productivity, Dewatering,

660

Kuzmich, I.A., "SOME RELATIONSHIPS IN THE COAL PENETRATION BY HIGH PRESSUI THIN WATER JETS," 1st ISJCT, April 5-7, 1972, Coventry, England, Paper E-1, (Kuzmich is from the Skochinsky Mining Institute, USSR)

KEY WORDS: Hydraulic Mining, Coal, Disintegration

ABSTRACT: Results are reported on the coal penetration depth as a function of the hydrodynamical jet parameters and the jet-coal reaction time.

The values of the jet traverse rates in order to obtain the optimal conditions for coal penetration and stopping the coal penetration process where determined.

661

Nikonov, G.P., Goldin, Yu.A., "COAL AND ROCK PENETRATION BY FINE, CONTINUOUS HIGH PRESSURE WATER JETS," 1st ISJCT, April 5-7, 1972, Coventry, England, Paper E-2, (From USSR)

KEY WORDS: Hydraulic Mining, Coal, Rock, Disintegration, Coal Hardness, Hydromonitor

ABSTRACT: The paper presents the experimental and theoretical results on the hydraulic penetration of coal & rock by fine, high pressure jets. The basic relationships of the process are given. On the basis of numerous experimental results, methods for calculating the effectiveness of coal penetration and rational traverse velocity of fine jets have been developed.

The process and the basic relationships of coal penetration by dual-jet cutters have been studied. An engineering method for calculating the effectiveness of this process has been developed. The data on the fine jets used for designing the mechanical equipment for coal-winning machines with hydraulic and hydromechanic cutters are presented.

662

Frank, J.N., Fogelson, D.E., Chester, J.W., "HYDRAULIC MINING IN THE USA," 1st ISJCT, April 1972, Paper E-4, Coventry, England

KEY WORDS: Hydraulic Mining, Coal, Rock, Roslyn No 9 Mine, Roslyn No. 10 Mine, Hydromonitor, Production Rate, Productivity, Anthracite, Disintegration, Thompson Creek Mine, Western, Appalachian, Sugar Notch Mine

ABSTRACT: A brief review of the history of hydraulic mining in the U.S. and contains a review of Government, industry, institute, and university hydraulic research.

663R

TABLE OF CONTENTS + BIBLIOGRAPHY TRANSLATED

Nikonov, G.P., "INVESTIGATION OF HYDRAULIC DISINTEGRATION OF COAL," Kollektivnaya Monografiya, Izd-vo "Nauka," 1968, 183 pp, Moscow "ISSLEDOVANIYA GIDRAVLICHESKOGO RAZRUSHENIA UGLYA"

KEY WORDS: Bibliography,

664R

TRANSLATED

Nikonov, G.P., "THEORETICAL AND EXPERIMENTAL RESEARCH ON THE DYNAMICS AND STRUCTURE OF HIGH-PRESSURE STREAMS," Chapter 2 of "INVESTIGATIONS OF THE HYDRAULIC DISINTEGRATION OF COAL," ("Issledovanya Gidravlicheskogo Razpushenia Uglya," Moscow, 1968.

KEY WORDS: Hydromonitor, Jet Characteristics

TRANSLATED 665R

Nikonov, G.P., "INVESTIGATION OF THE HYDRAULIC CHARACTERISTICS OF WATER JETS," Chapter III of "INVESTIGATION OF THE HYDRAULIC DISINTEGRATION OF COALS," ("Issledovanya Gidravlicheskogo Razpushenia Uglya"), Academy of Sciences of the USSR Ministry of Coal Industry Institute of Mining, A.A. Skochinskiy, Moscow, 1968, Translated by A. Brichant for Terraspace, April 1974.

KEY WORDS: Hydraulic Mining, Coal, Disintegration, Hydromonitor, Jet Characteristics, Coal Hardness, Donbass

TRANSLATED 666R

Nikonov, G.P., "RESISTANCE OF COALS TO HYDRAULIC FRAGMENTATION," Chapter IV of "INVESTIGATIONS OF THE HYRAULIC DISINTEGRATION OF COALS," ("Issledovanya Gidravlicheskogo Razpushenia Uglya), Academy of Sciences of the USSR Ministry of Coal Industry Institute of Mining, A.A. Skochinskiy, Moscow, 1968, Translated by A. Brichant for Terraspace, July 1974.

KEY WORDS: Petrography, Coal Hardness, Production Rate, Hydromonitors, Hydraulic Mining, Coal, Disintegration, Donbass, Water Supply, Productivi

ABSTRACT: Contains results of extensive study of the effect of petrographic properties of Donbass coals on breakage rates by hydromonitor jets at pressures up to 130 atm. Describes a water infusion test which provides the best method for evaluating the ease of disintegration of coal by hydromonitor jets and for predicting production rates.

TRANSLATED 667R

Nikonov, G.P., "HYDRAULIC BREAKING OF COAL BY USING THIN, HIGH PRESSURE JETS," Excerpt from Chapter 5 - Parts 3 through 6, of "Issledovanya Gidravlicheskogo Razpushenia Uglya," (INVESTIGATION OF THE HYDRAULIC DISINTEGRATION OF COAL), pp 111-138, Institut Gornogo Deia im A.A. Skochinskogo, Izdatelstvo Navka, Moscow, 1968, (Academy of Sciences of the USSR Ministry of Coal Industry Institute of Mining, A.A. Skochinskiy

KEY WORDS: Hydraulic Mining, Coal, Disintegration, Jet Cutter, Odesskaya - Komsomolskaya No. 2, Nagolchanskaya No. 4, Darevskaya No. 3. Hydromonitor, Coal Hardness, Yanovskaya No. 4,, Pioneer D-2, Pump, Jet Characteristics, Anthracite, Rock, Electrical Power, Donbass

TRANSLATED 668R

Nikonov, G.P., "COMBINED METHODS OF MASSIF DISINTEGRATION DURING HYDRAUL BREAKING OF COAL," Chapter VI of "Investigations of the Hydraulic Disintegration of Coal," ("Issledovanya Gidravlicheskogo Razpushenia Uglya," Moscow, 1968)

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Borehold Mining, Explosives, Donbass, Disintegration, Rock, Roof, Production Rate, Productivity, Privol'nyanskaya-Severnaya # 4, Cost Per Ton, Odesskaya-Komsomol'skaya # 2, Coal Mining, Dar'yevskaya # 3, Zimorgor'ye # 63, Novo-Grodovka # 3, Electrical Power, Pump

670R

TABLE OF CONTENTS TRANSLATED

Nurok, G.A., "TECHNOLOGY AND PLANNING OF HYDRO-MECHANIZATION OF MINES," Izdatel'stvo, "Nedra," Moscow, 1965, 579 pp.
""TEKHNOLOGIYA I PROEKTIROVANIE GIDROMEKHANIZATSII GORNYKH RABOT"

KEY WORDS: Bibliography

671R

TRANSLATED

Nurok, G.A., Chapter 8, "QUESTIONS OF TECHNOLOGY AND PLANNING OF UNDERGROUND HYDRAULIC MINING OF COAL," Translated from the book "TECHNOLOGY AND PLANNING OF HYDRO-MECHANIZATION OF MINES," Moscow, 1965 (translated Nov. 1970 by Terraspace).

KEY WORDS: Hydraulic Mining, Coal, Mining Plan, Hydraulic Mining System, Pump, Hydromonitor, Nikitinskaya No. 4 Mine, Donbass, Kuzbass, Polysayevskaya Severnaya Mine, Tonsinskaya 1-2 Mine, Baidayevskaya Mine, Flat Coal Beds, Hydraulic Hoist.

672R

TRANSLATED

Nurok, G.A., "THE ECONOMIC EFFICIENCY OF HYDRAULIC MINING OPERATIONS," Translated from "TECHNOLOGY AND PLANNING OF HYDRO-MECHANIZATION OF Mines," CHapter 10, Moscow, 1965, Translated by Terraspace, Nov. 1970

KEY WORDS: Hydraulic Mining, Coal, Rock, Economics, Capital Investment, Cost Per Ton, Production Rate, Amortization, Kuzbass, Donbass

673R

Nurok, G.A., ""HYDROMECHANIZATION OF OPENCAST WORKINGS," Izdatel'stvo, "Nedra," Moscow, 1970, 584 pp
"GIDROMEKHANIZATSIYA OTKRYTYKH RAZRABOTOK"
"
KEY WORDS: Bibliography

677

National Coal Board, "COAL INDUSTRY OF THE USSR," Report by the Technical Mission of the National Coal Board, 1958.

KEY WORDS: Hydraulic Mining, Coal, Economics, Capital Investment, Mining Plan, Hydraulic Haulage, Pump, Hydromonitor, Explosives, Roof Support, North Polysayevskaya Mine, Monorail, Coal Hardness, Recovery, Sluicing (Flume), Slurry, Pipeline, Dewatering, Electrical Power, Roof, Floor, Flat Coal Beds, Kuzbass

ABSTRACT: A visit was made in 1956 to the USSR by members of the National Coal Board. This report is based on the team's observations, within these general terms of reference, in the Kuzbass, Donbass, and Rostov coalfields and on information given by officials of the industry at all levels, during the period 14 May to 7 June 1956. It must be appreciated, therefore that the Report emphasises what is best in Soviet mining techniques, and does not elaborate on much that was seen which was well below the standard of modern British practice.

678

National Coal Board, "COAL INDUSTRY OF THE USSR," Report by the Technical Mission of the National Coal Board, 1958, Part 2

KEY WORDS: Coal, Coal Hardness, Production Rate, Hydraulic Mining, Kuzbass, Disintegration, Jet Characteristics, North Polysayevskaya Mine, Tyrganskiye Uklony Mine

ABSTRACT: See SL 677

679

SME "Mining Engineering Book," Volume I, 1973, pp 9-4

KEY WORDS: Hydraulic Mining

680

SME "MINING ENGINEERING BOOK," Volume II, 1973, pp 17-27 and 17-28

KEY WORDS: Economics, Hydraulic Haulage.

681

Sutulov, Alexander, "ENERGY RESOURCES," Chapter III of "Mineral Resources and the Economy of the USSR," pp 57-76, 1973

KEY WORDS: Coal, Donbass, Kuzbass, Production Rate, Anthracite Bituminous

683

American Mining Congress, "LIME SLURRY SYSTEM AT PURSGLOVE NO. 15 MINE," Abstract of Convention Paper Presented at the 1969 Coal Convention, PIttsburgh, May 4-7

KEY WORDS: Water Purification

684

American Mining Congress, "LIMESTONE IN MINE DRAINAGE TREATMENT," Abstract of Paper Presented at the 1969 Coal Convention, Pittsburgh, May 4-7

KEY WORDS: Water Pollution, Water Purification

685

American Mining Congress, "WATER CONTROL AND REFUSE DEWATERING SYSTEMS," Abstract of Paper Presented at the Coal Convention, Pittsburgh, May 4-7, 1969

KEY WORDS: Water Supply, Water Purification

686

American Mining Congress, "MINE WATER TREATMENT - FRICK DISTRICT," Abstract of Paper Presented at the Coal Convention, Pittsburgh, May 4-7, 1969

KEY WORDS: Water Purification

687

American Mining Congress, "THE OUTLOOK FOR LONGWALL MINING IN N. AMERICA," Abstract of Paper Presented at the 1969 Coal Convention, Pittsburgh, May4-7

KEY WORDS: Mining Systems, Longwall

688R

TRANSLATED

Nikonov, G.P., "RESEARCH INTO CUTTING OF COAL BY SMALL DIAMETER, HIGH PRESSURE WATER JETS," Tjubertsy, 5, Coal & Rock Hydraulic Cutting Lab., A.A. Skotchinsky Mining Institute, Moscow. (From "Issledovanya Razrushenija Uglya Tonkimi Struyami Vody Vysokogo Davleniya")

KEY WORDS: Hydraulic Mining, Coal, Disintegration, Jet Characteristics, Coal Hardness

ABSTRACT: Detailed research has been conducted at the Skotchinsky Inst. of Mining to study the dynamics & structure of the small water jets & the mechanism by which they cut coal. One of the objects of this research was to obtain data for the design of a machine for cutting rock, based on the same principles as that for cutting coal. The productivity of water jet mining machines depends on the hydrodynamic parameters of the jet. Therefore, the research on small diameter water jets was directed, initially to a study of the nature of the variation of these parameters, & to obtain a profile of dynamic pressure distribution over the section of the jet. As a result of the experimental work carried out in the mines using double headed cutters it was found that where the cutting head was advanced into the face, up to a critical inter-slot distance, the dividing kerb between the cuts could be removed without the need for a supplementary process. The critical distance between slots for anthracite was found to be 12-15 cm. The research showed that the effectiveness of cutting coal using dual-jet cutters depends not only on the parameters of the jet, the cutting mechanism, and the mechanical properties of the coal, but also on the design of the cutter and its moving parts and the angle between slot formation and an increase in angle between the nozzles and also design of the moving parts of the cutter, special experiments were carried out at nozzle pressures of between 200 and 400 kg/sq.cm. The optimal angle between the nozzles was 15-17 deg.

690

Reichl, E.H., "METHOD AND APPARATUS FOR CONTINUOUSLY MINING AND TRANSPORTING COAL," Patent No. 3,260,548, July 12, 1966

KEY WORDS: Hydraulic Haulage, Coal, Coal Mining, Slurry, Pump, Mining Machinery, Hydraulic Mining System, Continuous Miners

ABSTRACT: This application is a continuation-in-part of copending application Serial No. 126,610, entitled "Continuous Transportation of Newly Mined Coal," filed July 25, 1961, and now abandoned.

This invention relates to a method and apparatus for continuously mining and transporting coal and more particularly to a method and apparatus for mining coal and continuously transporting the newly mined coal hydraulically from a continuous miner to a terminus located either within the mine or outside of the mine.

694

Summers, D.A., "WATER JET COAL MINING RELATED TO THE MINING ENVIRONMENT," Paper presented at the Conf. on the Underground Mining Environment held at the Univ. of Missouri, Oct. 1971, 11 pp

KEY WORDS: Coal, Hydraulic Mining, Coal Dust, Safety, Disintegration

ABSTRACT: One of the greatest problems facing the coal mining research engineer at the present time is the need for new, more effective methods of dust suppression in coal mines. In the past this has been a major hazard in the lives of the mine workers.

The author states that the problem can be solved by using high pressure water jets in the mines. Although the system is not in world-wide use, operation of the water jet system in the USSR, UK, & USA has proved most successful. Proof is given of productivity increases of up to 50% in comparison to conventional mining techniques and reduction of mining costs by 15-20%. The author covers in the paper the advantages of the jet cutting system, & how some of the problems, which others have been confronted with, can be solved. The author concludes by saying: "I have tried to show that water jet mining is safer, simpler & cheaper than conventional equipment & capable of acceptable output rates and I await the test of time to prove the veracity my arguments."

TRANSLATED 695R

Kodentsov, A.Ya., Kuzmich, I.A., Ishchuk, I.G., "SPOSOBY PROVEDENIYA GORNYKH VYRABOTOK S PRIMENENIEM GIDROMEKHANIZATSII," From the Book "PROVEDENIE GORNYKH VYRABOTOK SPOSOBOM GIDROMEKHANIZATSII - CONDUCTING MINE WORKINGS BY HYDROMECHANIZATION," Moscow 1971
"METHODS OF CONDUCTING MINING WORKINGS APPLYING HYDROMECHANIZATION"

KEY WORDS: Nagolichinskaya No. 4, Daryevskaya No. 3, Coal, Hydraulic Mining, Mine Development, Roadheader, Water Cannon, Pressure Intensifier, Pulsating Jet, Jet Cutters, Disintegration, Anthracite, Hydromonitor, Mining Machinery, Donbass, Kuzbass, Sluicing, Productivity, Krasnogorskaya

TRANSLATED 696R

Kodentsov, A.Ya., Kuzmich, I.A., Ishchuk, I.G., PROVEDENIE GORNYKH VYRABOTOK PO UGLYA," Chapter II from the Book "PROVEDENIE GORNYKH VYRABOTOK SPOSOBOM GIDROMEKHANIZATSII," - "CONDUCTING MINE WORKINGS BY HYDROMECHANIZATION," Moscow 1971
"CONDUCTING MINE WORKINGS OVER COAL,"

KEY WORDS: Coal, Hydraulic Mining, Hydromonitor, Coal Hardness, Mining Plan, Mine Development, Hydraulic Haulage, Sluicing (Flume), Productivity, Economics, Nagol'chanskaya No. 4, Zimor'yevskiy Mine No. 63, Pioneer D-2, Privol'nyanskaya - Severnaya No. 4, Baydayevskaya - Severnaya, Roadheader, Yanovskiy, Samsonovskaya No. 1, Flat Coal Seam, Pitching Coal Seam, Coal Dust, Roof, Floor, Roof Support, Production Rate, Hydraulic Mining Machinery, Pipeline, Wear & Abrasion, Water Infusion., Donbass, Kuzbass

698

Robinson, Neil, "CAPITAL AND OPERATING COSTS FOR NEW PROPERTIES," Mining Congress Journal, Vol. 55, No. 9, September 1969, pp 72-75

KEY WORDS: Coal Mining, Economics, Capital Investment, Mine Development, Productivity, Manpower

699

Lezon, M., "THE LU-CJA-TO COAL MINE," Mining Magazine, January 1974, pp 31 -32

KEY WORDS: Hydraulic Mining, Coal, Hydraulic Hoist, Hydromonitor, Sluicing, China, Pump, Slurry

700

Williams, C.H. Jr., "PLANNING, FINANCING, AND INSTALLING A NEW DEEP MINE IN THE BECKLEY COAL BED," Mining Congress Journal, August 1974, pp 42-47

KEY WORDS: Coal Mining, Economics, Capital Costs, Coal Preparation, Mine Development

704

Pederson, J.A., Rudawsky, O., "SOME ECONOMIC ASPECTS OF COAL PRODUCTION AND USES IN COLORADO," Source Unknown, pp 41-46

KEY WORDS: Coal, Western U.S., Productivity, Production Rate

705

Hammer, O., Harper, D.C., "PROCESS OF MINING ORE FROM BENEATH AN OVER-BURDEN OF EARTH FORMATION," U.S. Patent 3,393,013, July 16, 1968

KEY WORDS: Borehole Mining, Hydraulic Mining, Hydraulic Hoist, Airlift

ABSTRACT: Water in-soluble ore, such as phosphate, is mined from a subterranean bed lying beneath an overburden of earth by the introduction of a water jet that forms an ore-water slurry carried up a production casing by an air lift or the like. The jetting water stream and the producing conduit are moved downwardly into the cavity formed in the ore body independently of the production casing which is sealed to the overburden. The jetting water stream as well as the producing conduit are oscillated vertically so as to erode ore from the body and increase trubulence in the ore-water slurry to hold a maximum amount of solids in suspension. Make-up water, in addition to the water required to produce the slurry is added in order to retain adequate pressure within the ore cavity.

706

Claytor, E.E., "PROCESS AND APPARATUS FOR MINING," U.S. Patent 1,851,565, March 29, 1932

KEY WORDS: Borehole Mining, Hydraulic Mining, Hydraulic Hoist

ABSTRACT: This invention relates to the mining and treatment of minerals and particularly to the recovery of minerals which may be reduced to a fluid state during the mining operation as described in Patent No. 1,607,586, the present application being a division thereof.

The particular object of the invention resides in the recovery either from beneath or above the surface of the ground of minerals which can be resolved into a fluid state during the mining operation and in the separation of the thus mined minerals from the inert material with which they are always associated.

707

Fly, A.B., "HYDRAULIC JET WELL UNDER-REAMING PROCESS," U.S. Patent 3,155,177, Nov. 3, 1964

KEY WORDS: Borehole Mining, Hydraulic Mining, Hydraulic Hoist

ABSTRACT: This invention relates to under-reaming process and more particularly to a process for hydraulically under-reaming the sidewalls of a well or bore.

708

Cannon, H.B. (Sr.), et al, "APPARATUS AND METHOD FOR MINING GRANULAR ORE," U.S. Patent 3,311,414, March 28, 1967

KEY WORDS: Borehole Mining, Hydraulic Mining, Hydraulic Hoist

ABSTRACT: This invention relates to an apparatus and method for the deep-well mining of granular ore, and it more particular relates to such an apparatus and method for the mining of granular phosphate ore.

TRANSLATED

711R

Borisenko, S.G., "SYSTEM OF MINING WITH APPLICATION OF HYDRO-MECHANIZATION," Chapter 4 # 4 of "TECHNOLOGIYA PODZEMNYKH GORNYKH RABOT," Dopchshcheno, Podobshei, Redaktsiei, Moscow, 1971, pp 195-201

KEY WORDS: Hydraulic Mining, Coal, Mining Plan, Sluicing, Czechoslovakia, USSR

712R

Karachentsev, V.N., Pereverzev, M.P., Belov, V.B., "O SISTEMAKH RAZRABOTKI NA GIDROSHAKHTAKH DONBASSA," Ugol # 6, 1962, pp 34-36
"ON MINING SYSTEMS APPLIED IN THE DONBASS HYDROMINES."

KEY WORDS: Hydraulic Mining, Coal, Mining Plan, Donbass, Kuzbass, Odeskaya-Komsomolskaya # 2, Polysayevskaya-Severnaya, Nagolchinskaya # 4

ABSTRACT: Advantages of hydraulic mining as compared with conventional methods; outline of preparatory work preceding activation of hydraulicking.

Discussing the currently most widely used mining systems in USSR as well as abroad when applying hydromechanization, the authors discern two directions, or rather trends: creation and improvement of the short wall system and improvement of the system of mining by longwall winning faces applying hydromechanization. By presenting several examples the authors try to demonstrate on the basis of labor productivity that the method of working by short faces has multiple advantages because of combination of hydraulic mining and transport and of pressure control without or with little use of support. They conclude that the current trend in the Donbass should lie in the search for improvement of effective variants of the shortwall systems of mining. Although rather outdated, this paper seems to offer interest because of statistical figures provided, and could be recommended in view of its shortness for cover-cover translation

713R

Rukov, E.F., Smoldyrev, A.E., Trainis, V.V., "ESPRESS-METOD OPREDELENIYA KACHESTVENNOGO IZMENENIYA UGLYA PRI GIDROTRANSPORTE PO TRUBOPROVODAM," UGOL # 41, pp 28-30, May 1966
"A RAPID METHOD OF DETERMINING THE QUALITATIVE CHANGE IN COAL DURING HYDRAULIC TRANSPORT IN PIPES"

KEY WORDS: Hydraulic Haulage, Slurry, Coal

ABSTRACT: The paper first compares coal degradation measurements on a ring main rotating on a horizontal axis with similar measurements made on pipelines up to 100 KM long. The specification of the coals tested was, ash content 15% and 24% and mean particle diameter of 13.1 mm and 7.8 mm. The overall grading of both coal samples was 0 - 80mm. The measurements consisted of noting the change in mean diameter and increase in percentage of coal 0 to 0.063 mm size. The pipeline bore is quoted as being 300 m.m. and ring main as 200 m.m. - it is not clear whether this is the diameter of the ring or the bore of the pipe. The velocity was 2.7 m/sec. and solids to water ratio of 1 to 4 by weight. The conclusion reached are that the velocity ring main system gives accurate results for pipeline up to 40 - 50 Km. long.

Among other experiments quoted - carried out on pipelines up to 12 Km. long - are effect of initial size of the coal.

714

Halvorsen, W.J., "AUTOMATING THE COAL PIPELINE," Coal Age, July 1964, Vol. 69, pp 107-108.

KEY WORDS: Coal, Consolidation Coal Pipeline, Hydraulic Haulage, Slurry, Pipeline, Western

ABSTRACT: This short article outlines the remote control system which proved itself in operation on the Consolidation Coal Company's pipeline.

715 J

Hokao, Z., "ON PARAMETERS OF MONITOR JET AND STRESS DISTRIBUTION IN COAL SEAMS IN HYDRAULIC CRUSHING," J. Min. & Met. Inst., Japan, Vol. 81, # 930, pp 23-28, Oct. 1965.

KEY WORDS: Hydromonitor, Coal, Disintegration, Jet Characteristics, Japan

ABSTRACT: Problems associated with parameters of high-pressure water jet directed against face, and stress distribution in coal seams in hydraulic crushing are derived mathematically showing relationship between parameters related to distance between face and nozzle

716

Hill, G.R., "RESEARCH, DEVELOPMENT, AND USE OF WESTERN COALS," Coal Mining & Processing, Dec. 1971, pp 54-57

KEY WORDS: Coal, Western U.S.

ABSTRACT: A review of U.S. energy demand and fossil fuel reserves, the present status of research to provide gas and oil supplements, and the place of western coals in meeting future energy demands.

717 J

Yoshizawa, Y, Kawashima, T., & Yanaida, K, "ON THE DETERMINATION OF PERFORMANCE OF NOZZLE OF THE HYDRAULIC MINING DEVICE," J. Min. & Met. Inst., Japan, Vol. 81, # 930, pp 29-34, Oct. 1965

KEY WORDS: Hydromonitor, Jet Characteristics, Japan

ABSTRACT: For determining performance of nozzle, flow characteristics of water jet are studied mathematically correlating divergence coefficient of jet, profile of jet, and dynamic pressure distribution along center line and radial axis of jet.

718

Toda, M., Konno, H., Saito, S., & Maeta, S., "HYDRAULIC CONVEYING OF SOLIDS THROUGH HORIZONTAL & VERTICAL PIPES," British Chemical Engineering, August, 1969, Vo. 14, # 8, pp 1077

KEY WORDS: Coal, Slurry, Pipeline, Hydraulic Haulage, Power Consumption (Pipeline)

ABSTRACT: The hydrodynamics of solid-liquid mixture has been historically an important research area because of its utility in the long-distance transportation of coals and minerals in particular. These are studies available in the literature which may be used in obtaining optimum conditions for hydraulic conveying of solids through horizontal and vertical pipes. These studies however, are limited in their application and do not provide a fundamental explanation of the phenomena.

719

Coal Mining & Processing, "BLACK MESA NO. 1 MINE IS DIFFERENT," Coal Mining & Processing, Feb. 1971, pp 32-36

KEY WORDS: Black Mesa Mine, Coal, Western U.S.

720

Coal Mining & Processing, "THE LONGEST, LARGEST COAL SLURRY PIPELINE EVER BUILT," Coal Mining & Processing, Feb. 1971, pp 37-40

KEY WORDS: Coal, Hydraulic Haulage, Pipeline, Slurry, Black Mesa Pipeline, Crusher, Pump, Western

721

Bonnington, S.T., "DEVELOPMENTS IN THE HYDRAULIC TRANSPORT OF COAL," Coal Preparation, Nov./Dec. 1966, 5 pp

KEY WORDS: England, Consolidation Coal Pipeline, Feeder, Hydraulic Haulage, Pipeline, Slurry, Walton Colliery Pipeline, Western

722

Stott, J.B., "BREAKAGE OF COAL DURING HYDRAULIC TRANSPORT," From the Annual Report, 1959, University of Otago, Mining Research, 1 pp

KEY WORDS: Hydraulic Mining, New Zealand, Fly Creek Mine, Coal, Sluicing (Flume)

723

Stott, J.B., "THE EFFECT OF PROLONGED WATER IMMERSION ON THE SIZE OF OHAI DROSS COAL," University of Otago, 5 pp

KEY WORDS: Coal, New Zealand, Sluicing (Flume), Slurry

724

Stott, J.B., "HYDRAULIC TRANSPORT OF COAL," University of Otago, 5 pp

KEY WORDS: Fly Creek Mine, New Zealand, Sluicing (Flume), Coal, Water Supply, Hydraulic Haulage, Slurry

ABSTRACT: Tests were completed on breakage of Fly Creek coal during its transport by fluming. These tests determined the degree of breakage during short periods of travel under artificial conditions in the continuous flume at the laboratory. Another series of tests determined the actual breakage during fluming at the mine. In both cases breakage was shown to be small.

725C

TRANSLATED

Puchta, O, "LETTER OF September 16, 1974 TO DR. W.C. COOLEY, Terraspace,"

KEY WORDS: Czechoslovakia

726C

TRANSLATED

Goshovski, M., Slavek, K., "NAGNETANIE VODY V PLAST NA UGOL'NYKH SHAKHTAKH PNR,"UGOL # 8, 1974, pp 72-75
"WATER INJECTION INTO THE SEAMS IN COLLIERIES OF THE POLISH PEOPLE'S REPUBLIC"
KEY WORDS: Coal, Water Infusion

727

Broadhurst, P.H., & Read, R.W., "DEVELOPMENT OF A FEEDER FOR THE HYDRAULIC TRANSPORT OF COAL," Journal Leeds Univ. Min. Soc. # 36, 1960, pp 61-70.

KEY WORDS: Hydraulic Haulage, Feeder, Coal, Hydraulic Hoist, England, Woodend Colliery, Pump

ABSTRACT: This paper summarizes the development, in recent years, of methods of feeding coal into the transport line and outlines the work carried out at the National Coal Board Central Engineering Establishment in co-operation with the Hydraulic Transport Section at Headquarter. It describes the designing and testing of several lock hopper type feeders and the manufacture, insulation and testing of the prototype feeder now operating at Woodend College, West Lothian, Scotland.

731

Willmott, L.F., Huff, W.R., & Crockett, W.E., "AQUEOUS SLURRIES OF COAL AND GRANULAR MATERIALS: A BIBLIOGRAPHY," Bureau of Mines Information Circular 8165, 1963

KEY WORDS: Bibliography, Coal, Slurry, Pipeline, Wear & Abrasion, Settling, Pump

ABSTRACT: Annotated bibliography with subject index of 349 references dealing with such subjects as properties and aspects of aqueous slurries of coal and granular materials, rheology, methods of viscometry, abrasion, sedimentation, settling rate, mixing, pumping, and instrumentation.

733R

TRANSLATED

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "UNDERGROUND HYDRAULIC MINING OF COAL," "Podzemnaya Gidrodobycha Uglya, Table of Contents, Introduction, and Bibliography, Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, This has been broken down into Chapters (SL 734 thru 746)

KEY WORDS: Bibliography, Coal, Productivity, Economics, Hydraulic Mining, Coal Mining, Hydromonitor, Donbass, Kuzbass, Safety, Hydraulic Hoisting, Pipes, Hydraulic Haulage, Sluices, Coal Dust, Yubileynoye, Tyrganskiye, Krasnoarmeyskaya, Cost Per Ton,

734R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "BASIC INFORMATION ON HYDRAULICS," Chapter 1 of "Podzemnaya Gidrodobycha Uglya," Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974
"Osnovnye Svedeniya Po Gidravlike"

KEY WORDS: Hydraulic Mining, Jet Characteristics

TRANSLATED

735R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "BARING AND WORKING HYDROMINE FIELDS," Chapter 2 of "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974
"UNDERGROUND HYDRAULIC EXTRACTION OF COAL"

KEY WORDS: Hydraulic Mining, Hydraulic Hoisting, Ventilation, Slurry, Feeder, Pump, Airlift, Dewatering, Anthracite, Hydromonitor, Coal, Rock, Hydraulic Transportation, Conveyor, Odessa-Komsomol # 2, Donbass, Gramoteinskaya 3 & 4, Krasnogorsk, USSR, Water Supply, Pioneer 2, Yubiley Mine, Kuzbass, Sluice, Krasnoarmeyskaya, Production Rate, Ordzhonikidzeugol # 4, Yanovskiy

TRANSLATED 736R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "EXCAVATION SYSTEMS IN UNDERGROUND COAL MINING," Chapter 3 of "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974 "UNDERGROUND HYDRAULIC EXTRACTION OF COAL,"

KEY WORDS: Coal, Coal Mining, Hydraulic Mining, Safety and Health, Mining System, Pitching Coal Beds, Coal Hardness, Hydraulic Transport, Flat Coal Beds, Slurry, Roof Supports, Sluicing, Roof, Floor, Ventilation, Explosion Hazard, Spontaneous Combustion, Rock, Polysayevskaya-Severnaya, Kuzbass, Donbass, Hydromonitor, Pipelines, Productivity, Novo-Grodovka #3, Odessa of Sverdlovantratsic Combine, Daryeva # 3, Seam Thickness, Explosives, Anthracite, Water Availability, Methane, Pioneer, Production Rate, Poland, Yan (Jan), Yubileynoye, Roadheader, Cost Per Ton, Tyrgan, Krasnogorsk, Privol'nyanskaya Severnaya, Ordzhonikidzeugol' # 160, Yanovsky, Koksovaya

TRANSLATED 737R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "MINE WORKINGS," Chapter 4 of "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974 , "UNDERGROUND HYDRAULIC EXTRACTION OF COAL"

KEY WORDS: Hydraulic Mining, Ventilation, Hydraulic Haulage, Coal, Rock, Hydraulic Hoist, Monorail, Safety, Water Availability, Dust, Pump, Temperature, Sluices, Hydromonitor, Jet Cutter, Production Rate, Yanovsky Hydromine, Anthracite, Pitching Coal Beds, Roof Support, Seam Thickness, Slurry, Samsonovskaya # 1, Donbass, Nagol'chavskaya # 4, Explosives, Zimogorye # 63, Manpower, Flat Coal Beds, Roadheader, Odesskaya # 2, Pipeline, Kuzbass, Yubileynoye Mine (Jubilee), Pioneer, Privol'nyanskaya-Severnaya # 4 Mine,

TRANSLATED 738R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "WAYS AND MEANS OF EXTRACTING COAL AND ROCKS IN HYDRAULIC EXTRACTION," Chapter 5 of "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "UNDERGROUND HYDRAULIC EXTRACTION OF COAL"

KEY WORDS: Coal, Hydraulic Mining, Rock, Hydromonitor, Water Supply, Pulsating Jets, Pipeline, Donbass, Coal Hardness, Pitching Coal Beds, Safety, Flat Coal Beds, Production Rate, Explosion Hazard, Czechoslovakia, Japan, Valve, Pump, Economics, Krasnogorskaya Mine, Kuzbass, Explosives, Dzerzhinsky Mine, Hydraulic Hoist, Poland, Floor, Roof, Conveyor, Coal Dust, Odesskaya Komsomol'skaya # 4, Electrical Power, Privol'myanskaya-Severnaya # 4, Hydraulic Transport, Slurry, Dewatering

TRANSLATED 739R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "HYDRAULIC TRANSPORT AND HYDRAULIC HOISTING OF COAL," Chapter 6 of "Podzemnaya Gidrodobycha Uglya," Izdanie, 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "Underground Hydraulic Extraction of Coal"

KEY WORDS: Coal, Hydraulic Hoist, Hydraulic Haulage, Slurry, Pipeline, Abrasion and Wear, Sluicing, Coal Pump, Air Lift, Feeders

TRANSLATED 740R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "AUXILIARY EQUIPMENT OF HYDROMINES," Chapter 7 of "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "UNDERGROUND HYDRAULIC EXTRACTION OF COAL,"

KEY WORDS: Hydraulic Powered Mining Equipment, Ventilation, Hydraulic Mining

TRANSLATED 741R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "DEWATERING AND PREPARATION OF COAL," Chapter 8 of "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "UNDERGROUND HYDRAULIC EXTRACTION OF COAL."

KEY WORDS: Coal Preparation, Dewatering, Screen, Water Clarification (Purification)

TRANSLATED 742R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "HYDROMINE WATER SUPPLY," Chapter 9 from the book "Underground Hydraulic Mining of Coal", Moscow, 1974, "Podzemnaya Gidrodobycha Uglya," Nedra Publishers

KEY WORDS: Water Supply, Coal, Hydraulic Hoisting, Hydraulic Haulage, Preparation of Coal, Water, Clarification, Hydraulic Mining, Settling, Pump, Slurry, Tomusinskay 1/2, Kuzbass

TRANSLATED 743R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "ELECTRICAL EQUIPMENT OF HYDROMINES," Chapter 10 from the book "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie, 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "UNDERGROUND HYDRAULIC EXTRACTION OF COAL"

KEY WORDS: Hydraulic Mining, Electrical Power, Pumps, Coal

TRANSLATED 744R

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "AUTOMATION OF HYDRAULIC EXTRACTION," Chapter 11 from the book "Podzemnaya Gidrodobycha Uglya," Izdanie, 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "Underground Hydraulic Extraction of Coal"

KEY WORDS: Hydraulic Mining, Hydromonitors, Dewatering, Pump, Slurry, Hydraulic Hoisting, Coal

745R

TRANSLATED

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "BRIEF DATA ON ECONOMICS AND MANAGEMENT OF COAL PRODUCTION BY HYDRAULIC METHOD," Chapter 12, of "Podzemnaya Gidrodobycha Uglya," Izdanie, 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "Underground Hydraulic Extraction of Coal,"

746R

TRANSLATED

Okhrimenko, V.A., Kuprin, A.I., Ishchuk, I.G., "SAFETY TECHNIQUES IN HYDROMINES," Chapter 13 of "PODZEMNAYA GIDRODOBYCHA UGLYA," Izdanie, 2, Pererabotannoe I Dopolnennoe, Moscow, 1974, "UNDERGROUND HYDRAULIC EXTRACTION OF COAL"

KEY WORDS: Safety, Dust, Health, Roof Support, Roof Falls, Ventilation, Methane, Humidity, USSR

747

Machinoexport, "LETTER TO TERRASPACE, INC.," August 20, 1974

KEY WORDS: Hydraulic Mining, USSR

750

Spencer, K.T., "DEVELOPMENT OF HYDRAULIC LOADS FOR FEEDING COAL INTO HIGH PRESSURE HYDRAULIC PIPELINES," Colloquium on Hydraulic Transport, November 1952.

KEY WORDS: Hydraulic Haulage, Coal, Pipeline, Slurry, Pump, Markham Colliery Pipeline, England, Feeder

751

Denny, D.F., "DEVELOPMENT OF A COAL PUMP," Colloquim on the Hydraulic Transport of Coal, Nov. 1952, BHRA

KEY WORDS: Hydraulic Haulage, Coal, Pump, Feeder, Slurry

ABSTRACT: This paper is concerned with the problem of introducing coal into a pipeline containing water under pressure. An experimental plunger pump seams to show more promise or success, particularly when made in double-acting form and driven hydraulically so that all seals are avoided.

752

Tatkov, V.A., "A HIGH PRESSURE TWO PHASE COAL PUMP FOR HYDRAULIC TRANSPORT IN SHAFTS," From "Mine Water Drainage and Pump Construction in the Coal Industry, Moscow, 1957, pp 289-295, National Coal Board Translation A.1639/JG

KEY WORDS: Hydraulic Hoist, Pump, Coal

ABSTRACT:

A two-phase, centrifugal pump of spiral design for pumping coal-water mixtures containing feed material with an average diameter of 80-90 mm is described, and test results are given. The pump was designed to handle 900 cubic meters per hour at a head of 250 meter liquid column.

753

Coeuillet, M.M. & Veillet, "HYDRAULIC TRANSPORT OF COAL AND STONE IN THE MINES," Centenary Congress of the Mineral Industry Association, National Coal Board Translation A.1079, Paris, June 1955.

KEY WORDS: Hydraulic Haulage, Hydraulic Stowing, France, Coal, Slurry, Economics, Pipeline

ABSTRACT:

Advances of hydraulic transport in mines are investigated. Contents include: Bases of comparative study; power and consumption of energy in hydraulic transport (Horizontal and vertical) - Economics of hydraulic transport (equipment, capital expenditure and depreciation, maintenance). Comparison with conventional methods of transport - Appendix. On the basis of this study, the table of daily costs of hydraulic transport, calculated for various flow regimes, is presented.

756

BHRA,"PROCEEDINGS OF HYDROTRANSPORT 2," 2nd International Conference on Hydraulic Transport of Solids in Pipes, Coventry, England, 1972

KEY WORDS: Hydraulic Haulage, Conveyor, Pipeline, Slurry, Settling, Wear and Abrasion, Slurry Pump, Feeder, Pump, Coal, Economics

757

Tarjan, I., & Debreczeni, E., "THEORETICAL AND EXPERIMENTAL INVESTIGATION ON THE WEAR OF PIPELINE CAUSED BY HYDRAULIC TRANSPORT, Hydrotransport 2, BHRA, Sept. 1972, Paper G1, pp G1-1-14

KEY WORDS: Hydraulic Haulage, Pipeline, Slurry, Hungary

Summary

The economy of hydraulic transport, especially for longer transporting distances, is highly affected by the life endurance of the pipeline. The paper deals with the examination of the wear of a straight pipe, determining the relationship between the wear and the main characteristics of hydraulic transport and giving a method to determine beforehand the economic effect of pipe wear. It describes a method to measure pipe wear and an equipment constructed at the Technical University of Miskolc as well as the measuring results obtained for different pipes and materials to be transported. The measurement is based on the change of pipe weight.

758

Thompson, T.L., Frey, R.J., Cowper, N.T., and Wasp, E.J., "SLURRY PUMPS, A SURVEY," Hydrotransport 2, Paper H1, BHRA, Sept. 1972, pp H1-1-24

KEY WORDS: Slurry, Pump, Pipeline, Black Mesa Pipeline, Western U.S., Consolodation Coal Pipeline, Economics, Cost Per Ton, Electrical Power, Hydraulic Hoisting

Summary

A review is given of major commercial long-distance slurry pipeline systems installed world wide. Emphasis is on pump installations; capabilities and limitations of available types of slurry pumps are discussed. The decade ahead is projected with particular emphasis on types and sizes of pumps which will be needed for large-scale slurry systems.

759

Wilson, G., "THE DESIGN ASPECTS OF CENTRIFUGAL PUMPS FOR ABRASIVE SLURRIES," Hydrotransport 2, Paper H2, BHRA, Sept. 1972, pp H2-25-52

KEY WORDS: Slurry, Pump, Canada, Rock

Summary

Satisfactory hydraulic performance of a centrifugal slurry pump is not the only design criterion. If abrasive wear exists the severity of any damage can be reduced and the life of the wearing parts prolonged by selecting the correct pump to suit the conditions of service. This paper is concerned with the design and construction of centrifugal pumps for handling abrasive solids.

The wear phenomena due to the slurry being pumped and the materials used to combat abrasive wear are outlined.

The hydraulic design of the impeller and casing and their relationship to wear and the hydraulic radial and axial unbalance is discussed.

The prediction of abrasive wear in pumps cannot be precise as many factors are involved and this is the object of current research.

760

Laubscher, B., Sauermann, H.B., "PERFORMANCE OF HYDRO-LIFT FEEDER," Hydrotransport 2, Paper H3, BHRA, Sept. 1972, pp H3-53-68

KEY WORDS: Hydraulic Hoist, Pump, Pipeline, Feeder, Australia, Dewatering, Hydraulic Haulage, Settling

Summary

Various dimensionless parameters governing the introduction of coarse solids into a pressurized pipeline by means of the so called Hydro-Lift feeder, are discussed. The results of a full-scale Hydro-Lift feeder with a 254 mm diameter uplift pipe are combined with the results obtained in models by Australian investigators and an improved design formula for this type of feeder is developed.

It is shown that the discharge concentration is a function of entrainment length (distance between nozzle outlet and uplift pipe inlet), nozzle diameter, uplift pipe diameter, mixture velocity, density of material and settling velocity.

Pressure losses along a length of the 254 mm diameter uplift pipe and over the feeder were measured and compared with values predicted from theoretical considerations.

The design of hydraulic hoisting installations for optimum efficiency is outlined.

761

Kocsanyi, L., "HIGH PRESSURE HYDRAULIC TRANSPORT OF COAL AND OTHER MINING PRODUCTS BY MEANS OF PIPE-FEEDERS," Hydrotransport 2, BHRA, Sept. 1972, Paper H4, pp H4-69-80

KEY WORDS: Pipeline, Feeder, Hydraulic Haulage, Coal, Water Purification Pump, Hungary

ABSTRACT: The paper describes some constructional characteristics and applications of a Hungarian pipe feeder.

763

Stewart, D.B., "HIGH HEAD SLURRY PUMP," Hydrotransport 2, Sept. 1972, BHRA, Paper H6, pp H6-93 to H6-98

KEY WORDS: Pump, Pipelines, Slurry, Hydraulic Haulage

Summary

A positive displacement rotary ram pump is being developed for pipeline transportation of slurries such as coal, iron ore and limestone etc. Pump operation is by hydraulic powered free pistons in a rotating cylinder block with cylinders overlapped by stationary inlet and discharge ports in a water lubricated and sealed rotary valve. This enables pressures up to 2500 psi with pulsation free constant pumping for long distance pipelines.

764

Kobylecki, E., "HYDRAULIC TRANSPORT IN OPEN-CAST MINES," Working Meeting No. 5, 9 pages

KEY WORDS: Hydraulic Haulage, Poland, Coal, Slurry, Pipeline, Rock, Pump, Open Pit, Consolidation Coal Pipeline, Black Mesa, Western U.S. France, Canada, Donbass, USSR, Lugansk Pipeline (Projected)

765R

Krivtsov, A.T., & Shteinberg, V.A., "EKONOMIKO-MATEMATICHESKAYA MODEL' OPREDELENIYA KAPITAL'NYKH VLOZHENII V KOMPLEKS VODOOTLIVA," Gorniy Zhurnal, No. 7, July 1974, pp 18-20
"ECONOMICO-MATHEMATICAL MODEL FOR DETERMINING CAPITAL INVESTMENTS IN A WATER DRAIN COMPLEX."

KEY WORDS: Economics, Capital Investment, Dewatering

ABSTRACT:

This paper is devoted to the quantitative estimate and construction of of an economico-mathematical model for computing the magnitude of capital investments in a complex of mine drainage, which would allow a sharp decrease in cumbersome computations and assure the required conditions for a multiple-variant analysis when choosing the most economical drainage scheme.

766R

Masurov, A.A., & Elanskiy, A.N., "ZA RUBEZHOM: PRIMENENIE GIDROTRANSPORTA NA ZARUBEZHNYKH GORNO-OBOGATITEL'NYKH PREDPRIYATIYAKH," Gorniy Zhurnal, No. 9, 1974, pp 72-74
"APPLICATION OF HYDROTRANSPORT IN FOREIGN MINE BENEFICIATION ENTERPRISES."

KEY WORDS: Hydraulic Transport

SUMMARY: This paper deals with foreign beneficiation of ores and does not deal with coal

767R

Karpov, G.S., Vaganov, P.V., Gonomarev, A.N., & Kompaneitsev, E.A., "VLIYNIE OSNOVNYKH PARAMETROV GIDRAVLICHESKOGO SPOSOBA RAZRABOTKI ROSSYPEI NA PROISVODITEL'NOST' GIDROUSTANOVOK I SEBESTOIMOST' DOBYCHI," Gorniy Zhurnal, No. 7, 1974, pp 26-28
"INFLUENCE OF THE BASIC HYDRAULIC METHOD PARAMETERS OF PLACER OR OF ALLUVIAL DEPOSITS OPERATION ON THE PRODUCTIVITY OF THE HYDRAULIC INSTALLATIONS AND PRODUCTION COSTS."

KEY WORDS: Water Consumption, Production Rate

ABSTRACT:

This paper is a corollary of "Terraspace #615R", dealing essentially with operation of alluvial, especially gold or placer deposits, the calculations involved proving that hydraulics have a good reserve in production rate increase on account of lowering the specific consumption of water.

768R

Sheshenko, F.F., "KLASSAFIKATSIYA TEKHNOGOGICHESKIKH SKHEM GIDROVLICHESKOI DOBYCHI I GERBRABOTKI NERUDNYKH ISKOPAEMYKH," Gorniy Zhurnal, No. 9, 1974, pp 22-24
"CLASSIFICATION OF TECHNOLOGICAL SCHEMES OF HYDRAULIC PRODUCTION AND PROCESSING OF INDUSTRIAL (NON-ORE) MINERALS."

KEY WORDS: Open Pit, Hydraulic Mining, Continuous Mining

ABSTRACT:

The paper deals especially with open pit mining to which the schemes in question are applied. Flowsheets of two schemes are presented in Fig.1 and 2, respctively the continuous technology of hydraulic production and processing of industrial minerals and the so called continuous-cyclical one. As reference is made here on excavators and dredges, this has only a remote connection with coal mining, especially the underground one.

769

Pfefferle, G.H., "APPARATUS FOR AND METHOD OF MINING A SUBTERRANEAN ORE DEPOSIT," U.S. Patent 3,439,953, April 22, 1969

KEY WORDS: Borehole Mining, Hydraulic Mining, Hydraulic Hoist, Airlift

ABSTRACT: Apparatus for and a method of mining a subterranean ore deposit through a well bore where the ore is eroded from the ore matrix by laterally directed jets of water. The mining operation is started with the well filled with water. After the cavity formed by the eroding jet streams reaches a size such that the jet streams can no longer erode the ore efficiently, the water level in the well is lowered to a point just above the lower end of the eductor tube through which the ore and water slurry is removed. The mining operation then continues with the eroding jet streams traveling through air. The slurry is removed from the well through the eductor tube by an air lift system. The location of the air-water interface is determined by a vertically movable small diameter tubing string.

770

Wenneborg, W.Z., Payne, B.R., Bunnelle, P.R., "METHOD OF SUBTERRANEAN DRILLING AND MINING," U.S. Patent # 3,730,592, May 1, 1973

KEY WORDS: Borehole Mine, Hydraulic Mining, Hydraulic Hoist

ABSTRACT: A method is provided for drilling into and mining a subterranean deposit of granular ore. The method incorporates a drilling function, a mining function, and a novel change in function between drilling and mining by imposition of a hydraulic actuating force originating from the ground surface. The method is capable of mining a granular ore deposit located in proximity with or below an aquifer without substantially removing water from the aquifer. An embodiment of the method permits the change in function between drilling and mining to be repeated as often as necessary to mine several layers of granular ore having intervening layers of overburden.

771

Beckett, P.J., Cummings, A.D., Whitmore, R.L, "INTERFACIAL PROPERTIES OF COAL MEASURE SHALES IN WATER," Proc. Residential Conf. on Science in the Use of Coal, Univ. Sheffield Publ. Inst. Fuel (London), pp B-14 - B-19, Paper 12, April 15-17, 1958

KEY WORDS: Hydraulic Mining, Rock, Floor

ABSTRACT: Some of the interfacial properties of coal-measure shales have been examined by electrochemical and electrokinetic methods. The specific conductivities, cation exchange capacities, and porosities have also been measured. The results obtained are correlated with the slaking behaviour of the shales, and an attempt is made to describe the mechanism of breakdown in terms of the ionic surface activities of the materials present. Finally, the difficulties of controlling slaking are discussed in relation to the ionic characteristics of the shales.

772

Wright, A., "HYDRAULIC TRANSPORT OF COAL," Sheffield University Mining Magazine, pp 47-70, Read before the Mining Society May 1959

KEY WORDS: Coal, Hydraulic Mining, Hydraulic Haulage, Slurry, Sluicing, Pipeline, Pump, Feeder, Consolidation Coal Pipeline, (Cadiz to Cleveland, Ohio), France, (Merleboch Mine), England, Woodend Mine, Poland (Debiensko)

ABSTRACT: This paper includes a review of both the use of solids-handling pumps & developments of special feeders.

773

Bowen, I.G., "HANDLING OF SLURRIES," U.S. Patent 3,140,123, July 7, 1964

KEY WORDS: Hydraulic Mining, Slurry, Pipeline, Hydraulic Haulage, Feeder

ABSTRACT:

In the method for handling heavy slurries, e. g. of powdered coal, in a pipeline, the slurry is pumped from a reservoir into a lock hopper and then expelled into the pipeline by an equal volume of outside water. A volume of water equal to the volume of the coal solids is separated, clarified and recycled to the water source. The usual water-disposal problems associated with slurry pipeline operations are substantially eliminated.

774

Chermensky, G.P., "DEVICE FOR BUILDING UP FLUID PRESSURE PULSES," U.S. Patent 3,601,988, August 31, 1971

KEY WORDS: Water Cannon, Hydraulic Mining

ABSTRACT:

The invention relates to a device for building up fluid pressure pulses, said device comprising a cylinder and a piston reciprocating inside said cylinder and dividing its cavity into two chambers. The first chamber is in communication with a compressed gas vessel whereas the second one is filled with fluid and has a hole for the discharge of the fluid under the pressure built up by the impact of the piston which is accelerated by the compressed gas contained in the first chamber. The device incorporates a means for replenishing the first chamber with gas (air) pumped from the atmosphere and for bypassing it into the compressed gas vessel during the progressive movement of the piston.

775

Muchnik, V.S., "DEVICE FOR BUILDING UP FLUID PRESSURE PULSES," U.S. Patent 3,614,271, October 19, 1971

KEY WORDS: Water Cannon, Hydraulic Mining

ABSTRACT:

A device for building up fluid pressure pulses comprises a cylinder and a piston which divides the cylinder cavity into two chambers. The first of these chambers communicates with a compressed gas vessel while the second one is filled with fluid and has a hole for the discharge of the fluid under pressure when the fluid is struck upon by the piston which is accelerated by the compressed gas in the first chamber, the second chamber being in constant communication with the fluid supply line through a number of channels in the sidewall of the cylinder, some of these channels being arranged tangentially to the chamber and inclined with respect to the axis of the discharge hole while the remainder of these channels are arranged radially and also inclined relative to the axis of the hole.

776

Chermensky, G.P., "DEVICE FOR BUILDING UP FLUID PRESSURE PULSES," U.S. Patent 3,601,987, August 31, 1971

KEY WORDS: Water Cannon, Hydraulic Mining

ABSTRACT:

The invention describes a device for building-up fluid pressure pulses comprising a cylinder with a piston which divides the cylinder cavity into a high-pressure chamber and low-pressure chamber of which the first one has a hole and is filled with fluid while the second one communicates with a vessel containing compressed gas which accelerates the piston and the latter strikes the fluid contained in the first chamber so that said fluid is discharged under pressure through a hole in the chamber. The piston is of a differential design and its step of a larger diameter is located at the side of the first chamber while the step of a smaller diameter is located at the side of the second chamber, the cylinder between the steps being divided by a partition which, together with the piston steps, forms two hydraulic chambers. One of these chambers, located at the side of the step of a smaller diameter is in constant communication with the pressure line while the second one, located at the side of the step of a larger diameter is put periodically in communication with the first hydraulic chamber and simultaneously with the pressure line, and also with the drain line.

777

Chermensky, G.P., "DEVICE FOR PRODUCING HIGH PRESSURE PULSE TYPE JETS OF LIQUID," U.S. Patent 3,593,524, July 20, 1971

KEY WORDS: Water Cannon, Hydraulic Mining

ABSTRACT: The invention describes a device for producing pulse-type high pressure liquid jets created by the impact of a piston on the liquid contained in a chamber having a hole for the outflow of the liquid. For this purpose the piston is accelerated in the cylinder by compressed gas and, after producing an impact returns to the initial position compressing the gas by feeding the liquid under pressure into said cylinder.

778

Berkowitz, N, et al, "PIPELINE TRANSPORTATION OF SOLIDS," U.S. Patent 3,190,701, Feb. 1, 1963

KEY WORDS: Hydraulic Haulage, Pipeline, Coal

ABSTRACT: Finely divided coal is mixed with about 30% water to form a paste, the paste formed into discrete and coherent bodies, and these bodies injected into a flowing stream of a hydrocarbon oil. The "load factor" of the pipeline may be readily varied to meet sudden increases or decreases in market demans. Inasmuch as the water and oil are substantially immiscible, recovery of the solids at the pipeline terminal may be accomplished by simple screening.

779

Wunsch, W. & Puff, W., "METHOD OF TRANSPORTING SOLID AND VISCOUS MATERIAL IN PIPE LINES," U.S. Patent 3,180,691, April 27, 1965

KEY WORDS: Hydraulic Haulage, Coal, Pipeline, Slurry

ABSTRACT: In pipeline transportation of hard coal, the granular coal is intermixed with a gasifiable liquid carrier substance which will be gaseous at the temperation and atmospheric pressure prevailing at the end of the pipeline. The mixture is passed into the liquified carrier substance through the pipeline. At the discharge and the carrier is caused to assume its gaseous state so as to facilitate separation of the coal solids therefrom. Listed among the suitable carriers are : propylene, propane, difluordichloromethane, methyl chloride, i-butane, n-butane n-pentane.

780

Phinney, J.A., et al, "TRANSPORTATION OF COAL BY PIPELINE," U.S. Patent 3,168,350, August 29, 1961

KEY WORDS: Hydraulic Haulage, Pipeline, Slurry, Coal, Screen, Crusher

ABSTRACT: The blending of two slurries having different spectra of coal particles, both with high transport energy requirements less than either of the two slurries originally employed in the blend. This makes possible the transport of a larger amount of coal at the same transport energy as previously required, or the transport of the same amount of coal at lower transport energy requirements. This improved slurry is obtained by specifically controlling the particle size and the distribution of the various sized particles.

782

Wussow, D., "WATER AS WINNING AND TRANSPORT MEDIUM IN HARD-COAL MINING," Gluckauf, 101 (5): 316-21 (1965), Translated from the German for Oak Ridge National Laboratory, NTIS# PB 187566

KEY WORDS: Hydraulic Mining, Hydraulic Haulage, Hydraulic Hoist, Coal, Economics, Sluicing

ABSTRACT: Experience with hydraulic method of coal mining and hydraulic equipment used at coal face; methods of hydraulic transportation of coal to surface; economic aspects in future development of method.

783

Stedman Foundry & Machine Co., "STEDMAN FLARED, SINGLE ROW, AND MULTI ROW CRUSHERS," & Letter, Nov. 1974

KEY WORDS: Crushers, Coal

784

American Pulverizer Company, "WC AND WS SERIES ROLLING RING COAL CRUSHERS," & Letter, Nov. 1974

KEY WORDS: Crushers, Coal

785

Cooley, W.C., "WATER CANNON DEVELOPMENT IN NOVOKUZNETSK BY G.P. CHERMENSKY" July 1971

KEY WORDS: Hydromonitor, Hydraulic Mining, Coal, Pressure Intensifier, Water Cannon, Disintegration, Hydraulic Hoist, Rock, Jet Cutter, Economics

786

Worthington, "WORTHINGTON SLURRY PUMPS," & Letter, Nov. 1974

KEY WORD: Slurry Pump

788

Ingersoll-Rand, "THE TYPE MIR HARD IRON RHINO SLURRY PUMP," 1973

KEY WORDS: Slurry Pump

789

USGS, "LIST OF SOURCES OF COAL INFORMATION IN COAL-BEARING STATES," 1974

KEY WORDS: Coal

790

Mitre Corporation, "ENERGY SELF SUFFICIENCY, HOW MUCH AND HOW SOON?," Symposium/Workshop Summary Report, September 1974.

KEY WORDS: Coal, Western U.S., Appalachian, Mid-western U.S., Production Rate

ABSTRACT: Ten energy policy statements are presented and discussed as a set of measures for achieving a realistic degree of U.S. energy self-sufficiency in the next five to ten years.

791

Warman Equipment (International), Inc., "WARMAN SERIES A HEAVY DUTY SLURRY PUMP, & LETTER," Nov. 1974.

KEY WORDS: Slurry Pump, Coal Pump

792

Slocum, M., "SOVIET ENERGY: AN INTERNAL ASSESSMENT," Technology Review, October/November, 1974, pp 17-33

KEY WORDS: USSR, Coal

The author's attempt in this article is to present as accurate a picture as possible of the officially accepted Soviet position on energy supplies and development in relation to discussions of the allocations of capital and other resources within the planning structure of the government of the U.S.S.R. The Soviet views of their energy situation were compiled during an extensive study of more than 2,000 books and journals published in the Soviet Union for internal Soviet consumption since 1965. No statement has been included unless it was found in at least three different and authoritative sources; and no statement was included if at any time an indirectly or directly contradictory statement was found. Superscripts in the text refer to the numbers of the references listed at the end of this article (pp. 32-33) where supporting data is found; specific page references and some translations from those references have been supplied by the author and are available from the editors. In order to reduce redundancy, the references listed at the back of this study are only a small percentage of those used in the course of the analysis; however, all the available Soviet sources were cross-checked against each other in order to be sure that the information used was internally and externally consistent in all available sources.

The author notes that Soviet numerical data are used in this paper only as trend indicators, because no complete sets of Soviet data on the fuel/energy balance or related topics are as yet available to the West. The fragments of Soviet data series that are available are usually incompatible with each other. Not only are no descriptions given of the methodology used by the Soviet authors in the compilation of their data, but there is extensive internal evidence that the methodology varies considerably from source to source. Any attempt to develop a series by interpolating or interpreting fragmented data of this sort inevitably introduces approximations, assumptions, or "mirror images" which may or may not be an accurate reflection of the Soviet problem, position or plan.

The author takes this opportunity to express appreciation and gratitude to A. Pietsch for help in selecting appropriate materials, for compiling the bibliography, and for many illuminating discussions.

793

INGERSOLL-RAND, "PUMP BROCHURES," 1972 & 1974

KEY WORDS: SLURRY PUMP, Pumps

794R

Mirer, S.V., "OB OTSENKE NAPRYAZHENNOGO SOSTOYANIYA PRIZABOYNOY CHASTI PLASTA PRI POMOSHCHI GIDRAVLICHESKOGO DATCHIKA DAVLENIYA," Ugol # 10, 1974, pp 65-66
"ON THE ESTIMATE OF THE STATE OF STRESS OF THE FACE PART OF THE SEAM WITH THE AID OF A HYDRAULIC PRESSURE SENSOR."

KEY WORDS: Coal,

ABSTRACT:

The sensor in question is designed for the experimental determination of the coefficient of stresses concentration and the extension of the zone of threshold pressure state of the coal massif near the working.

Earlier research has established that the measured value of the coefficient of stresses concentration is essentially dependent on the initial fluid pressure in the pickup. On the basis of numerical data it appears that the ratio of maximum pressure in the pickup to the initial is not valid for the characterization of the coefficient of stresses concentration in the face zone of the coal seam.

The subsequent reasoning is based on the consideration of the extent to which the real distance from the face to the maximum of stresses concentration determined with the aid of the pickup corresponds to the magnitude of the zone of the thrshold state of the massif.

Two diagrams serve as the basis for the conclusions derived: Fig.1 presents the probable model of interaction between pressure in the hydraulic pickup and the real stresses in the marginal part of the seam; fig.2 shows the pressure drop in the pickup as a function of time.

All these complex and frankly difficult to understand reasonings, supported by a series of numerical examples, lead to the conclusions that the distance from the face to the point of maximum pressure in the device corresponds to the distance from the face to the place of seam pinching by the rock console. The conclusion allegedly offers interest in regard to the estimate of the degree of the danger of face part of coal seam ejection.

795

Newsclipping, "CANADIANS, USSR, JAPANESE MERGE MINING SKILLS," Daily Journal of Commerce, Seattle, Washington, Nov. 19, 1974

KEY WORDS: Coal, Hydraulic Mining, Japan, Canada, USSR, Crows Nest Mine

796

News Clipping, "KAISER RESOURCES SAYS ACCORD IS SET ON COAL TECHNOLOGY," Newspaper Unknown, 1974, Fall

KEY WORDS: Coal, Hydraulic Mining, Japan, Canada, USSR, Crows Nest Mine

798

Battelle Columbus Labs, "REFERENCES FOR COAL MINING AND SAFETY," 1974

KEY WORDS: Bibliography, Coal Mining, Safety

SL799

Nagle Pumps, Inc., "SLURRY PUMPS AND COAL MINING," & Letter, Dec. 1974

KEY WORDS: Pump, Slurry Pump

SL 800

Weir, J.P., & Clark, G.C., "EVALUATION OF COAL MINING PROPERTIES," AIME, Proc. Council Economics, New York, N.Y., Mar. 1971, pp 263-281, ID No. BI72X090978, 552673

KEY WORDS: Coal Mining, Economics, Capital Investment

ABSTRACT: The approach of the simple compound discount of cash flow to establish value (or to determine rate of return) is outlined. The DCF method is simple and conforms to accounting practices. By discount of cash flow, the value is established so that an investor would obtain return of his investment and an interest return on the unrecovered portion of his investment. The method mathematically is more or less analogous to a mortgage system. Numerical examples are given, taken from practice.

803

Kendal, M., "A FEED VALVE FOR THE HYDRAULIC TRANSPORTATION OF COAL," January 1955, National Coal Board, Scientific Department, Central Research Establishment I, Report No. 1245

KEY WORDS: Hydraulic Haulage, Coal, Feeder, Slurry

ABSTRACT: Describes a rotary valve for feeding coal out of the mine to the surface.

804

Worster, R.C. & Denny, D.F., "THE TRANSPORT OF SOLIDS IN PIPES," BHRA Proceedings of the Third Annual Conference Held at Ashorne Hill, Leamington England, Sept. 1954, part 2,

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Wear & Abrasion

ABSTRACT:

The subject matter of this paper is firstly concerned with the characteristics of the flow of solid-liquid mixtures in pipes and secondly with the design of practical systems for the pumping of coal.

Perhaps the most important type of pipe flow is the flow in horizontal pipes and a large amount of experimental data has been collected on this aspect which can be correlated to allow for different pipe diameters and solids and liquid densities. Pressure drops in vertical pipe due to friction are just the same as for water flow alone, provided they are measured in feet of mixture and that the downward slip velocity of the particles with respect to the water is small compared with the water velocity. In sloping pipes, thepressure drop between the pipe ends seem to approximate to the sum of the pressure drops in the corresponding horizontal and vertical pipes joining the same end points.

The question of designing practical pumping systems is gone into at some length. Several systems are discussed and operational efficiencies worked out for these. Open or closed systems can be used and the coal must either be passed through a solids handling pump or fed mechanically into the pipeline after the water has been raised to the necessary pressure.

The best alternative is to use a coal feeder, and the Association has constructed and tested several of these. These and other types of feeder aredescribed in this paper. Auxiliary equipment such as water cleaning plant and instrumentation is required for the operation of a coal raising scheme. For removal of the coal fines continually produced in the water, thickeners must be provided for concentration of the slurry before filtration. The provision of suitable equipment is discussed as is the provision of suitable instrumentation for efficient operation.

The economics of the coal transport process is finally examined and the estimated cost of transport of coal by this method is 4 to 5 pence per ton per mile.

806

Worster, R.C., "MEASUREMENT OF THE FORCES CAUSING HYDRAULIC TRANSPORT OF COAL," BHRA, # RR482, March 1954.

KEY WORDS: Hydraulic Haulage, Coal, Slurry

ABSTRACT:

In this report a correlation is established between hydraulic and pneumatic transport and then the results of a number of experiments, carried out to determine the force distribution, when solids are hydraulically transported in a horizontal pipe, are given. The fraction of the total force which causes the solid bed to slide is determined and from this a coefficient of friction is worked out and compared with the coefficients of friction for the solids in question.

807

Denny, D.F., "WEAR TESTS ON COMMERCIAL PLUG-VALVES HANDLING COAL-WATER SLURRIES," BHRA, # RR598, October 1958

KEY WORDS: Coal, Slurry,

ABSTRACT:

Tests have recently been carried out at B.H.R.A. on three 6- inch cast-iron commercial plug valves, two of the full-bore parallel plug type and a third incorporating a tapered plug, to determine to what extent they are suitable for use under the arduous conditions associated with hydraulic coal transport systems. After describing the experimental apparatus, which consisted essentially of a large U-tube in which the valve under test was repeatedly operated against a continuously oscillated coal/water mixture, the report gives details of the valves and the methods of sealing the plugs. The operating torques and lubrication applied during the investigation are given.

Results indicate that in spite of the fact that in most cases the lubricant grooves became choked with fine coal particles, neither wear nor leakage were excessive after 250,000 cycles and all three valves were considered suitable for the particular application being considered.

808

Katell, S & Hemingway, E.L., "BASIC ESTIMATED CAPITAL INVESTMENT AND OPERATING COSTS FOR UNDERGROUND BITUMINOUS COAL MINES," Mines with Annual Production of 1.06 to 4.99 Million Tons from a 72 Inch Coalbed, US Bureau of Mines, IC 8632, 1974

KEY WORDS: Economics, Capital Investment, Bituminous, Coal, Coal Mining, Productivity, Continuous Miner, Feeder, Conveyors, Electric Power, Water Supply, Cost Per Ton

ABSTRACT:

This study estimates capital investment, operating costs, and selling prices for four underground bituminous mines producing coal with annual production ranging from 1.06 to 4.99 million tons. It is assumed that the mines have a 20-year life. Wages and union welfare payments are considered as of November 12, 1973, under the Bituminous Wage Agreement of 1971, and costs for material and equipment are based on 1973 indexes.

Initial capital investment ranges from $12,540,700 for the 1.06-million-ton-per-year (MM tpy) mine to $44,720,500 for the 4.99 MM tpy mine. Total capital investment ranges from $21,850,700 to $75,693,500 for the same mines. Corresponding selling prices for the coal range from $8.76 to $7.53 per ton, assuming a 12-percent discounted cash flow rate of return after Federal income taxes.

809

Hileman, D.H., Collins, B.A. & Wilson, S.R., "COAL PRODUCTION FROM THE UINTA REGION, COLORADO AND UTAH," Cost Analysis for Proposed Underground Mining Operations, US Bureau of Mines, IC 8497, 1970

KEY WORDS: Productivity, Coal Mining, Economics, Cost Per Ton, Western U.S., Rock, Anthracite, Bituminous, Feeder-breaker, Continuous Miner, Water Pollution, Coal

ABSTRACT: Economic investigations indicate that bituminous coal can be mined underground in the Uinta region and marketed at a cost competitive with that of other energy sources in the West. A selling price of $3.90 per ton of coal was calculated from a cost analysis of a projected coal mine in the Emery coalfield of Utah. Although mines in some of the coalfields have extremely difficult mining conditions and cannot compete in the energy market at this price level, at least 2 other coalfields in the Uinta region contain coal reserves that could be mined and sold at a price of approximately $3.90 per ton. Projections by power companies and other coal-consuming industries indicate a strong future market for the large coal reserves in the Uinta region.

810

Miller, R.A., "COMPUTER PROGRAM FOR ECONOMIC EVALUATIONS OF UNDERGROUND BITUMINOUS COAL MINES," U.S. Bureau of Mines, IC 8513, 1971

KEY WORDS: Bituminous, Coal, Economics, Capital Investment, Productivity Cost Per Ton, Continous Miner

ABSTRACT:

This computer program determines the price per ton of coal needed to obtain a profit of 12 percent discounted cash flow.

From a predetermined equipment and manning list, the program calculates all costs and prints seven tables, including the equipment and manning tables and the discount cash flow table. Forty-four of the input variables may be readily changed to study their effects upon the final price per ton of coal or upon individual cost items.

The method is adaptable for any type of mining and, with additions, for beneficiation processes.

This program was written in Fortran IV for use on the IBM 1130[2] and with few modifications can be used on other computers.

811R

TRANSLATED

Nalapko, I.A., Shevchenko, I.A., Manza, P.I., "PROMYSHLENNYE ISPYTANIYA AGREGATA DLYA GASHENIYA I TRANSPORTIROVANIYA SHLAKA I ZOLY," Obogashcheni I Briketirovanie Uglya, # 7, 1974, pp 19-20
"INDUSTRIAL TESTS OF A PLANT UNIT FOR THE EXTINCTION AND TRANSPORT OF SLAG AND ASH."

KEY WORDS: Coal, Anthracite, Conveyor, Crushers, Dewatering, Coal Preparation

812R

TRANSLATED

Gelyuta, E.Z., Zabedetskiy, Yu.I., "ANALIZ SOVERSHENSTVOVANIYA DOBYCHI UGLYA GIDRAVLICHESKIM SPOSOBOM," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 7, 1974, pp 32-34
"ANALYSIS OF COAL PRODUCTION IMPROVEMENT BY HYDRAULIC METHOD."

KEY WORDS: Coal, Coal Mining, Hydraulic Mining, Hydraulic Hoisting, Yubiley, Kuzbass, Donbass, Pioneer, Productivity, Economics, Hydraulic Transport, Hydromonitors, Flat Coal Beds

813R

TRANSLATED

Bakhmanov, G.S., Vasil'ev, E.F., Rad'ko, B.V, "VLYANIE POTER'UGLYA NA TEKHNIKO-EKONOMICHESKIE POKAZATELI RABOTY GIDROSHAKHT, RAZRABATYVAYUSHCHI KRUTYE PLASTY," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 7, 1974, pp 34-35
"THE INFLUENCE OF COAL LOSSES ON TECHNOECONOMIC INDICATORS OF WORK OF HYDROMINES EXPLOITING STEEP SEAMS,"

KEY WORDS: Pitching Coal Seams, Coal, Productivity, Capital Investment, Floor, Economics

TRANSLATED

814R

Bakhmanov, G.S., Zavedetskiy, Yu.I., Rad'ko, B.V., "TRUDOMKOSTY POVREMENNYKH RABOT PRI RAZRABOTKE KRUTYKH PLASTOV GIDRAVLICHESKIM SPOSOBOM," Tekhnologiya Dobyche Uglya Podzemnym Sposobom, # 8, 1974, pp 37
"LABOR CONSUMPTION OF PERIODIC WORKS WHEN WORKING OUT STEEP SEAMS BY HYDRAULIC METHOD."

KEY WORDS: Hydraulic Mining, Coal, Productivity

TRANSLATED

815R

Zavedetskiy, Yu.I., Atabekov, V.A., Gelyuta, E.Z., "OPTIMIZATSIYA PARAMETOV RAZRABOTKI PLASTA SLOZHNOGO STROENIYA GIDRAVLICHESKIM SPOSOBOM," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 9, 1974, pp 40-43
"OPTIMIZATION OF WORKING PARAMETERS USING HYDRAULIC METHOD FOR SEAM OF COMPLEX STRUCTURE."

KEY WORDS: Coal, Donbass, Artemugol, Ordzhonikidzeugol, Rock, Roof, Floor, Productivity, Hydromonitor

TRANSLATED

816R

Bityukov, L.E., Semenov, L.G., "VLYIYANIE NAPRYAZHENNOGO SOSTOYANIYA UGOL'-NOGO MASSIVA I DAVLENIYA VODY PERED GIDROMONITOROM NA PROIZVODITEL'NOST' GIDROOTBOYKI," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 9, 1974, pp 43-44
"INFLUENCE OF THE STATE OF STRESS OF THE COAL MASSIF AND OF WATER PRESSURE AHEAD OF THE HYDROMONITOR UPON THE YIELD OF THE HYDRAULIC BREAKING."

KEY WORDS: Coal, Hydromonitor, Hydraulic Mining, Krasnoarmeyskaya, Flat Coal Seams, Donbass

TRANSLATED

817R

Gol'din, Yu.A., Frolov, V.S., "REZULTATY PROMYSHLENNYKH ISPYTANIY TONKOSTRUYNYKH ISPOLNITEL'NYKH ORGANOV RAZRUSHENIYA, Tekhnologiya Dobyche Uglya Podzemnym Sposobom, # 9, pp 44-45
"RESULTS OF INDUSTRIAL TESTS OF THIN-JET ACTUATORS OF DISINTEGRATION,"

KEY WORDS: Coal, Coal Dust, Odesskaya # 2, Donbass, Anthracite, Flat Coal BEds, Hydraulic Mining, Poland, Economics, Health

TRANSLATED

818R

Kuz'mich, I.A., Frolov, V.S., Shakin, I.S., Golovashkin, Yu.V. "RAZRUSHENIE UGLETSEMENTNYKH BLOKOV GIDROMEKHANICHESKIM SPOSOBOM," Tekhnologiya Dobyche Uglya Podzemnym Sposobom, # 8, 1974, pp 37-39
"DISINTEGRATION OF CARBON-CEMENT BLOCKS BY HYDROMECHANICAL MEANS"

KEY WORDS: Roadheader, Hydraulic Mining, Coal, Coal Dust

819

Schmidt, W., "NOTES ON GERMAN HYDRAULIC MINING," U.S. Bureau of Mines, 1974. (Mtg with Monton Consulting & Hydraulic Mining at Gneisenau Mine)

KEY WORDS: Hydraulic Mining, Germany, Gneisenau Mine, Karl Funke Mine, Pump, Wear and Abrasion, Coal, Economics, Hydraulic Haulage, Hydraulic Hoist, Air Lift, Donbass, Slurry, Anthracite, Cost Per Ton, Mining Plan, Coal Preparation, Recovery, Production Rate, Pitching Seams, Sluice, Hydromonitor, Monorail, Water Supply, Coal Dust, Safety, Slurry Pump, Crusher, Capital Investment, Feeder, Hasner Mine

SL 821

Thomas Foundries, Inc., "SLIMPLISITY SLURRY PUMPS," and Letter, Dec., 1974

KEY WORDS: Slurry Pump

TRANSLATED 823R

Volchenkov, A.S., Klubnichkin, E.K., Lutskiy, G.M., "GIDROMONITORNAYA USTANOVKA S SHARNIRNO-POVOROTNYM VODOVODOM," Dobycha Uglya Otkrytym Sposobom, # 9, Moscow, 1974, pp 25-26.
"HYDROMONITOR INSTALLATION WITH HINGE-ROTATIVE WATER CONDUIT"

KEY WORDS: Hydromonitor, Pipeline, Slurry

824

Coal Age, "KAISER MITSUI SOVIET COAL TECHNOLOGY DEAL," Coal Age, pp 39-40, December 1974

KEY WORDS: Coal Mining, Hydraulic Mining, Coal, Airlift, Slurry, Pipeline, Production Rate, Canada, USSR,

825R

Leleko, B.P., "REZUL'TATY ISPYTANIY OPTYNO-PROMYSHLENNOGO UGLEDOBYVAYU-SHCHEGO KOMPLEKSA KM-87M," Ugol Ukrainy, # 10, Oct. 1974, pp 26-27
"RESULTS OF TESTS OF THE EXPERIMENTAL-INDUSTRIAL COMPLEX"
"
KEY WORDS: Mining Machinery, Coal

SUMMARY

This type-KM-87 complex is one of the most widely used in exploitation of flat or gently pitching seams of average thickness (1.1 - 2 m). They assure a substantial increase in the loading in the winning faces, lowering labor consumption in face support and roof control. 128 such such complexes now operate in the mines of the UkrSSR, in 61 of which the loading in the longwall face exceeds 1,000 t/day.

This complex is apparently designed for mines with standard technology, for nowehere in the paper there is any hint to hydraulic mining. However, use of hydraulic goalposts and some hydraulic equipment is mentioned.

826

Breland, J.E., "COST IMPACT OF THE FEDERAL COAL MINE HEALTH AND SAFETY ACT OF 1969," Society of Mining Engineers, AIME, Vol. 256, December, 1974, pp 295-297

KEY WORDS: Economics, Health, Safety, Coal Mining

ABSTRACT: A case study of tangible and intangible costs incurred by a coal mining company for meeting the requirements of the Federal Coal Mine Health and Safety Act of 1969 is discussed. For clarity, the data is presented on a "before and after" basis, with special emphasis on safety records, costs, and production performance. The cost figures hav been subjected to outside verification.

827

Crouch, S.L. & Fairhurst, C., "MECHANICS OF COAL MINE BUMPS," AIME Transactions, Vol. 256, Dec. 1974, pp 317-323

KEY WORDS: Roof Support, Coal Mining

The general term "coal mine bump" refers to the sudden and violent failure of in-situ coal. Coal bumps occur in most countries where coal is worked by underground methods. They are related to geological factors and mining techniques. Coal bumps can be characterized as unstable releases of energy associated with yielding that occurs with progressive mining. Unstable releases of energy occur when the coal is able to absorb less energy than is released by the surrounding rock mass during the yielding process. At any stage of mining, the amount of excess energy so released is governed by the mining geometry, the overburden stress, the elastic properties of the rock mass, and the stress-strain characteristics of the seam material. If the coal in the vicinity of the working face is crushed, the peak abutment pressure occurs at some distance into the intact portions of the seam, and mining takes place in essentially destressed coal. With subsequent mining, additional yielding occurs, excess energy may be released, and the peak stress is again shifted into the solid. This process continues until the mining geometry is such that the zone of peak stress is effectively surrounded by yielding coal, at which point it can be anticipated that further mining will produce dramatic redistributions of stress and be accompanied by large releases of energy. On this basis, the differences between several alternatives for mining a given block of coal may be pronounced.

828

Ricca, V.T., Chow, K., "ACID MINE DRAINAGE QUANTITY AND QUALITY GENERATION MODEL," AIME Transactions, Vo. 256, Dec. 1974, pp 328-336

KEY WORDS: Water Supply, Purification, Coal Mining

When dealing with acid mine drainage as to treatment levels, costs, and evaluation of abatement schemes, predictions of the quantity and quality of the discharges are needed. An acid mine-drainage model is presented in this paper. In essence, the model is a hybrid of computer programs for streamflow simulation and acid mine drainage. Two major aspects of the model are discussed: mine-water generation and acid-load production. The former is based on hydrologic concepts and the latter on pyrite oxidation kinetics and oxidation product removal. The total model is programmed for the high-speed digital computer. The major inputs are: climatological, basin characteristics, and mine characteristics data. By the use of the hydrologic model the amount of water that flows through the pyritic system is determined. From this information, acid loads removed by leaching, inundation, and gravity diffusion are then predicted. The outputs from the total model are: average daily mine-water discharge, the associated acid concentration or load, plus the average daily flow in the receiving streams or at basin outlets. The capabilities of the separate models have been tested individually and the joint model has been applied to a small drift mine in southeastern Ohio.

TRANSLATED

829R

Perederiy, V.P., & Reka, Ya.D., "NASOSNAYA USTANOVKA UTSMN DLYA OROSITEL'-NYKH SISTEM OCHISTNYKH DOMBAYNOV," Gornye Mashiny I Automatika # 8, 1974 pp 19-20
"Pumping Installation "UTSMN" For Sprinkler Systems of Stoping Combines"

KEY WORDS: Pump, Coal Mining, Mining Machine

TRANSLATED

830R

Kuzmicheva, A.I. & Kuz'michev, G.M., "APPARAT DLYA KONDITSIONIROVANIYA FLOTATSIONNOY PUL'PY," Obogashchenie I Briketirovanie Uglya, # 9, 1974, pp 16-17
"APPARATUS FOR CONDITIONING THE FLOTATION SLURRY"

KEY WORDS: Coal, Slurry, Water Clarification, Coal Preparation, USSR

TRANSLATED

831R

Andreev, Z.V., Otverchenko, A.A., Bugerya, B.Ya., "OPYT EKSPLUATATSII KOMBAYNA K-56M S MODERNIZIROVANNYM ISPOLNITEL'NYM ORGANOM," UGOL # 11, 1974, pp 33-34
"Experiment of Cutter-Loader Combine K-56M Exploitation with a Modernized Actuating Mechanism"

TRANSLATED

832R

Gubayloviskiy, A.G. & Merkulov, S.D., "REZULT'TATY SRAVNITEL'NYKH ISPYTANIY RAZLICHNYKH SREDSTV PYLEPODAVLENIYA PRI RABOTE KOMBAYIA KSH-3M V KUZBASSE," UGOL # 11, 1974, pp 35-38
"RESULTS OF COMPARATIVE TESTS OF VARIOUS MEANS OF DUST CONTROL DURING THE OPERATION OF THE KSH-3M COMBINE IN THE KUZBASS"

KEY WORDS: USSR Dust, Coal Mining, Mining Machinery, Kuzbass

TRANSLATED

833R

Malyshev, V.N. & Balashov, V.F., "POVYSHENIE DOLGOVECHNOSTI I IZNOSOSTOYKOSTI NASOSOV GIDROSHAKHT," UGOL # 11, 1974, pp 45-46
"INCREASE IN THE LIFETIME AND RESISTANCE TO WEAR OF HYDROMINE PUMPS"

KEY WORDS: Pump, Wear and Abrasion, Water Clarification

834

World Coal, "HYDRAULIC MINING - BREAKTHROUGH IN PRODUCTIVITY," G. Roman, Editor, World Coal, Oct. 1974, pp 94-96

KEY WORDS: Crows Nest Mine, Canada, Hydraulic Mining, Pitching Seam, Coal, Hydromonitor, Productivity, Sluice

835

Dougherty, R.W., "A SURVEY ON THE HYDRAULIC TRANSPORTATION OF COAL," Bureau of Mines, Report of Investigations 4799, July 1951

KEY WORDS: Hydraulic Haulage, Slurry, Pipeline, Coal, Rock

ABSTRACT:

Review of previous experiments; problems of actual pipeline transportation with water; removal of abrasive impurities prior to introduction into line; crushing to required top size; dewatering at discharge end of line as part of cleaning; maximum economy can be effected by moving large tonnages on continuous basis; problem of special pumps; characteristics of coal and water mixtures; estimated costs of 100-mile coal pipeline; data on tests. Bibliography.

836

Dran, J.J., Jr., & McCarl, H.N., "A CRITICAL EXAMINATION OF MINERAL VALUATION METHODS IN CURRENT USE," Mining Engineering, July 1974, pp 71-75

KEY WORDS: Economics

ABSTRACT: A summary of the more popular mineral valuation techniques being used by the mining industry, with examples of their various interrelationships. Some of the older methods may be in error when compared to modern methods of financial analysis.

838

Coal Age, "CONOCO'S MINING RESEARCH, Coal Age, October, 1972, pp 150-151

KEY WORDS: Coal, Slurry, Continuous Miners, Jet Cutter, Coal Dust, Wear & Abrasion, Roof Support, Hydraulic Haulage, Methane

839

Coal Age, "USS WESTERN DISTRICT - COLORADO, UTAH," Coal Age, October 1973, pp 131-136

KEY WORDS: Western U.S., Coal, Steeply Pitching Coal Beds, Rock, Roof, Conveyor, Feeder, Crusher, Continuous Miners, Seam Thickness, Spontaneous Combustion, Ventilation, Pump, Pipeline, Wear and Abrasion

840

Kuti, J., "OUTLOOK OF LONGWALL MINING SYSTEMS IN THE UNITED STATES," Reprint from Coal Age, August 1972, pp 64-73

KEY WORDS: Coal Mining, Longwall

841

Wilson Snyder, "SLURRY PUMPS AND PIPELINES," Brochure & Letter, 1974

KEY WORDS: Pumps, Slurry, Pipelines

842

Bethlehem Steel Corporation, "TECHNOLOGY FORECASTING - COAL MINING," and Letter, 1973

KEY WORDS: Coal, Coal Mining, Anthracite, Hydraulic Mining

843

Consolidation Coal Company, "CONVEYING OF A SLURRY THROUGH A PIPELINE," British Patent # 861-537, February 22, 1961

KEY WORDS: Slurry, Pipeline, Screen, Pump, Coal, Dewatering

ABSTRACT:

Present invention relates to pipeline transportation of slurries comprising finely divided solids suspended in a liquid. More particularly, it relates to the transportation of slurries through pipelines longer than 10 miles.

In operation of commercial coal slurry transportation pipeline, a hitherto unreported phenomenon has been discovered that tends to form plugs in long distance pipelines used for conveying slurries. The adverse affects are cumulative with distance.

844

Ruhrgas Aktiengesellschaft, "APPARATUS FOR CONVEYING SOLID SUBSTANCES IN PIPELINES, British Patent # 948,466, Feb. 5, 1964

KEY WORDS: Pipeline, Pump

ABSTRACT:

Coal is introduced into the pipeline together with a conveying medium which is gaseous at atmospheric temperature and pressure but which can be liquified under pressure e. g. propylene, propane, butane etc. A compressor maintains the conveying medium liquid in the pipeline. Coal and conveying medium are pumped through the pipeline. At the outlet, the pressure is released so that the conveying medium returns to the gaseous phase and the coal is separated therefrom.

845

USGS, "GEOLOGIC QUADRANGLE MAPS OF THE BRAMWELL QUADRANGLE WEST VIRGINIA-VIRGINIA," by Kenneth J. Englund, Map GQ745, 1968

KEY WORDS: Bituminous, Coal, Seam Thickness, Appalachian

846

USGS, "GEOLOGIC QUADRANGLE MAPS OF ELKHORN CITY QUADRANGLE - KENTUCKY-VIRGINIA AND PART OF THE HARMAN QUADRANGLE PIKE COUNTY, KENTUCKY, by Donald C. Alvord and Ralph L. Miller, Map GQ-951, 1972

KEY WORDS: Appalachian, Coal, Seam Thickness

847

USGS, "GEOLOGIC MAP OF THE PENNINGTON GAP QUADRANGLE, LEE COUNTY, VIRGINIA, AND HARLAN COUNTY, KENTUCKY," by Ralph L. Miller & John B. Roen, Map GQ-1098, 1973

KEY WORDS: Appalachian, Bituminous, Coal, Seam Thickness

848

McLanahan Corporation, "Crushers," Brochure, 1974

KEY WORDS: Crushers

849

Brown, D.F., "Letter to Dr. William C. Cooley " from Mines Department, Wellington, New Zealand, Sept. 1974

KEY WORDS: New Zealand, Hydraulic coal mining, Productivity, Screen, Hydraulic hoist

850

Owens Manufacturing, Inc., "THE GROWING CAPABILITIES OF," Brochure

KEY WORDS: Crushers, Feeder, Feeder Breakers

851

Commercial Shearing, Inc., "HY-JAX HYDRAULIC SUPPORTS OPERATING AND SERVICE MANUAL," 1972

KEY WORDS: Roof Support

852

MSI Industries, Inc., "HI-PROB SIZER - A UNIQUE CONCEPT IN SCREENING," Brochure

KEY WORDS: Screens

854

Wahlstrom, E.E., EXCERPT FROM "TUNNELING IN ROCK," 1973, pp 120-125

KEY WORDS: Rock, Floor, Roof

870

Detrick, M.H., Co., "PIPELINES" Brochure, 1975

KEY WORDS: Pipeline, Wear & Abrasion

873

Reese, Hamilton, "MEETING OF BUREAU OF MINES PERSONNEL WITH SOVIET AND KAISER PERSONNEL REGARDING HYDRAULIC COAL MINING," Reported by H. Reese to W.C. Cooley, Feb. 5, 1975

KEY WORDS: USSR, Hydraulic Mining, Coal, Kuzbass, British Columbia

874

Machinoexport, "HYDRAULIC COAL MINING EQUIPMENT," Brochure sent Terraspace by D. Hume, 1975

KEY WORDS: Hydraulic Mining, Hydromonitor, Coal, Rock, Pump, Water Supply,

875

Machinoexport, "HEADING DRIVING MACHINES," Brochure sent Terraspace by D. Hume, 1975

KEY WORDS: Continuous Miners, Coal Mining, Roadheader (K-56MG, PK-9, PK-3M, PK-7), Tunneling Machine (PK-8, PK-10, Karaganda 7-15).

876

Machinoexport, "COAL FACE MECHANIZED SET," Brochure sent Terraspace by D. Hume, 1975

KEY WORDS: Roof Support, Coal Mining, Conveyor

877

Machinoexport, "COAL CONTINUOUS MINER," Brochure sent Terraspace by D. Hume, 1975

KEY WORDS: Longwall, Coal Mining, Continuous Miners

878

Machinoexport, "MECHANIZED MINING OUTFIT," Brochure sent Terraspace by D.B. Hume, 1975

KEY WORDS: Roof Support, Coal Mining

879

Galigher Company, "HORIZONTAL & VERTICAL PUMPS," Brochure

KEY WORDS: Pump, Screen

882R

TRANSLATED

Ugol Ukrainy, "MINE TECHNOLOGY NEWS FLASHES," Ugol Ukrainy, Nov. 1974

KEY WORDS: Rock, Pump, Krasnoarmeyskugol Combine, Wear & Abrasion, Donbass

Abstract: Describes the drilling-loading machine 2PNB-2b with a suspended drilling equipment NB-1, designed for hole drilling and mine mass loading during blast-hole drilling method of conducting inclined (to 8°) and horizontal workings in rocks of f = 10 strength factor.

TRANSLATED 883R

Kodentsov, A.Ya., Kurkin, V.F., Krasnyanskiy, L.S. & Papkov, M.N., "OBEZVOZHIVANIE PORODY I UGLYA OSVETLENIE OTRABOTONNOY VODY PRI PROVEDENII VYRABOTOK SPOSOBOM GIDROMEKHANIZATSII," Ugol Ukrainy, # 11, 1974, pp 43-44
"DEWATERING OF COAL AND ROCK, CLARIFICATION OF WASTE WATER DURING DRIVING BY HYDROMECHANIZATION"

KEY WORDS: USSR, Karbonit Mine 4/6, Pump, Dewatering, Screen, Water Clarification, Artem ? Mine

TRANSLATED 884R

Ugol Ukrainy, "TELEVIZIONNAYA NAUCHNO-PRAKTICHESKAYA KONFERENTSIYA," Ugol Ukrainy, # 11, 1974, pp 53-54
"SCIENTIFIC-PRACTICAL TELEVISION CONFERENCE" Chronicle

KEY WORDS: Water Cannon, Roadheader, Coal Mining

891

Cooley, W.C., "NOTES ON PUMPS OWNED BY AMERICAN GILSONITE COMPANY," February 13, 1975,

KEY WORDS: Pumps

SL 893

Reeves, J.A., "UNDERGROUND MINING," Society of Mining Engineering, February 1975, pp 64B-64D

KEY WORDS: Coal, Bituminous, Anthracite, Western U.S., Safety, Roof Supports, Hydraulic Haulage, Air Flow, Methane

894

Elkhart Brass Mfg. Co., Inc., "ELKHART FIRE FIGHTING EQUIPMENT," Brochure 1975

KEY WORDS: Hydromonitors

895

Pettibone Corporation, "ABRASIVE MATERIAL HANDLING PUMPS," Brochure & Letter, 1975

KEY WORDS: Pumps

896

Katell, S & Hemingway, E.L., "BASIC ESTIMATED CAPITAL INVESTMENT AND OPERATING COSTS FOR COAL STRIP MINES," Bureau of Mines IC 8661, October 1974

KEY WORDS: Coal Mining, Open Pit

ABSTRACT:

This Bureau of Mines study estimates typical capital investments, operating costs, and selling prices for two bituminous coal strip mines in the Eastern and Interior provinces and a subbituminous coal operation in the Northern Great Plains province. The annual productions were based on tonnage required to fuel a 250-MM-scfd, high-Btu gas plant. The annual tonnage for the Eastern province mine is 4.8 million tons; for the Interior province mine, 6.72 million tons; and for the Northern Great Plains province mine, 9.2 million tons. It is assumed that the mines have a 20-year life. Wages and union welfare payments are considered as of May 12, 1974, under the terms of the Bituminous Wage Agreement of 1971, and costs for material and equipment are based on 1973 and early 1974 indexes.

897

Dewey, Richard F., "RECENT DEVELOPMENTS IN AMERICAN GILSONITE COMPANY'S MINING OPERATIONS (INCLUDING A REPORT ON TUNNEL BORING AND LARGE DIAMETER SHAFT DRILLING)," Feb. 4, 1965, presented at the National Western Mining Conference, Denver, Colorado

KEY WORDS: Hydraulic Mining, Hydraulic Haulage, Gilsonite

898

Certainteed Products Corporation, "PVC PIPE AND FITTINGS FOR MINES," Brochure, 1975

KEY WORDS: Pipe

899R

Ivanov, S.K., Raskin, I.A., Balter, B.Z., "NOVYE EZHEKTORY DLYA DEGAZATSII I MESTNOGO PROVETRIVANIYA," Ugol # 12, 1974, pp 61-64 "NEW EJECTORS FOR DEGASSING AND LOCAL VENTILATION," Safety Techniques. Industrial Hygiene. Environment Preservation.

KEY WORDS: Ventilation

SUMMARY

Ventilation of impass mining workings is sometimes achieved with the aid of ejectors working on mine network's compressed air (Refs. 1 through 5). Although they are simpler and more economical in general, they are less so by comparison with pneumatic fans of local ventilation, since their adiabatic efficiency does not exceed 8 to 10%.

The use of ejectors as a source of thrust for degassing goafs by way of isolated discharge of air-methane mixture along pipes 500 to 600 mm in diameter was proposed by Donugi. According to ref.(6) this proved to be effective and sufficiently economical especially for the elimination of methane accumulations in the conjunction zones of the longwall with the ventilation roadway. At the same time it was ascertained that the degassing requires ejectors with much higher pressures and output rate.

On that basis Dongiprouglemash worked out new powerful ejectors with high adiabatic efficiency. The types of nozzles were researched so as to obtain optimum construction dimensions. Fig.1 compares the aerodynamic characteristics of the investigated ejectors fitted with three types of nozzles, circular and ring-type (Laval) and slotted (Koanda). The results are compiled in Table 1. The ring or annular nozzle was chosen as the least noisy and was adopted for the new worked out ejectors EDD-5 and EDD-5m.

Both these ejectors are described in detail with their aerodynamic characteristics plotted in three diagrams.

The results of industrial exploitation of ejectors EDD-5 and EDD-5m justify their recommendation for application in coal and ore mining industries. They may be utilized in other branches of industry for shifting aggressive and explosion-prone gases in conditions, where such qualities, as total as their being explosion-proof, the simplicity of construction have a first rate significance. The industrial output of these ejectors is earmarked for the year 1976 in the experimental plant of Donugi.

900

Landis, E.R., "MINERAL FUELS AND ASSOCIATED RESOURCES - COAL," From the Book "Mineral and Water Resources of Colorado," Rept. of the U.S.G.S. with the Colorado Mining Industrial Development Board, Oct. 1968

KEY WORDS: Coal, Productivity, Western U.S., Coking, Bituminous, Anthracite, Rock,

901

Odell, J.W., Coffin, D.L., & Langford, R.H., "WATER RESOURCES," from the Book "Mineral and Water Resources of Colorado," Rept. of the USGS with the Colorado Mining Industrial Development Board, Oct. 11, 1968

KEY WORDS: Water Supply, Western U.S.

903

Pearl, R.H., "GEOLOGY OF GROUND WATER RESOURCES IN COLORADO - AN INTRODUCTION," Special Publication 4, Colorado Geological Survey, Department of Natural Resources, 1974

KEY WORDS: Water Supply, Western U.S.

ABSTRACT:

This report describes, in summary form, the ground-water resources of Colorado. Its purpose is to give a nontechnical presentation of factual information about the hydrogeological conditions of Colorado. The ground-water resources of Colorado are discussed and presented in maps and tables in relation to water quantity, quality, and distribution as related to the various geographic regions of the State.

904

Hornbaker, A.L, & Holt, R.D., "1972 SUMMARY OF COAL RESOURCES IN COLORADO," Special Publication 3, Colorado Geological Survey, Department of Natural Resources,

KEY WORDS: Coal, Western U.S.

ABSTRACT:

Colorado has approximately 10% of the total U.S. coal resources. These resources occur in eight coal regions and 20 coal fields that occupy about 28% of the total area of the state. Most of the coal is of Upper Cretaceous age but some is of much younger Paleocene and Eocene age. The higher rank coals are generally in older Upper Cretaceous strata of the San Juan region while the lower rank coals are in the youngest Upper Cretaceous and Tertiary rocks in the Denver Basin and Green River regions. The coals generally range in rank from high-volatile B bituminous to subbituminous and lignite, however igneous intrusions and structural deformation locally metamorphosed the coal to semianthracite and anthracite. About 77% of the coal in Colorado is bituminous, 23% subbituminous and less than 1% anthracite.

Total coal resources are conservatively estimated at 230,164 million tons to depths of 6,000 feet. Approximately 560 million tons of coal have been produced to date. As technology improves so that coals deeper than 3,000 feet can be utilized, and as drill and core data become available, estimates of total coal resources will probably increase substantially. The Uinta region has the largest coal resource followed in order by the Green River region, the Denver Basin region, the North Park region and the San Juan region.

905

Holt, R.D., "BIBLIOGRAPHY, COAL RESOURCES IN COLORADO," Bulletin 34-A, Colorado Geological Survey, Dept. of Natural Resources, 1972

KEY WORDS: Coal, Western U.S., Bibliography

906

Mining Record, "ETSI CONTINUING WITH PLANS FOR WYOMING COAL SLURRY LINE, The Mining Record, Feb. 5, 1975

KEY WORDS: Slurry, Western U.S., Coal, Economics

907

Cooley, W.C., "UNDERGROUND HYDRAULIC MINING OF COAL," Nov. 22, 1974

KEY WORDS: Hydraulic Mining, Slurry, Coal, USSR, U.S., Japan, British Columbia, China, New Zealand, England, Poland, Czechoslavakia, Germany, Hydromonitor, Hydraulic Hoist, Kuzbass, Donbass, Productivity, Sunagawa, Crows Nest Mine, Roof Support, Water Supply, Coal Dust, Explosion Hazard, Methane, Hydraulic Haulage, Pitching Coal Seams, Sluice, Flat Coal Seams, Roadheader, Continuous Miners, Crusher, Pump, Capital Investment, Safety, Health, Spontaneous Combustion, Appalachia, Western U.S., Rock, Longwall,

908

Reeves Plastic Pipe Company, Inc., "PLASTIC PIPE, VALVES, FITTINGS, PUMPS, TANKS AND ACCESSORIES," Brochure, 1975

KEY WORDS: Pipe

909

USGS, "BIBLIOGRAPHY AND INDEX OF U.S. GEOLOGICAL SURVEY PUBLICATIONS RELATING TO COAL, January 1971 - June 1974," by Flora Walker, Geological Survey Circular 709, A supplement to USGS Bulletin 1377

KEY WORDS: Coal, Western U.S., Bibliography

910

USGS, Averitt, P. & Lopez, L., "BIBLIOGRAPHY & INDEX OF U.S. GEOLOGICAL SURVEY PUBLICATIONS RELATING TO COAL, 1882-1970," Geological Survey Bulletin 1377, 1972.

KEY WORDS: Coal, Western U.S., Bibliography

911

Doelling, H.H., "BOOK CLIFFS - SUNNYSIDE COAL FIELDS," From the Book "Central Utah Coal Fields," A Survey of Palynomorphs from Several Coal-bearing Horizons of Utah, Monograph Series # 3, 1972, pp 369-388

KEY WORDS: Coal, Western U.S.

912

USGS, "RELIEF MAP OF UTAH - COAL FIELDS OF UTAH," Compiled by H.H. Doelling

KEY WORDS: Coal, Western U.S.

913

Werner, R.H., "HYDRA-SLUDGE REMOVAL FOR MINE DRAINAGE AND COAL PREPARATION PLANT SLUDGE," SME, AIME Preprint No. 75-F-83, to be presented at the AIME Meeting, NYC, Feb. 1975

KEY WORDS: Coal, Water Clarification

914

Kock, E.T., Jr., "DOUBLE HINGED CRAWLER MOUNTED HIGH WALL SLURRIFIER," SME, AIME, Preprint # 75-AO-50, to be presented at the AIME Meeting, NYC, Feb. 1975

KEY WORDS: Slurry, Hydraulic Haulage, Rock

915

International Alloy Steel Company, "ABRASION RESISTING STEEL PLATES," Brochure & Letter, 1975

KEY WORDS: Sluice, Wear and Abrasion

916

Ladish Company, "COROSION RESISTANT VALVES," Brochure & letter, 1975

KEY WORDS: Valves

917

Abex Corporation, "SLURRY PUMPS," Letter & Brochures, 1975

KEY WORDS: Slurry Pump

918

Stamler, W.R., Corporation, "FEEDER-BREAKERS," Brochure, 1975 and letter

KEY WORDS: Feeder-Breaker

919

Schroeder, W.E., "THE FEEDER BREAKER AS A PRIMARY CRUSHER IN STRIP MINING OPERATIONS," Reprint from Mining Congress Journal, March 1974

KEY WORDS: Feeder-Breaker, Crusher, Coal, Black Mesa

920

Bush, L.P., "LHD/FEEDER-BREAKER SYSTEM CUTS COSTS AT INTERNATIONAL SALT COMPANY'S CLEVELAND MINE," Reprint from Engineering & Mining Journal, September 1974

KEY WORDS: Feeder Breaker

925

Lightning, Industries, Inc., "PUMPS," Brochure, 1975

KEY WORDS: Pumps

TRANSLATED 926R

Chermensky, G.P., "LETTER TO DR. W. C. COOLEY, TERRASPACE, INC.," Feb. 17, 1975

KEY WORDS: Bibliography, Water Cannon, Disintegration, Hydraulic Mining

TABLE OF CONTENTS TRANSLATED 927R

Bibliography, "QUESTIONS REGARDING THE HYDRAULIC PRODUCTION OF COAL," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR Kemerovskoe Knizhnoe Izdatel'stvo, 1967 (This book has been broken down into individual reports SL-928R through SL-958-R)

KEY WORDS: Bibliography, Hydraulic Mining, Coal, USSR

928R

Muchnik, V.S., "CRITERION OF LABOR PRODUCTIVITY IN THE ADOPTION OF TECHNOLOGICAL AND TECHNICAL SOLUTIONS," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp. 6-26
"KRITERIY PROIZBODITEL'NOSTI TRUDA V PRINYATII TEKHNOLOGICHESKIXK I TEKHNICHESKIKH RESHENIY"

KEY WORDS: Productivity, Hydraulic Mining, Coal

ABSTRACT: Presented in the paper are the results of the 1st division of the technology of hydraulic production of coal theory and further trends of research are defined.

The data of investigation are designed for their use during the planning of hydromines. (7 illustrations)

929R

Say, I.I., Golland, E.B., Tyl'skiy, F.P., Kopysov, V.F., "THE ACTUAL EXPLOITATION RELIABILITY OF PUMPS AND COAL SUCKERS IN THE TECHNOLOGICAL CHAIN OF HYDROMINES," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 27-36
"FAKTICHESKAYA EXPLUATATSIONNAYA NADEZHNOZT' NASOSOV I UGLESOSOV V TEKHNOLOGICHESKOY TSEPI GIDROSHAKHT"

KEY WORDS: Baydayevskaya-Severnaya, Hydraulic Mining, Kuzbass, Pump, Coal

ABSTRACT:

On the basis of analysis of a large volume of data concerning the hydromine "Baydayevskaya-Severnaya", No.1 in regard to failures of pumps 12NVG, 12YV-6 and of some other equipment combined with coal pumps and ordinary pumps, the actual parameters are presented on the reliability of these pumps and of separate units.

The established parameters of reliability may be utilized by workers of planning organizations, scientific institutes, mine and plant engineers when planning the further improvement of the existing machines. (2 illustr., 3 tables, 3 references)

930R

Yurin, P.I. & Sosinskiy, M. Yu., "RESISTANCE TO WEAR AND LIFETIME OF THE BASIC EQUIPMENT OF HYDROMINES," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 37-44, "IZNOSOSTOYKOST' I DOLGOVECHNOST' OSNOVNOGO OBORUDOVANIYA GIDROSHAKHT"

KEY WORDS: Kuzbass, Hydraulic Mining, Wear & Abrasion

ABSTRACT:

Expounded are the results of investigations of wear-resistance of the basic equipment of Kuzbass' hydromines, and ways of improving their lifetime are indicated. (1 table, 7 illustrations).

TRANSLATED 930R

Poluektov, V.F., "IMPLANTATION OF MATHEMATICAL METHODS FO THE SOLUTION OF PROBLEMS OF SCIENTIFIC RESEARCH AND ECONOMIC PLANNING WITH THE AID OF COMPUTERS," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 49-52, "VNEDRENIE MATEMATICHESKIKH METODOV RESHENIYA NAUCHNO-ISSLEDOVATEL'SKIKH I PLANOVO-EKONOMICHESKIKH ZADACH S POMOSHCH'YU"

KEY WORDS: Economics, Hydraulic Mining, Coal, Mining Machinery, Coal Mining

ABSTRACT:

The paper tells of creation in the VNIIGidrougol' Institute of a computing center; enumerated are some mathematical programs used in the Institute and in other organizations of the city of Novokuznetsk in the Kuzbass. Description of some other programs is brought up.

TRANSLATED 933R

Khazov, V.M., Soin, V.V., San'kov, A. E., "RESULTS OF WORKS ON THE CREATION OF A WORKING OUT SYSTEMS FOR THICK FLAT SEAMS USING HYDRO-MECHANIZATION," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 53-63, "REZUL'TATY RABOT PO SOZDANIYU SISTEM RAZRABOTKI MOSHCHNYKH POLOGIKH PLASTOV PRI GIDROMEKHANIZATSIY"

KEY WORDS: Hydraulic Mining, Seam Thickness, Flat Coal Beds, Pitching Coal Beds, Coal, Tomusinskaya 1-2 Mine, Kuzbass, Explosives, mining plan, Sluice(flume), Economics, Productivity, Recovery

ABSTRACT:

Expounded in this paper are the basic results of theoretical, laboratory and mine investigations concerned with the search of effective systems for mining flat seams 8 to 15 m thick, which were conducted in the laboratory of VNIIGigrougol' Institute, specializing in the research on mining systems for flat or gently slanting seams, and also in the hydrocomplex of the mine "Tomusinskaya" No. 1 -2 in the period 1959 - 1966.

For the industrial implantation, the room-and-pillar system of mining and also the combined system with pillar extraction on dip from mining entries. The latter system was successfully implanted in seams SH and 1U-U. (5 tables, 3 illustrations and 3 references).

934R TRANSLATED

Teodorovich, B.A. & Ivanushkin, V.G., "CREATION AND IMPROVEMENT OF WORKING OUT SYSTEMS FOR FLAT SEAMS OF AVERAGE THICKNESS WITH HYDRO-MECHANIZATION," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 64-73, "SOZDANIE I SOVERSHENSTVOVANIE SISTEM RAZRABOTKI POLOGIKH PLASTOV SREDNIY MOSHCH S GIDROMEKHANIZATSIEY"

KEY WORDS: Hydraulic Mining, Kuzbass, Economics, Mining Plan, Coal, USSR, Polysayevskaya-Severnaya, Hydromonitor, Gromoteinskaya, Roof Support, Pump

ABSTRACT:

This paper generalizes the experiment in creating and improving the system of mining flat seams of average thickness with hydromechanization for the period after the start of the first Kuzbass' hydromine, from 1953 through 1967. The results of industrial implantation of the mining systems with blast-hydraulic, mechano-hydraulic and hydraulic mining are briefly expounded. Considered also is the influence on the technoeconomic effectiveness of a series of factors. Classification of processes is given according to the degree of mechanization and automation. The most promising principle of mine pressure control is proposed. The paper includes 7 figures, 1 table and 9 references.

TRANSLATED

935R

Khvoshchevskiy, N.M., Sal'nikov, V.R., "HYDRAULIC MINING OF THICK STEEP AND INCLINED SEAMS IN THE KUZBASS," from the book, "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo 1967, pp 74-81, "GIDRAVLICHESKAYA RAZRABOTKA MOSHCHNYKH KRUTYKH I NAKLONNYKH PLASTOV I KUZBASSE"

KEY WORDS: Hydraulic Mining, Seam Thickness, Economics, Pitching Coal Seams

ABSTRACT:

The estimate of an economic system for the hydraulic mining of thick seams of steep or inclined pitching, using high-pressure (75-85 atm) hydraulic breaking,has been conducted on the basis of actual material. Comparison is presented of high-pressure hydraulic breaking with the blast-hydraulic method with the use of the method of mathematical statistics, and, in particular, with the use of the single-factor dispersion analysis. Besides, ways of lowering exploitation losses, when using the system of sub-level hydraulic mining are presnted alongside with the nomogram for computing the parameters of effective application of the system with flexible canopy, which lowers the exploitation losses of coal. (The paper includes 4 tables, 2 figures and 5 references).

936R

Soldatenko, A.V., "ROCK PRESSURE CONTROL AS THE BASIS OF SYSTEMS OF SHORTWALL MINING WITHOUT SUPPORT," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 82-88
"UPRAVLENIE GORNYM DAVLENIEMOSNOVA SISTEM RAZRABOTKI KOROTKIME ZABOYAMI BEZ KREPLENIYA"

KEY WORDS: Shortwall, Monitors, Roof

ABSTRACT:

The fundamental questions of mine pressure controlare discussed in this paper, when applying shortwall systems with mining by advances without support, but with the aid of hydromonitors. The parameters of the winning faces, assuring a maximum denudation area, are supposed to be found starting from the minimum action of the main roof upon the immediate one. The parameters of latter's baring should be determined basing oneself on the collapse consoles taking into account the time factor for the given mine geology conditions. (2 illustrations, 2 references).

939R

Tsyapko, N.F., "CONTEMPORARY STATE OF THE HYDRAULIC BREAKING OF COAL IN THE KUZBASS," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 104-109, "SOVREMONNOE SOSTOYANIE GIDROOTBOYKI UGLYA V KUZBASSE"

KEY WORDS: Hydraulic Mining, Coal, Kusbass, Baydayevskaya-Severnaya, Gramoteinskaya, Monitors

ABSTRACT:

The work on implantation of hydraulic breaking of coal by thin high-pressure jets was successfully concluded in the new hydromines of the Kuzbass, namely, "Baydayevskaya-Severnaya" No.1 and "Gramoteinskaya" No.3-4. This work was the concluding part of operations for the investigation of jet dynamics, its action on the coal massif and the creation of hydromonitors.

Light was thrown upon the basic position of research and the results of implantation of hydraulic breaking in the Kuzbass; dependences and the fundamental aspects of the calculation of hydraulic breaking's productivity are also brought up in the paper (5 refs).

940R

Tsyapko, N.F., "DETERMINATION OF OPTIMUM HYDRAULIC BREAKING OF COAL PRODUCTIVITY FOR GIVEN CHARACTERISTICS OF THE PUMP, PIPELINE AND HYDROMONITOR," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 110-117, "OPREDELENIE OPTIMAL'NOY PROIZVODI - TEL'NOSTI GIDROOTBOYKI UGLYA PRI ZADANNYKH KHARAKTERISTIKAKH NASOSA, TRUBOPROVODA I GIDROMONITORA"

KEY WORDS: Coal, Hydraulic Mining, Pump, Pipeline, Monitor

ABSTRACT:

The analytical solution is given of the problem on the determination of the extreme value of hydraulic breaking of coal productivity under preassigned charactristics of the pump, pipeline network and hydromonitors.

It is shown that the extremes of productivity of hydraulic breaking of coal and of jet's kinematic energy for that same system do not coincide. The maximum value of hydraulic breaking of coal corresponds to lower water flow (consumption) and higher indicators on energy capacity and slurry consistency.

Practical r3commendations are made in the paper concerning the choice joint conditions of operation of the system : pump-pipelines-hydromonitors, and also on the determination of the number of simultaneously operating hydromonitors. (3 figures, 7 references).

941R

Kazantsev, A.A., "RESULTS OF INVESTIGATIONS AND FIRST EXPERIMENT OF EXPLOITATION OF HYDROMINES' TECHNOLOGICAL PIPELINES," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 118-121
"REZUL'TATY ISSLEDOVANIY I PERVYY OPYT EXPLUATATSII TEKHNOLOGICHESKIKH TRUBOPROVODOV GIDROSHAKHT"

KEY WORDS: Hydraulic Mining, Pipeline

ABSTRACT:

Estimate is given of the effectiveness of applying basic aspects of instruction on erection, adoption and exploitation of technological pipelines of hydromines, namely in new hydromines; the expediency in applying overhead laying of technological pipelines on the surface and in mine workings is indicated. (6 references).

942R

Tat'kov, V.A., Yurin, P.I., and Matulevich, G.F., "DEVELOPMENT OF COAL PUMPS AND PUMPS CONSTRUCTION FOR THE HYDRAULIC MINING OF COAL," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 122-131
"RAZVITIE KONSTRUIROVANIYA UGLESOSOV I NASOSOV DLYA GIDRAVLICHESKOY DOBYCHI UGLYA"

KEY WORDS: Coal, Pumps, Hydraulic Mining

ABSTRACT:

The paper encompasses a complex of questions having defined the development of coal and other pumps' construction from their first specimens having operated in the first hydraulic sections in 1950-1955, and up to the latest types, constituting the three basic models, now mass-produced and operating in contemporary hydrocomplexes. Includes 1 table and 7 figures.

943R

Tat'kov, V.A., Yurin, P.I., Matulevich, G.F., "WAYS OF IMPROVING HYDRAULIC QUALITIES OF TWO-STAGE COAL PUMPS," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 132-145
"PUTI ULUCHSHENIYA GIDRAVLICHESKIKH KACHESTV DVUKHSTUPENCHATYKH UGLESOSOV"

KEY WORDS: Coal, Pumps, Hydraulic Mining

ABSTRACT:

The ten-year experience in the construction and exploitation of two-stage coal pumps in hydrocomplexes of coal industry proves the vitality of their principal construction scheme.

This paper considers one of the ways of improving the hydraulic characteristics of coal pumps, which was studied in the VNIIGidrougol' Institute's laboratory of hydraulic machines, and led to a positive result. (2 tables, 9 figures, 8 references).

944R

Tyutikov, G.T., "TECHNICAL WATER SUPPLY AND HYDROTRANSPORT IN THE HYDROMINES OF THE KUZBASS," from the book "Questions Regarding the Hydraulic Production of Coal," VOL. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSST, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 146-149
"TEKHNICHESKOE VODOSNABZHENIE I GIDROTRANSPORT NA GIDROSHAKHTAKH KUZBASSA"

KEY WORDS: Water Supply, Hydraulic Haulage, Hydraulic Mining, Kuzbass, Hydraulic Hoisting

ABSTRACT:

Expounded in this paper are the results of work of technical water supply and hydrotransport

Basic factors are brought up, which influence the parameters of the technical water supply; their range of variation and ways of improvement are given. The factors influencing the parameters of hydraulic hoisting and hydrotransport are indicated. Treatments are given for their elimination.

945R

Medvedkov, V.I., Muratov, R.G., Gorbachev, A.S., "SOME PECULIARITIES OF TURBO-ENGINE PLANNING FOR MECHANO-HYDRAULIC MACHINES," from the book "Questions Regarding the Hydraulic Production of Coal," VOL. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 150-158
"NEKHOTORYE OSOBANNOSTI PROEKTIROVANIYA TURBODVNGATELEY MEKHANO-GIDRAVLICHESKIKH MASHIN"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

This paper contains a series of recommendations regarding the external characteristics of a turbo-engine, planned instead of an electric one on a machine being remodeled. The paper has an experimental-analytical character and may be used in planning turbo-engines of complex mechano-hydraulic machines' drive. (5 figs, 5 references)

946R

Golland, E.B., Kuz'min, A.P., Tov, G.M., Lankovskiy, B.G., "SOLUTION OF SOME PROBLEMS OF MINE PLANNING WITH THE AID OF A COMPUTER," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 159-175
RESHENIE NEKOTORYKH ZADACH GORNOGO PROEKTIROVANNIYA S POMOSHCH'YU EVM"

KEY WORDS: Mining Plan, Hydraulic Mining, Coal Preparation, Economics

ABSTRACT:

Presented in this paper are the mathematical theories and algorithms of the solution of mining planning problems with the aid of computers: deposits of stratified economic minerals, mining working schemes, separation of strata portions according to quantitative-qualitative criteria, determination of isohypses and calculation of coal reserves by horizons, determination of geological profiles and of contours of protective pillars along seams. Determination of optimum parameters of hydromines' extraction sections, selection of optimum diameters of technological pipelines, determination of the optimum balance of coal preparation products and calculation of mining costs. (3 tables, 11 illustrations, 5 references).

947R

Zaretskiy, L.I., Gartman, A.K., Belozerov, I.D., "DEVICES FOR PRESSURE AND CONSUMPTION FOR HYDROMINES," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 176-181, "PRIBORY DAVLENIYA I RASKHODA DLYA GIDROSHAKHT"

KEY WORDS: Hydraulic Mining

ABSTRACT:

The tensometers and induction flowmeters created at the VNIIGidrougol' Institute are described.

The devices may operate in series with an automatic recorder (general industrial application) and a transformer assuring at output a standard d.c. signal. For making up a set with devices having at output a d.c. signal, an integrator is developed. Schemes, constructions and technical conditions are brought up. (4 figures).

948R

Belozerov, I.D., "TELEMETRIC MEASUREMENT SYSTEM FOR DISPERSED OBJECTS," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo UGOL'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 182-185 "TELEIZMERITEL'NAYA SISTEMA DLYA RASSREDOTOCHENNYKH OB'EKTOV"

KEY WORDS: Hydraulic Mining

ABSTRACT:

A telemetric system is considered for dispersed objects with autonomous feed source and with spark-proof parameters. The system is designed for operation in hydromine conditions. (4 figures).

949R

Arginskiy, K.M., "THE COMPUTER IN HYDROMINES," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 186-194
"VYCHISLITEL'NAYA MASHINA NA GIDROSHAKHTAKH"

KEY WORDS: Hydraulic Mining, Baydayevskaya-Severnaya, Kuzbass

ABSTRACT:

Described in this paper are the problems that must be resolved by the controlling computer "Dnepr-1" installed in the hydromine "Baydayevskaya-Severnaya", No.2 for serving two hydromines. Block-diagrams on control and guidance by units, verified in the course of computer "Dnepr-1" operation on stand are described, as is also the system of transformations to standard sub-programs, and the system of transformations to sub-programs for processing the information accrued. (1 table, 8 figures).

950R

Bugrov, V.G., Stefanyuk, B.M., Simonenko, V.I., "PROGRAMME REMOTE CONTROL BY THE K-58MG COMBINE, from the book, "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti, SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 195-199
"PROGRAMMNO-DISTANTSIONNOE UPRAVLENIE KOMBAY - NOM K-56MG"

KEY WORDS: Roadheader

ABSTRACT:

A program-remote control device is conceived and tested for the roadheader-shearer K-56MG in execution of PNI-2.5. The system includes a magnetic station and a control panel with a series of pickups. The feed voltage of the control panel is 1.5 v.

The information conversion (translation) unit is assembled on semiconductor (transistor) units. The tests have shown the operating capability of the apparatus in conditions of hydraulic face. (3 figures).

951R

Zaretskiy, L.I., "POSSIBILITIES OF DETERMINING HYDROMINE PRODUCTION WITH THE AID OF DEVICES," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp. 200-204, "VOZMOZHNOSTI OPREDELENIYA DOBYCHI GIDROSHAKHT S POMOSHCH'YU PRIBOROV,"

KEY WORDS: Hydraulic Mining, Coal

ABSTRACT: Considered in this work are the possible trends in the creation of a method of accounting for hydromine's production of coal. Errors occurring at various approaches to accounting with the aid of devices are determined. On the basis of errors' analysis, the said devices are recommended. (1 figure, 2 tables)

952R

TRANSLATED

Rechin, V.D., "ECONOMIC EFFECTIVENESS OF HYDRAULIC MINING IMPLANTATION IN THE KUZBASS," from the book, "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 205-209 "EKONOMICHESKAYA EFFEKTIVNOST' VNEDRENIYA GIDRODOBYCHI V KUZBASSE"

KEY WORDS: Hydraulic Mining, Kuzbass, Safety, Productivity, Capital Expenses, Coal, Economics, Cost Per Ton, Baydayevskaya-Severnaya # 1, Gramoteinskaya # 3-4, Polysayevskaya-Severnaya, Mining Machinery

ABSTRACT:

For the 15 years beginning with 1952, a great experience has been accumulated in the implantation of hydraulic technology in mines of the Kuzbass. Analysis of the attained indicators provides the possibility to conclude, that hydraulic production, as compared with the standard underground method of mining, assures the increase in labor productivity and labor's safety, the lowering of costs and specific capital outlays. (1 figure, 1 table).

953R

Yeskin, P.I., Gokhman, B.M., Veselkov, V.S., "SICK RATE AND INDUSTRIAL INJURIES AMONG MINE WORKERS OF THE KUZBASS' COLLIERIES," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 210-216
"ZABOLEVAEMOST' I PROIZVODSTVENNYY TRAVMATIZM SPEDI GORNORABOCHIKH UGOL'NYKH SHAKHT KUZBASSA"

KEY WORDS: Roadheader, Health and Safety, Kuzbass, Explosives

ABSTRACT:

This paper gives a comparative analysis of illness with temporary loss of work capacity, spread of pneumoconiosis and frequency of industrial traumatism during blasthole drilling and roadheader mining of coal, and also when utilizing various forms of hydromechanization. It is noted that in conditions of the Kuznetsk basin, hydraulic and mechano-hydraulic mining of coal allows to positively resolve the problem of pneumoconiosis' prophylaxy, to notable lower the onset of illness with temporary loss of working capacity and the industrial traumatism, especially in winning faces. (4 tables).

954R

Gokhman, B.M, Voronin, Yu.B., Volkov, G.F., Arapov, I.I., "WAYS OF IMPROVING THERMAL CONDITIONS AND EFFICIENCY INCREASE OF HYDROMINE VENTILATION." from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSST, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 217-221
"PUTI ULUCHSHENIYA TEPLOVYKH USLOVIY I POVYSHENIYA EFFEKTIVNOSTI PROVETRIVANIYA GIDROSHAKHT"

KEY WORDS: Hydraulic Mining, Airflow, Temperature, Humidity, Pipelines, Hydraulic Haulage

ABSTRACT:

Considered in this paper are factors determining the hydromines' microclimate: temperature, moisture, and air velocity. Ventilation schemes of winning faces at the expense of general mine depression are presented; they allow to increase the amount and the motion velocity of the air in faces. Considered are the means of lowering the temperature of inductrial water in the closed cycle of thehydromine and the thermal conditions of long-range hydrotransport pipelines in conditions of negative temperatures of outer air. (3 figures).

955R

Protsenko, I.A., "PREPARATION AND DEWATERING TECHNOLOGY OF COALS PRODUCED BY HYDRAULIC METHOD," from the book "Questions Regarding the Hydraulic production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo UGOL'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 222-232
"TEKHVOLOGIYA OBOGASHCHENIYA I OBEZVOZHIVANIYA UGLEY, DOBYTYKH GIDRAVLICHESKIM SPOSOBOM"

KEY WORDS: Hydraulic Mining, Kuzbass, Coal, Dewatering, Coal Preparation

ABSTRACT:

Given in this paper is a brief description and the characteristics of technological processes of preparation and dewatering of coals in preparation plants of operating Kuzbass' hydromines. and also some of the actually attained technological indicators on these processes. (4 figures, 6 tables).

956R

Antipenko, L.A., Kartasheva, L.P., Ikramov, L.P., Yefimova, G.A., "FORECASTING SLIME FORMATION IN THE PROCESS OF COAL HYDROTRANSPORT IN THE HYDROMINE "BAYDAYEVSKAYA-SEVERNAYA," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 233-238
"PROGNOZIROVANIE SHLAMOOBRAZOVANIYA V PROPESSE GIDROTRANSPORTA UGLYA NA GIDROSHAKHTE "BAYDAEVSKAYA-SEVERNAYA" No. 1"

KEY WORDS: Baydayevskaya-Severnaya, Hydraulic Haulage, Coal, Hydraulic Mining, Kuzbass

ABSTRACT:

Investigations have been conducted in the mine "Baydayevskaya-Severnaya" No.1 of forecasting the qualitative characteristics of coals in the process of hydrotransport. Technological properties of slimes are studied with the purpose of utilizing the obtained data for planning preparation plants. (3 tables, 2 figs., 4 references).

957R

Burshteyn, M.M., "VOLUMETRIC MODELING OF HYDROMINE ERECTION," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 239-243
"OB'EMNOE MODELIROVANIE SOORYZHENIY GIDROSHAKHT"

KEY WORDS: Hydraulic Mining

ABSTRACT:

Methods of volumetric planning of industrial buildings of hydromines, including the blocks and the complexes of mine workings have been worked out at the VNIIGidrougol' Institute on the basis of the principle of volumetric planning of industrial buildings. Unified constructions of model parts were created and their production by industrial methods, assuring orders from numerous planning institutes, was implanted. A brief description is given of methodical and fundamental constructive bases of modeling hydromine erections.

958R

Saplinov, L.S., "COORDINATION OF SCIENTIFIC RESEARCH WORK IN THE DOMAIN OF HYDRAULIC MINING," from the book "Questions Regarding the Hydraulic Production of Coal," Vol. XI, Trudy VNIIGidrougol, Ministerstvo Ugol'noy Promyshlennosti SSSR, Kemerovskoe Knizhnoe Izdatel'stvo, 1967, pp 244-248
"KOORDINATSIYA NAUCHNO-ISSLEDOVATEL'SKIKH RABOT V OBLASTI GIDRODOVYCHI"

KEY WORDS: Hydraulic Mining

ABSTRACT:

A brief characteristic is given of works fulfilled by some scientific research institutes in the field of hydraulic production. The link existing between them is revealed.

959

Triplex, "TRIPLEX PUMP AIDS INDUSTRIAL CLEANING," No date, No Reference

KEY WORDS: Pumps

960

Davis, G.H. & Wood, L.A., "WATER DEMANDS FOR EXPANDING ENERGY DEVELOPMENT," USGS Circular 703, 1974

KEY WORDS: Water Supply, Coal Mining

ABSTRACT:

Water is used in producing energy for mining and reclamation of mined lands, onsite processing, transportation, refining, and conversion of fuels to other forms of energy. In the East, South, Midwest, and along the seacoasts, most water problems are related to pollution rather than to water supply. West of about the 100th meridian, however, runoff is generally less than potential diversions, and energy industries must compete with other water users. Water demands for extraction of coal, oil shale, uranium, and oil and gas are modest, although large quantities of water are used in secondary recovery operations for oil. The only significant use of water for energy transportation, aside from in-stream navigation use, is for slurry lines. Substantial quantities of water are required in the retorting and the disposal of spent oil shale. The conversion of coal to synthetic gas or oil or to electric power and the generation of electric power with nuclear energy require large quantities of water, mostly for cooling.

Withdrawals for cooling of thermal-electric plants is by far the largest category of water use in energy industry, totaling about 170 billion gallons (644 million m^3) per day in 1970.

Water availability will dictate the location and design of energy-conversion facilities, especially in water deficient areas of the West.

961

USGS, "LIST OF PUBLICATIONS," Dec. 1, 1974

KEY WORDS: Bibliography, Coal, Western U.S.

962

Dresser Industries, "COALBUSTERS," Brochure, 1975

KEY WORDS: Crushers

963

Gardner-Denver Company, "TRIPLEX PLUNGER PUMPS," Brochure & Letter, 1975

KEY WORDS: Pumps

964

Stang Hydronics, Inc., "LETTER CONCERNING PUMPS," March 4, 1975

KEY WORDS: Pumps

965

Coal Age, "IN SLURRY-PIPELINE OPERATION...VARIABLE-SPEED DRIVE CONTROLS FLOW OF COAL," pp 154-160, Coal Age, Feb. 1975

KEY WORDS: Coal, Slurry, Pipeline, Robinson Run Mine, Appalachia, Slurry Pump, Screen

966

Coal Age, "CONTINUOUS UNDERGROUND SLURRY," Coal Age, Feb. 1975, pp 122-123

KEY WORDS: Hydraulic Haulage, Coal

967

Coal Age, "TRAINING GETS INCREASED EMPHASIS IN THE SAFETY PICTURE," Coal Age, Feb. 1975, pp 127-129

KEY WORDS: Safety, Coal Mining

968

Coal Age, "COAL MINE DEVELOPMENT SURVEY SHOWS 236.6 MILLION TONS OF NEW CAPACITY," George F. Nielsen, author, Coal Age, Feb. 1975, pp 130-136

KEY WORDS: Coal Mining, U.S.

969

Coal Age, "1974 SHIPMENTS OF MINING EQUIPMENT PRODUCTION AND PRODUCTIVITY FROM VARIOUS METHODS OF MINING," Coal Age, Feb. 1975, pp 137-139

KEY WORDS: Mining Machinery, Coal Mining

970

Flygt Corporation, "MINE DEWATERING SUBMERSIBLE PUMPS," Brochure, 1975

KEY WORDS: Pumps, Dewatering

975

Shavlovsky, D.S., "HYDRODYNAMICS OF HIGH PRESSURE FINE CONTINUOUS JETS," Lst International Symposium on Jet Cutting Technology, April 5-7, 1972, Coventry, England (From USSR) (Paper A-6)

KEY WORDS: Hydraulic Mining, Jet Characteristics, Hydromonitor

Summary

Presented in the paper are results of the dynamics and structure studies of fine continuous water jets at pressure up to 500 atmospheres.

General relationships of variation of fine continuous jet hydrodynamic characteristics are given. A method is proposed for determining the parameters of high-pressure water jet along and transverse the jet axis. Conditions necessary for the formation of fine high-pressure solid water jets are stated and rational proportions of the dimensions of the water supply line to the nozzle as well as the form and the dimensions of the stabilizer placed in the feeder are presented. Results on the study of the nozzles used for high-pressure jets are given.

977

Kobrick, T.E., "THE PRESENT STATUS OF COAL MINE RESPIRABLE DUST SAMPLING," Proceedings of the 5th Annual Institute on Coal Mining Health Safety and Research, Blacksburg, Va., Aug. 1974, pp 254-262

KEY WORDS: Dust, Ventilation

978

Pendergast, J.D., Ison, W.D., Sutherland, W.H., "WET AUGER: RESPIRABLE DUST CONTROL FOR UNDERGROUND AUGER CONTINUOUS MINING MACHINES," Proceedings of the 5th Annual Institute on Coal Mining Health Safety and Research, Blacksburg, Va., August 1974, pp 247-253

KEY WORDS: Dust, Ventilation

979

Dalzell, R.W., "INTEGRAL MACHINE-MOUNTED DUST COLLECTORS," Proceedings of the 5th Annual Institute on Coal Mining Health Safety and Research, Blacksburg, Va., Aug. 1974, pp 267-295

KEY WORDS: Dust, Ventilation

ABSTRACT

Laboratory and field studies of face ventilation systems operated in conjunction with integral machine-mounted dust collectors (scrubbers) have been made to determine if use of dust collection equipment results in additional hazards in the face region from increased methane concentrations caused by dust collector recirculation.

As part of these studies, machine-mounted dust collectors (scrubbers) with varying degrees of recirculation were operated along with blowing and exhausting face ventilation systems without causing additional hazards to methane control. However, exploratory tests of blowing line brattice operated in conjunction with a dual-discharge dust collector indicate loss of methane control at line brattice distances of 13 feet or more.

980

Marcona Corporation, "HYDRAULIC MATERIALS HANDLING TOOL," Letter and Brochure, 1975 & 1974.

KEY WORDS: Hydraulic, Slurry Pump, Pump

981

Thompson, D.G., "COMPARISON OF COAL DRYING METHODS," SME of AIME Annual Meeting, Preprint # 75-F-58, Feb. 1975

KEY WORDS: Coal Preparation

982

Schmidt, W.B., Moroni, E., Bullock, R., Sanford, C., and Murphy, J., "REVIEW OF BRITISH AND GERMAN COAL MINING TECHNOLOGY," SME of AIME Annual Meeting, Feb. 16-20, 1975, Preprint # 75-F-76

KEY WORDS: Coal Mining, Longwall, Dust, Ventilation, Hydraulic Mining, Coal, England, Germany, Karl Funke Mine, Gneisenau Mine, Hydraulic Hoist, Hydraulic Haulage, Water Supply

983

Smith, H.H., "THE WRINGING OF THE WEST," The Washington Post, Sunday, Feb. 16, 1975, pp B1 and B4

KEY WORDS: Coal Mining, Water Supply, Western U.S.

985R

TRANSLATED

Zhanagarin, A.I., "VODO-PUL'POPD'EMNYE USTANOVKI S GIDROTSIKLONNOY PRIEMNOY KAMEROY I GIDROELEVATORNYM PROMYVNYM USTROYSTVOM," Gornyy Zhurnal, # 1, 1975, pp. 26-28
"WATER SLURRY-LIFTING INSTALLATIONS WITH A HYDROCYCLONE RECEIVING CHAMBER AND A HYDRO-ELEVATOR WASHING INSTALLATION"

KEY WORDS: Dewatering, Rock, Slurry, Pump

986R

TRANSLATED

Ekber, B.Ya., & Gontov, A.E., "3526 METROV OSNOVNYKH SHTREKOV KOMBAYNOM K-56MG ZA 25 RABOCHIKH DNEY," Ugol #1, 1975, pp 30-32
"3,526 METERS OF MAIN ROADWAYS (DRIVEN) BY THE K-56MG SHEARER IN 25 WORKING DAYS,"

KEY WORDS: Mining Machinery, Coal, Seam Thickness, Roof, Floor, Roadheader, Hydraulic Haulage, Slurry, Kuzbass, Longwall, Roof Support, Coal Mining, Pipeline, Ventilation, Production Rate, Manpower, Methane

989

Business Week, "A WATER CURE FOR COAL PRODUCTIVITY," Business Week, Sept. 21, 1974, pp 42B and 42D

KEY WORDS: Hydraulic Mining, Coal, Appalachia, Western U.S., USSR, England, Japan, British Columbia, Sunagawa, Gilsonite, Temperature, Productivity

990

Given, I.A., "HYDRAULIC MINING," Section 12.7 of SME Mining Engineering Handbook, Vol. 1, 1973, pp 12-95 to 12-100

KEY WORDS: Hydraulic Mining, Gilsonite, Water Supply, Sluicing, Water Cannon, Pump, Wear & Abrasion

991

Coal Age, "BOOST YOUR PRODUCTIVITY BY ADDING CONTINUOUS MINERS," March 1975, pp 78-80

KEY WORDS: Production Rate, Hydraulic Haulage, Continuous Miner, Dust, Economics, Capital Investment, Coal Mining

992R

TRANSLATED

Chermenskiy, G.P., "LETTER TO W. C. COOLEY" March 30, 1975

KEY WORDS: Water Cannon, Coal, Roadheader, Rock, Feeders

993R

TRANSLATED
Bibliography, "VOPROSY GIDRAVLICHESKOY DOBYCHI UGLYA," Ministerstvo Ugol'noy Promyshlennosti SSSR, Tekhnicheskoe Upravlenie, Trudy VNIIGidrouglya Vypusk XIII, Novokuznetsk, 1968, This book has been broken down into individual reports - SL 994R through SL 1026R
"QUESTIONS REGARDING THE HYDRAULIC PRODUCTION OF COAL," Issue 13

KEY WORDS: Bibliography

994R

Pletnev, O.N., "MATHEMATICAL MODEL STUDIES OF THE TECHNOLOGICAL PROCESS OF THE MECHNOHYDRAULIC MINING OF COAL" from the Book "Questions Regarding the Hydraulic Production of Coal," Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 3-8
"MATEMATICHESKOYE MODELIROVANIYE TEKHNOLOGICHESKOGO PROTSESSA MEKHANO-GIDRAVLICHESKOY VYYEMKI UGLYA"

KEY WORDS: Hydraulic Mining, Coal, Coal Mining, Water Supply
ABSTRACT:

Questions are examined regarding the construction of a mathematical model of the technological process of coal mining by the mechahydraulic method, using as an example the composition of a formalized scheme of a water supply unit. One of the possible variants is brought up, which corresponds to the given formalized scheme of the modeling algorithm, on the basis of which the method of statistical tests (the Monte Carlo method) is laid. (includes 2 illustrations).

995R

Kazantsev, A.A.,"ON THE STABILITY OF PROCESSES OF HYDRAULIC PRODUCTION OF COAL," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol, XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp8-11
"OB USTOYCHIVOSTI PROTSESSOV TEORII TEKHNOLOGII DOBYCHI UGLYA GIDRAVLICHESKIM SPOSOBOM,"

KEY WORDS: Hydraulic Mining, Coal

ABSTRACT:

A. A. KAZANTSEV. - Ob ustoychivosti protsessov teorii tekhnologii dobychi uglya gidravlicheskim sposobom, str. 8 - 11.

The occurrence of oscillating conditions in a network of high-pressure water and product conduits results in a series of cases in an instability and unreliability of work in the hydromine.

This paper presents an analysis and ways are set to ensure the stability of the work. (Includes 1 illustration and 7 references).

996R

Tsyapko, N.F., "SOME QUESTIONS OF THEORY OF HYDROMONITOR WATER JET," from the Book " Questions Regarding the Hydraulic Production of Coal," Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 12-18
"NEKOTORYYE VOPROSY TEORII GIDROMONITORNOY STRUI VODY"

KEY WORDS: Monitor, Hydraulic Mining

ABSTRACT:

Presented in this work is an analytical determination of the basic dependences between the main parameters of the hydromonitor water jet.

It is shown that the application of the asymptotic law of velocity and density distribution in the boundary layer of the basic portion of the jet permits to find solutions independent of the choice of jet's boundary.

The work should be of interest for scientific workers and engineers concerned with hydromechanization. (includes 3 illustrations and 7 references).

997R

Tsyapko, N.F., "ON THE CAUSES OF EXPANSION OF HYDROMONITOR WATER JET," from the Book, "Questions Regarding the Hydraulic Production of Coal," Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968,pp18-19
"O PRICHINAKH RASSHIRENIYA GIDROMONITORNOY STRUI VODY"

KEY WORDS: Monitor, Hydraulic Mining

ABSTRACT:

Considered in this work are the causes of hydromonitor jet expansion and the dependences are given for the determination of the coefficient of flow's turbulent structure in the channel of the shaft.

The work is of interest to scientific workers and hydromechanization engineers.

998R

Krivchenko, A.A., Kretinin, N.G., Bakhmanov, G.S., "DETERMINATION OF THE LOCATION OF HYDROMONITOR JETS' MAXIMUM IMPACT," "Opredeleniye Mestopolozheniya Maksimuma Sily Udara Gidromonitornykh Struy," from the book "Questions Regarding the Hydraulic Production of Coal," Proceedings of the VNIIGidrougol', Issue 13, Novokuznetsk, 1968, pp 20-24

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Jet Characteristics

ABSTRACT:

Generalized in this paper are data of a series of investigations on the determination of hydromonitor jets' maximum impact force, as they escape from nozzles with diameters from 1 to 37 mm with a velocity of more than 30 m/sec. (2 illustrations, 3 tables, 14 references).

999R

TRANSLATED

Chermenskiy, G.P., "DISINTEGRATION OF COALS BY PULSED WATER CANNON AT DRIVING DEVELOPMENT WORKINGS," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol. 13, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp. 25-34
"RAZRUSHENIYE UGLEY IMPUL'SNYM VODOMETOM PRI PROVEDENII PODGOTOVITEL'NYKH VYRABOTOK"

KEY WORDS: Coal, Water Cannon, Hydraulic Mining, Krasnogorskaya, Kuzbass

ABSTRACT:

Considered in this paper are the results of strong coals disintegration by pulsed jets during the drivage of an accumulating roadway in the hydromine "Krasnogorskaya".

Recommendations are brought up on the choice of the optimum system of striking the face and some data are given on the choice of nozzles. A calculation is given of the power capacity of coal disintegration by pulsed jets, which shows the economic expediency in applying water cannons for driving workings, even by comparison with the mechanical methods.

This paper offers interest for scientific workers, planners, designers and mine workers. (4 illustrations, 3 tables and 5 refs).

1000R

Timoshenko, G.M., Miroshnichenko, V.V., Dul'kin, M.Z., "HYDRO-IMPACT PRESSURE BOOSTER AND ITS APPLICATION FOR INCREASE OF HYDRAULIC BREAKING EFFECTIVENESS" from the Book "Questions Regarding the Hydraulic production of Coal" Vol., XIII, Trudy VNIIGidrougol, Novokuznetsk, 1068, pp34-39
"GIDROUDARNYY POVYSITEL' DAVLENIYA I YEGO PRIMENENIYE DLYA POVYSHENIYA EFFEKTIVNOSTI GIDROOTBOYKI"

KEY WORDS: Hydraulic Mining

ABSTRACT:

The requirement of appying hydro-impact pressure boosters to increase the efficiency of hydraulic breaking is substantiated in this paper. A method is presented for the computation of the basic parameters of the booster, and also the results of its testing units' investigations. (4 illustrations, 1 table, 2 references).

1001R

Tat'kov, V.A.,Matulevich, G.F., "SOME RESULTS OF EXPERIMENTAL INVESTIGATIONS REGARDING FINAL ADJUSTMENTS OF THE FLOW-THROUGH PART OF COAL PUMPS," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp40-46
"NEKOTORYY REZUL'TATY EKSPERIMENTAL' NYKH ISSLEDOVANIY PO OTRABOTKE PROTOCHNOY CHASTI UGLESOSOV"

KEY WORDS: Pumps, Coal, Hydraulic Hoisting

ABSTRACT:

Expounded in this paper are the materials of experimental investigations of working parts of coal pumps conducted in the laboratory of hydraulic hoisting and hydro-machines of the VNIIGidorugol' Institute. Analyzed in it is the influence of the basic geometric parameters of the running wheels and branch pipes on the operating and cavitation characteristics. (5 illustrations, 1 table, 4 references).

1002R

Abramov, V.N., "INVESTIGATION OF CAVITATION PHENOMENA IN CENTRIFUGAL PUMPS AND COAL SUCTION PUMPS UNDER 'NONOPTIMUM' CONDITIONS OF OPERATION," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 47-54
"ISSLEDOVANIYE KAVITATSIONNYKH YAZLENIY V TESNTROBEZHNYKH NASOSAKH I UGLESOSAKH PRI NEOPTIMAL'NYKH REZHIMAKH RABOTY"

KEY WORDS: Coal, Pump

ABSTRACT:

Briefly expounded in this paper are the results of investigation of cavitation phenomena in coal pumps' running wheels. Comparison is given of the obtained results of investigations with theoretical assumptions on the decisive influence on the suction height of not only the conditions of entry in the wheel, but also of the load on the inlet edges of vanes. It is shown that the values of the coefficients $'_2$ and $_3$ * are influenced by the exit conditions.

Recommendations are made at the end of the paper on the choice of vane intake angles (*). (6 illustrations, 5 tables, 6 references).

1003R

Yurin, P.I., Kosotovetskiy, S.P., "SOME QUESTIONS CONCERNING THE VIBRATIONS OF PUMPS AND COAL PUMPS," from the Book "Questions Regarding the Hydraulic Production of Coal", Vol. XIII, Trudy VNIIGIdrougol, Novokuznetsk, 1968, pp54-65
"NEKOTORYYE VOPROSY VIBRATSII NASOSOV I UGLESOSOV"

KEY WORDS: Pump, Coal, Hydraulic Mining

ABSTRACT:

The effect of pump and coal pump vibration on their reliability and lifetime is investigated. Constructive technological enterprises are set forth to combat the vibration and define the norms for its restriction.

The conclusions and generalizations are formulated on the basis of pumps' and coal pumps' exploitation in hydromine conditions. (Included are 6 illustrations, 2 tables and 7 references).

1004R

Sharberg, Ye.M., Aksanov, Sh.I.,Glezer, S.S., "INVESTIGATION AND DEVELOPMENT OF A CENTRIFUGAL SLURRY THICKENER WITH AUTOMATIC REGULATION OF CONSISTENCY," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol. XIII, Trudy VNIIGidrouglya, Novokuznetsk, 1968, pp65-70
"ISSLEDOVANIYE I RAZRABOTKA TSENTROBEZHNOGO SGUSTITELYA PUL'PY.S AVTOMATICHESKIM REGULIROVANIYEM KNOSISTENTSII"

KEY WORDS: Slurry

ABSTRACT:

This paper brings forth the results of investigations designed for search of a centrifugal slurry thickener scheme. The construction of the thickener ARP, capable of thickening the slurry in the process of transport is described, as also is the system of automatic regulation. (Includes 3 illustrations).

1005R

Katyukhin, V.Ya., Vasil'yev, K.F., "CREATION AND INDUSTRIAL IMPLANTATION OF HYDRAULIC HOISTING CHAMBER WITH COAL PUMPS OPERATING UNDER CONDITIONS OF SELF-PRIMING ON COAL SLURRY OF RUN-OF-MINE COAL," from the Book "Questions Regarding the Hydraulic Production of Coal" Vol,XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp70-75
"SOZDANIYE I PROMYSHLENNOYE VNEDRENIYE KAMERY GIDROPODYEMA S UGLESOSAMI RABOTAYUSHCHIMI POD SAMOZALIVOM NA UGOL'NOY PUL'PE S RYADOVYM UGLEM"

KEY WORDS: Coal, Kuzbass, Slurry, Pump, Hydraulic Hoisting

ABSTRACT:

Analyzing in this paper the work of hydraulic hoisting's coal pumps in operating mines of the Kuzbass, the authors consider the principle of a new hydraulic hoisting chamber with coal pump installation under conditions of self-priming erected in the mine No.106 of the Saran'ugol' trust. (2 illustrations, 2 tables).

1006R

Tat'kov, V.A.,Kazantsev, A.A., Sorokin,A.S., "SOME QUESTIONS OF UTILIZATION OF THE STABILIZING ACTION OF AXIAL FORCE FOR A FLEXIBLE SHAFT OF A MULTISTAGE PUMP," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp75-78
"NEKOTORYYE VOPROSY ISPOL'ZOVANIYA STABILIZIRUYUSHCHEGO DEYSTVIYA OSEVOY SILY DLYA GIBKOGO VALA MNOGOSTUPENCNATOGO NASOS"

KEY WORDS: Pump

ABSTRACT:

This paper is the first attempt to set up the problem on the possibility of utilizing the axial hydraulic force developed by running wheels of centrifugal pumps, for a substantial stability increase of the rotor shaft. In case of solution of a series of constructive questions and of the system of nonlinear differential equations, determining the equilibrium of a flexible shaft, stretched by a significant axial force, it will become possible to apply improved hydraulic correlations of working parts of a high-pressure centrifugal pump. Partial results are presented of the search of basic equations' solutions and further ways are contemplated. (2 references).

1007R

Medvedlpv. V.I., "SOME RESULTS OF DEVELOPMENT OF HYDRAULIC TUBINE DRIVE AND PROBLEMS OF SUBSEQUENT INVESTIGATIONS," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol. XIII, Trudy VNIIGidrougol, Novokutznetsk, 1968, pp 78-88
"MELPTPRUUE OTPGI RAZRABOTCK GIDROTURBINNOGO PRIVODA I ZADACHI DAL'NEYSHIKH ISSLEDOVANIY"

KEY WORDS: Water Supply

ABSTRACT:

A brief characteristic is given in the paper of problems of creation and improvement of a hydraulic turbine drive, set up by practice and successfully resolved in 1964-1967. Alongside with this the author considers the outlook for the development and implantation of the turbine drive from the standpoint of improvement of its construction and of the water supply system of face equipment. (4 figures and 26 references).

1008R

Yurin, P.I.,Nikulin, A.I., "ON THE METHODS FOR IMPROVING THE RELIABILITY AND LIFETIME OF THE EQUIPMENT FOR HYDRAULIC PRODUCTION OF COAL," from the Book "Questions Regarding the Hydraulic Production of Coal," Vol, XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp88-94
"O SPOSOBAKH POVYSHENIYA NADESHNOSTI I DOLGOVECHNOSTI OBORUDOVANIYA DLYA GIDRAVLICHESKOY DOBYCHI UGLYA"

KEY WORDS: Coal, Hydraulic Mining, Wear and Abrasion, Kuzbass

ABSTRACT:

The process of hydro-abrasive wear of the parts of equipment was investigated on laboratory stands and in industrial conditions. As a result of generalization of the obtained data methods are proposed for the increase of wear resistance of rapidly wearing parts.

A substantial economic effect was obtained by implantation of these methods in the Kuzbass' hydromines. (7 illustrations, 1 table).

1009R

Chadin, V.P., "WORKS FOR THE IMPROVEMENT OF THE RELIABILITY AND LIFETIME OF THE YASNOGORSK MACHINE CONSTRUCTION PLANT'S COAL PUMPS" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 94-95
"RABOTY PO POVYSHENIYU NADESHNOSTI I DOLGOVECHNOSTI UGLESOSOV YASNOGORSKOGO MASHZAVODA"

KEY WORDS: Coal, Pump, Wear and Abrasion

ABSTRACT:

Presented in this paper are the results of conducted tests in industrial conditions on the improvement of the reliability and lifetime of coal pumps manufactured by the Yasnogorsk machine works. In the course of the tests the most wear-resistant materials and alloys were selected for the parts of the pumps operating in conditions of hydro-abrasion.

1010R

Klochko, A. I., Kolchin, A.V., Yurin, P.I., Sosinskiy, M.Yu., "METHODS OF REINFORCEMENT BY HARD ALLOY OF THE MAJOR PARTS OF COAL PUMPS" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp95-99
"SPOSOB ARMIROVANIYA TVERDYM SPLAVOM KRUPNO-GABARITNYKH DETALEY UGLESOSOV"

KEY WORDS: Coal, Pump

ABSTRACT:

Description of technology is given for reinforcing the parts of running wheels' packings by plates made of hard alloy "VK". Advantages of this method are discussed. (4 illustrations).

1011R

Bugrov, V.G., "TO THE QUESTION OF AUTOMATION OF MINE WORKINGS' DRIVAGE WITHOUT SUPPORT" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp99-102
"K VOPROSU AVTOMATIZATSII PROKHODKI GORNYKH POROD BEZ KREPLENIYA"

KEY WORDS" Hydraulic Mining, Roadheader

ABSTRACT:

Questions of mine workings drivage without support using automation are considered for the cases applicable to hydraulic mining; requirements for roadheaders, as object of automatic control, are made more precise. Generalized are the results of tests of the shearer K-56MG with programme-remote control, and further stage of roadheading machines' automation are contemplated. (3 references).

1012R

Agrinskiy, K.M., "CONTROL OF UNITS' OPERATION TIME, CONVEYING RECOMMENDATIONS FOR REPAIR BY THE "DNEPR-1" MACHINE" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968. pp 102-103
"KONTROL' VREMENI RABOTY AGREGATOV, VYDACHA REKOMENDATSIY NA REMONT MASHINOY 'DNEPR-1'"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

In order to control the operating time of coupler mechanisms with the objects of the controlling computer "Dnepr-1", discrete pickups are switched on, which signal the operation or malfunction of the mechanisms. The program's block diagram is given. (1 illustration).

1013R

Stefanyuk, B.M., "SYSTEM OF LOGICAL AND FUNCTIONAL SEMICONDUCTOR SPARK-SAFE CELLS WITH 1.5 VOLTAGE FOR CONTROL CIRCUITS OF MINING MACHINES" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 104-110
"SISTEM LOGICHESKIKH I FUNKSIONAL'NYKH POLUPROVODNIKOVYKH ISKROBEZOPASNYKH YACHEYEK S NAPRYAZHENIYEM V1.5 V DLYA SKHEM UPRAVLENIYA SHAKHTNYKH MASHIN.

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

A system of logical and functional cells, consisting of 18 types of cells, is described. Entering into the system are cells, performing logical functions, trigger, multivibrator, amplifiers, controlled bridge and the protection cell from short closings of cores in the conveying cable.

The feed voltage of the cells is 1.5 v without additional bias. The operating conditions are potential. (18 illustrations, 18 refs.).

1014R

Belozerov, I.D., "ANALOGUE QUANTITIES' INTEGRATOR AI-1" from the book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 111-114
"INTEGRATOR ANALOGOVYKH VELICHIN AI-1"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

An integrator of analog quantities is described. The main difference of the proposed integrator as compared to the existing ones is the fact that the dynamic and static errors are equal when integrating quick-course processes. (2 illustrations, 2 references).

1015R

Bushmakin, V.N., "READOUT OF INTEGRAL VALUES OF CONSUMPTION BY THE CONTROLLING COMPUTER 'DNEPR-1'" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 115-117
"SCHITYVANIYE INTEGRAL'NYKH ZNACHENIY RASKHODA UVM 'DNEPR-1'"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

Examined in this paper are the questions of transformation of integral quantities, obtained from measurement devices, into discrete for the possibility of their introduction into the computer. The construction and the operation of the transformer is described.

The paper is of significant interest to specialists working in the field of automated production. (2 illustrations).

1016R

Riyps, A.R., Rosmann, M.P., Uybopuu, I.M., "SEMICONDUCTOR MEASURING AUTOCOMPENSATOR" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 118-122
"POLUPROVODNIKOVYY IZMERITEL'NYY AVTOKOMPENSATOR"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

This semiconductor measuring autocompensator is used in the mass-produced IR-3 induction flowmeter by the Tallin Measuring-instruments plant. The paper considers the principles of autocmpensator's operation and technical qualities. (5 illustrations, 3 references)

1017R

Laar, T., Myass, L., Riyps, A., "INDUCTION FLOWMETERS - SENSOR OF EXPLOSION- PROTECTIVE EXECUTION" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 123-124
"DATCHIKI INDUKTSIONNYKH RASKHODOMEROV VAZRYVOZASHCHITNOGO ISPOLNENIYA"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

The construction of such explosion-proof sensor of an induction flowmeter is described in detail.

Its advantages and some shortcoming are characterized; the respective technical characteristics are brought out.

1018R

Gartman, A.K., Zaretskiy, L.I., "EXPLOSION-PROOF HIGH-PRESSURE INDUCTION FLOWMETER" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp125-127
"VZRYVOBEZOPASNYY VYSOKONAPORNYY INDUKTSIONNYY RASKHODOMER"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

Described in this paper is the construction of an explosion-proof induction flowmeter computed for an operating pressure of the measured medium of up to 12 /m^2. The question is examined of the influence of pressure variation on the changes in device's readings. (1 illustr.)

1019R

Korodonskiy, N.I., Ushakov, N.A., Fel'dman, V.Ya., "UNITIZED EXPLOSION-PROOF SENSOR FOR DIFFERENTIAL-TRANSFORMER MEASUREMENT SYSTEMS" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 128-129
"UNIFITSIROVANNYY VZRYVO-BEZOPASNYY DATCHIK DLYA DIFFERENTSIAL'NO-TRANSFORMATORNYKH IZMERITEL'NYKH SISTEM"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

ABSTRACT:

The type-DM manometers, mass-produced in our industry and broadly applied in various branches of industry, are not convenient for the work in explosion-proof conditions of preparation plants and mines. Described in this paper is the construction of an explosion-proof sensor (pickup) assuring the application of these differnetial manometers in hydromines and preparation plants.

1020R

Ushakov, N.A., Kordonskiy, N.I., Vlasov, Yu.F.,"INVESTIGATION AND DEVELOPMENT OF THE DENSIMETER PP2-300 FOR THE PRESSURE HYDRO-TRANSPORT" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp129-133
"ISSLEDOVANIYE I RAZRABOTKA PLOTNOMERA PP2-300 DLYA NAPORNOGO GIDRO-TRANSPORTA"

Key WORDS: Hydraulic Haulage, Donbass, Coal, Hydraulic Mining

ABSTRACT:

The results are presented of experimental investigations concerning the hydraulic breaking of Donbass' coals. These investigations permitted to define the criterion of coals' resistance to jets of great flow, i. e. the specific water absorption of the seam, and work out a method of calculation of hydraulic breaking's rational parameters. (*)

1021R

TRANSLATED

Chermenskiy, M.A., Nikiforov, M.A. Natapov, I.B., "SOME QUESTIONS OF RELIABILITY AND EFFICIENCY OF APPLYING PULSED WATER CANNONS DURING DRIVAGE OF MINE WORKINGS" from the Book "Questions Regarding the Hydraulic Production of Coal" Vol. XIII, Trudy VNIIGIdrougol, Novokuznetsk, 1968, pp134-146
"NEKOTORYYE VOPROSY NADEZHNISTI I EFFEKTIVNOSTI PRIMENENIYA IMPUL' SNYKH VODOMETOV PRI PROKHODKE GORNYKH VYRABOTOK"

KEY WORDS: Water Cannon, Economics, Wear and abrasion

ABSTRACT:

Data on wear and reliability of the most vulnerable parts of water cannons are presented. It is shown on the basis of economic analysis that pulsed water cannons have a sufficient reliability,so as to allow them to be the object of industrial exploitation.(3 Tables).

1022R

Shubin, Yu.N., "ERRORS OF THE ELECTROMAGNETIC FLOWMETER DURING OPERATION ON SLURRIES" from the Book "Questions Regarding the Hydraulic Production of Coal", Vol. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 137-146
"POGRESHNOSTI ELEKTROMAGNITNOGO RASKHODOMERA PRI RABOTE NA PUL' PAKH."

KEY WORDS: Slurry

ABSTRACT:

Owing to its constructive advantages the electromagnetic flowmeter is well adapted to passage of inhomogenous flows. However, no sufficient metrological basis is available for such an application of electromagnetic flowmeters.

The object of the work consisted in an experimental investigation of error origination and of its magnitude when measuring slurry flows of different content and concentration.

To conduct these experiments a special metrological flowmeter installation has been created and certified. The results of investigations have shown the presence of specific regularities in the origination of errors. Recommendations are made for the application of electromagnetic flowmeters for various slurries. (4 illustr., 1 table, 3 references).

1023R

Volkov, G.F., Gokhman, B.M., "INFLUENCE OF SURFACE TECHNOLOGICAL BUILDING OF HYDROMINES ON THE TEMPERATURE OF INDUSTRIAL WATER AND SLURRY," from the Book "Questions Regarding The Hydraulic Production of Coal," Vol, XIII, Trudy VNIIGidrouglya, Novokuznetsk, 1968, pp 146-148
"VLIYANIYE POVERKHNOSTNYKH TEKHNOLOGICHESKIKH SOORUZHENIY GIDROSHAKHT NA TEMPERATURU TECHNOLOGICHESKOY VODY I PUL'PUY"

KEY WORDS: Hydraulic Mining, Slurry, Kuzbass

ABSTRACT:

Data of investigations are presented, of the thermal conditions of industrial water reservoirs, of concrete and earthy hydromine sumps, and also of surface trunk lines. Dimensions are given of the earthy sumps for Kuzbass' hydromines according to thermal conditions. (2 illustrations, 1 table and 2 references.

1024R

Isayev, V.V., Delyagin, G.N. Ivanov, V.M."ENERGY UTILIZATION OF COAL PREPARATION TAILS BY THEIR COMBUSTION IN THE FORM OF COAL-WATER SUSPENSIONS IN PREPARATION PLANTS" from theBook "Questions Regarding the Hydraulic Production of Coal", Vol., XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp148-156
"ENERGETICHESKOYE ISPOL'ZOVANIYE OTHODOV UGLEOBOGASHCHENIYA PUTEM SZHIGANIYA V VIDE VODOUGOL'NYKH SUSPENZIY NA UGLEOBOGATITEL'NYKH FABRIKAKH"

KEY WORDS: Coal, Coal Preparation, Combustion

ABSTRACT: The resoucres of flooded tailings from coal preparation are brought out and the requirement of their utilization is shown.

Analysis of the basic characteristics of tailings shows the possibility of their combustion in the form of coal-water suspensions by the torch method when the ash content is $\leq$40%, and over a layer of hard fuel whenthe ash content is higher than 40%.

The results of investigations of preparation tailings' combustion by the latter method in the burner of an industrial steam boiler have shown that the latter method allows an effective utilization of these tailings. (8 illustrations and 16 references).

1025R

Delyagin, G.N., Ivanov, V.M., Katorovich, B.V., Isayev, V.V., Zarayskiy, S.B., Markus, M.N., Parfenov, V.F., Trub, M.G., Ofengenden, N.E., WAYS OF EFFECTIVE BURNING OF FUELS IN THE FORM OF DISPERSED FUEL SYSTEMS AND OUTLOOK FOR THE CREATION OF A FUEL-ENERGY COMPLEX (HYDROMINE-HYDROTRANSPORT-STATE REGIONAL ELECTRIC POWER PLANT)", from the book "Questions Regarding the Hydraulic Production of Coal" VOL. XIII, Trudy VNIIGidrougol, Novokuznetsk, 1968, pp 157-167
"PUTI EFFEKTIVNOGO SZHIGANIYA OBVODNENNYKH TOPLIV V VIDE DISPERGIROVANNYKH TOPLIVNYKH SISTEM I PERSPECTIVY SOZDANIYA TOPLIVO-ENERGETICHESKOGO KOMPLEKSA (GIDROSHAKHTA-GIDROTRANSPORT-GRES)"

KEY WORDS: Hydraulic Haulage, Hydraulic Mining, Coal, Slurry

ABSTRACT: The resources of flooded fuel of USSR are brought out for the year 1965 with outlook through the year 1980.

Basic physico-mechanical and physico-chemical properties of coal-water suspensions are given as the form of a new power fuel.

Analyzed are the technoeconomic indicators of the fuel-power complex, i. e. (mine-coal-transport - State regional electric power plant) according to various variants of production, transport and combustion of coal, including hydrotransport and combustion in the form of coal-water suspensions. (4 illustrations, 4 tables, 6 refs).

1026R

Shelekhov, I.G., Timofeyev, O.V., "CHEMICAL CONSOLIDATION OF DISTURBED ZONES OF A COAL MASSIF WITH THE VIEW OF INCREASING THE STABILITY OF WORKINGS" from the Book "Questions Regarding the Hydraulic Production of Coal." Vol. XIII, Trudy VNIIGidrougol, Novokutnetsk, 1968, pp 168-175
"KHIMICHESKOYE UPROCHNENIYE NARUSHENNYKH ZON UGOL'NOGO MASSIVA S TSEL'YU POVYSHENIYA USTOYCHIVOSTI VYRABOTCK"

KEY WORDS: Hydraulic Mining, Coal, Krasnogorskaya, Pump, Kuzbass

ABSTRACT:

Presented in this paper are the results of investigations by the Leningrad Mining Institute concerning the consolidation of a coal massif around a working with the aid of synthetic resins. On the basis of these results in laboratory, the application in these conditions is recommended with the aid of urea-formaldehyde resin. The description of the technique, basic data of the process and the results of mining experiments concerning the consolidation is given. (3 illustrations, 2 tables and 4 references).

1027

McCain, D.L., "FUTURE SLURRY TRANSPORT OF LARGE PARTICLES BASED ON OPERATIONS WITH COARSE COAL," AIME, SME Preprint No. 75-B-124, Presented at the AIME Annual Meeting Feb. 1975 (Preprint & Actual Paper)

KEY WORDS: Slurry, Coal, Pipeline, Hydraulic Haulage, Humphry # 7 Mine, Appalachia, Robinson Run Mine, Crusher, Feeder, Pump, Mining Plan, Hydraulic Mining, Rock, Open Pit

Abstract

As an example of a successful large particle slurry transport project, some background and a system description are given for a coarse coal slurry line. Comments on equipment design, pumping studies, and future plans are included. Some projections and possibilities for the application of coarse particle slurries for coal and other solids are given.

1028

Evans, H.W., Tate, J., "BLACK THUNDER MINE PLANNING AND THE ENVIRONMENT," AIME, SME Preprint No. 75-F-128, Presented at the AIME Annual Meeting, Feb. 16-20, 1975

KEY WORDS: Coal Mining, Western U.S., Open Pit, Environmental Impact

ABSTRACT: Many reports and papers have been delivered on projects under construction or already in operation, but we believe there are few that have been written about projects yet to be built specifically dealing with advanced mine and environmental planning. This paper describes such planning for Atlantic Richfield Company's Black Thunder Mine.

1029

Mills, T.R., Mallory, C.W., Emerson, D.B., Hopkins, H.T., "ENVIRONMENTAL ISSUES RELATED TO LARGE SCALE COAL REFINERY COMPLEXES," AIME, SME Preprint No. 75-F-121, Presented at the AIME Annual Meeting, Feb. 1975

KEY WORDS: Coal Mining, Water Supply

1030

National Coal Board, "HYDRAULIC TRANSPORT OF COAL AT MARKHAM COLLIERY," Sept. 1961

KEY WORDS: Hydraulic Haulage, Coal, Pipeline, Pump, England, Productivity, Feeder, Slurry, Screen

1031

National Coal Board, "HYDRAULIC TRANSPORT OF COAL AT WOODEND COLLIERY," Sept. 1961

KEY WORDS: Hydraulic Haulage, England, Woodend Colliery, Conveyor, Dewatering, Feeder, Anthracite, Bituminous, Slurry Pump, Screen, Pump, Pipeline,

1032

Universal Nozzle Company, "UNIVERSAL HYDRAULIC GUNS," & letter, 3/26/75

KEY WORDS: Hydromonitors, Hydraulic Mining, Rock, Open Pit

1033

Malhotra, R., "FACTORS RESPONSIBLE FOR VARIATION IN PRODUCTIVITY OF ILLINOIS COAL MINES," Illinois State Geological Survey, Minerals Note # 60, Aug. 1975

KEY WORDS: Coal Mining, Production Rate, Economics, Capital Investment, Cost Per Ton, Productivity, Seam Thickness, Roof, Floor

1034

Goodyear Tire & Rubber Co., "LETTER," June, 1975

KEY WORDS: Hydraulic Haulage, Coal

1035

Manula, C.B., Ramani, R.V., & Falkie, T.V., "A GENERAL PURPOSE SYSTEMS SIMULATOR FOR COAL MINING," Mining Congress Journal, March 1975, pp 52-58

KEY WORDS: Coal Mining, Health & Safety, Roof Support, Methane, Ventilation

1036G

Schwarz, W., "HYDROMECHANISCHE KOHLENGEWINNUNG UND HYDRAULISCHE FORDERUNG AUF DER ZECHE VEREINIGTE POERTINGSIEPEN-CARL FUNKE," Gluckauf, October 1973 pp 1029-1033
"HYDROMECHANICAL MINING OF COAL AND HYDRAULIC TRANSPORTATION AT THE POERTENSIEPEN-CARL FUNKE COAL MINE IN ESSEN, WEST GERMANY"

KEY WORDS: Carl Funke Mine, Germany, Hydraulic Mining, Pitching Coal Bed, Coal, Economics, Hydraulic Haulage

ABSTRACT: Title operation, the first in Western Europe, in steeply dipping coal seams, showed that the described in the paper techniques can be successfully applied to complete mining regardless of dip. Useful life of a level that opened coal reserves of various stratification, can be extended and consequently the costs of access thereto can be reduced. Hydraulic transport of coal enables increase of the mine shaft throughput capacity.

1037

Coal Age, "72 MILE UTAH-COLORADO PIPELINE BEGINS OPERATING," Coal Age, June 1957, pp 142

KEY WORDS: Western U.S., Gilsonite, Pipeline, Slurry, Water Supply, Slurry Pump

1038

Coal Age, "HYDRAULIC MINING WITH ROTARY DRILL UNIT," Coal Age, July 1962, pp 97-99

KEY WORDS: Gilsonite, Mining Plan, Hydraulic Mining, Hydromonitor, Pipeline,

1039

Coal Age, "HYDRAULIC COAL MINING PROJECT IN CANADA," Coal Age, March 1975, pp 30

KEY WORDS: Canada, Hydraulic Mining, Coal

1040

Yu, A. Tobey, Mining Engineering, "BRINGING WESTERN COAL TO MARKET," 'Systems Approach Minimizes Haulage Costs,' Mining Engineering, July 1975, pp. 69-73

KEY WORDS: Coal, Western U.S.

1041

Wenneborg, W.Z., Payne, B.R., Bunnelle, P.R., "SUBTERRANEAN SLURRY MINING APPARATUS," U.S. Patent # 3,747,696, July 24, 1973

KEY WORDS: Hydraulic Mining, Borehole Mining, Hydraulic Hoist, Slurry

ABSTRACT: A bit attached to a tool string is used for drilling a hole from the ground surface into or through a subterranean deposit of granular ore. Within the tool string is a passage through which fluid flows to the bit while drilling. Valve means positioned within the passage are controllable from the ground surface for diverting the flow of fluid from the bit to an eductor located above the bit for mining operation. A nozzle in the tool string, located above the eductor, is controllable from the ground surface to discharge a jet stream of fluid radially outward from the tool string for breaking up the ore matrix. Then the eductor pumps a slurry mixture of fluid and granular ore through the tool string to the ground surface.

1045

Ingersoll-Rand Company, "Letters and information on Multistage Pump" April 1975.

Key Words : High pressure pumps

1046

Wilson-Snyder Pumps, "Horizontal Split Case Centrifugal Pump" Letters & Brochure,

KEY WORDS: Hydraulic Mining, Coal, Pump, Slurry

1047

Stefanko, R., Chopra, I.K., Ramani, R.V., "MINING INFLUENCE ON SIZE CONSIST AND WASHABILITY CHARACTERISTICS OF COAL," AIME, SME Preprint No. 74-F-313, Presented at the SME Fall Meeting, Sept. 1974,

KEY WORDS: Coal, Coal Preparation

ABSTRACT

The results of a recent study on the influence of continuous and conventional mining techniques on the size consist and washability characteristics of coal are presented.

Eight samples, four each from continuous and conventional mining sections were collected. Each sample was screened in seven size fractions, and each size fraction was totally fractionated at five gravities. The data thus collected was statistically examined for the influence significance of mining techniques, size, and gravity on the quality of the mined product. The paper presents the sample collection method, data gathering and analysis procedures, and major conclusions. The study revealed that there are pronounced differences in the products from the two mining systems and that conventional mining yielded a better product in terms of size-consist, and yield, ash, and sulfur in both the raw and washed products.

The results of the study are significant in regard to consideration of resource utilization and conservation, and environmental impacts.

1048

Poundstone, W.N., "HYDRAULIC TRANSPORTATION OF COAL FROM FACE TO PREPARATION PLANT," AIME, SME Preprint No. 74-F-312, Presented at the SME Fall Meeting, Sept. 1974

KEY WORDS: Hydraulic Mining, Robinson Run Mine, Coal, Hydraulic Haulage, Pipeline, Crushing, Pump, Humphrey No. 7 Mine, Slurry, Safety and Health, Productivity

1049

Terchick, A.A., Anderson, J.C., King, D.T., "THE APPLICATION & UTILIZATION OF THE ENVIRO-CLEAR THICKENER IN A U.S. STEEL COAL-PREPARATION PLANT," Presented at the SME Fall Meeting, Sept. 1974, AIME, SME Preprint No. 74-F-343

KEY WORDS: Coal Preparation, Water Clarification

1050

Hanks, R.W., & Ricks, B.L., "TRANSITIONAL AND TURBULENT PIPEFLOW OF PSEUDOPLASTIC FLUIDS," Journal of Hydronautics, Vol. 9, No. 1, Jan. 1975, pp 39-44

KEY WORDS: Slurry, Pipeline, Rock

ABSTRACT: A modified mixing length model is developed which permits the computation of velocity distributions and frictional pressure losses for transitional and turbulent pipe flow of viscous, inelastic non-Newtonian fluids. The rheological model assumed is the empirical power law. The method represents an improvement over previous workers' results. The data of several authors, most of which could not be harmonized by previous models, are shown to be fully compatible with the present method. The Dodge-Metzner-Reed, "generalized Reynolds number" method of correlation is shown to be inappropriate for transitional and turbulent flow. It is further shown that acceptable models of transitional and turbulent flow must correctly account for rheological behavior of the fluid. The proposed method expressly excludes viscoelastic effects. The method is suitable for engineering pipeline design computations and requires only a knowledge of power-law index n to permit computation of velocity profiles and friction factors.

1053

Mining Engineering, "DEEP OCEAN FLOOR NODULE MINING - FIRST GENERATION TECHNIQUES ARE HERE," Mining Engineering, April 1975, pp 47-52

KEY WORDS: Hydraulic Hoist, Airlift

1054

Mechanical Engineering, "IMPROVING EFFICIENCY OF MULTISTAGE CENTRIFUGAL PUMPS," Mechanical Engineering, December 1970, pp 40-41

KEY WORDS: Pump

1055

FMC, "BROCHURE ON SCREENS," 1975

KEY WORDS: Screens

TRANSLATED

1056R

Boiko, V.A., Parinskiy, Yu.P., "HYDRAULIC CAPABILITY FOR UNDERGROUND MINING OF COAL," 192 pages, Katalog-Spravochnik, Moscow, 1965, this book has been broken down by chapters, Bibliography, Table of Contents, & Introduction

KEY WORDS: Coal, Hydraulic Mining, Hydraulic Haulage, Hydromonitors, Road header, Rock, Slurry, Kuzbass, Donbass, Pipeline, Bibliography, Pump

TRANSLATED

1057R

Boiko, V.A., Parinskiy, Yu.P., "MACHINERY AND EQUIPMENT FOR STOPINGS," Chapter I of the book "Hydraulic Capability for Underground Mining of Coal," Moscow, 1965,

KEY WORDS: Hydromonitor, Water Supply, Pipeline, Kuzbass, Pump, Coal, Hydraulic Mining, Hydraulic Hoist

TRANSLATED

1058R

Boiko, V.A., & Parinskiy, Yu.P, "MACHINERY AND EQUIPMENT FOR DRIVING DEVELOPMENT WORKINGS," Chapter II from the book, "Hydraulic Capability for Underground Mining of Coal, Moscow, 1965

KEY WORDS: Roadheader, Production Rate, Electrical Power, Hydraulic Haulage, Disintegrate, Hydraulic Mining, Kuzbass, Water Supply, Roof, Pump, Donbass, Coal

TRANSLATED

1059R

Boiko, V.A. & Parinskiy, Yu.P., "EQUIPMENT FOR HYDROTRANSPORT AND HYDRAULIC HOISTING," Chapter III from the book, "Hydraulic Capability for Underground Mining of Coal, Moscow, 1965

KEY WORDS: Hydraulic Hoist, Hydraulic Haulage, Productivity, Slurry, Water Supply, Pipeline, Pump, Feeder, Donbass, Kapital'naya of the Proletarskugol # 6, Crusher, Screen, Rock, Electrical Power, Coal

TRANSLATED

1060

Boiko, V.A., Parinskiy, Yu.P., "EQUIPMENT FOR WATER SUPPLY," Chapter 4 from the book "HYDRAULIC CAPABILITY FOR UNDERGROUND MINING OF COAL," Katalog-Spravochnik, Moscow, 1965

KEY WORDS: Pump, Coal, Hydraulic Hoist, Hydraulic Mining

1061R

Boiko, V.A., Parinskiy, Yu.P., "EQUIPMENT FOR DEWATERING OF COAL," Chapter 5 of the book "Hydraulic Capability for Underground Mining of Coal," Katalog-Spravochnik, Moscow, 1965, pp 117-126
"OBORUDOVANIE DLYA OBEZVOZHIVANIYA UGLYA"

1062R

TRANSLATED

Boiko, V.A., Parinskiy, Yu.P., "AUXILIARY TRANSPORT EQUIPMENT," Chapter 6 from the book, "Hydraulic Capability for Underground Mining of Coal," Katalog-Spravochnik, Moscow, 1965

KEY WORDS: Monorail, Hydraulic Mining, Coal

1063R

Boiko, V.A., Parinskiy, Yu.P., "AUXILIARY EQUIPMENT," Chapter 7 of the book "Hydraulic Capability for Underground Mining of Coal," Katalog-Spravochnik, Moscow, 1965, pp. 152-163
"Vspomogatel'noe Oborudovanie"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery

1064R

TRANSLATED

Boiko, V.A., Parinskiy, Yu.P., "PIPELINE EQUIPMENT OF WATER AND SLURRY CONDUITS," Chapter 8 from the book "Hydraulic Capability for Underground Mining of Coal," Katalog-Spravochnik, Moscow, 1965

KEY WORDS: Pipeline, Slurry, Hydraulic Mining, Pump, Monitor, Kuzbass Valve, Coal

1065

Coal Week, "CANADIAN PIPELINE SAVES $1.60 TO $4.00 PER TON," Coal Week, March 31, 1975, p. 2

KEY WORDS: Pipeline, Coal, Slurry

1066

Leven, P., "PUMPING: A GOOD WAY TO DISPOSE OF COAL PLANT REFUSE," Reprint from Coal Mining and Processing, July 1966

KEY WORDS: Coal, Dewatering, Hydraulic Haulage, Pump

1067

Hazleton, "PUMP BROCHURES," June 1975 (and letter)

KEY WORDS: Pump, Coal, Slurry, Hydraulic Haulage

1068

Oil and Gas Journal, "NEW DRILLING LAB TO CONDUCT FULL-SCALE TESTS," Oil and Gas Journal, January 1975, p. 50

KEY WORDS: Jet Cutting, Rock, Jet Drilling

1069

Wall Street Journal, "KAISER RESOURCES SETS 52% PRICE RISE ON COAL FOR JAPAN," Wall Street Journal, March 1975

KEY WORDS: Canada, Coking Coal, Economics, Cost Per Ton

1070

Newsweek, "THE METHANE MINERS," Newsweek, March 3, 1975, page 54

KEY WORDS: Methane, Coal, Appalachia

1071

Schenck, G.H.K., "MECHANIZED ROCK EXCAVATION IN MINING," From "Proceedings, Vol. 1, Chapter 62, RETC, June 1974, pp 937-954

KEY WORDS: Rock, Continuous Miners, Roadheaders

1072

Cameron Engineers, Inc., "MAJOR COAL HOLDINGS," Map, April 1975

KEY WORDS: Coal, Western U.S.

INTRODUCTION, REF., + TABLE OF CONTENTS TRANSLATED 1073R

Kodentsov, A.Ya., "PROVEDENIE VOSSTAYUSHCHKH GORNYKH VYRABOTOK SPOSOBOM GIDROMEKHANIZATSII," Opyt Promyshlennosti Donbassa, Izdatel'stvo Donbass, Donetsk, 1972, pp 86
"CONDUCTING UP RAISE MINING WORKINGS BY THE HYDROMECHANIZATION METHOD"

KEY WORDS: Bibliography

TRANSLATED 1074R

Kodentsov, A.Ya., "MECHANICAL FACILITIES FOR DRIVAGE OPERATIONS," Chapter 1 of Book 1073 "Conducting Up Raise Mining Workings by the Hydromechanization Method," 1972, pp 3-27

KEY WORDS: Hydraulic Mining, Disintegration, Hydromonitor, Coal, Borehole Mining, Samsonovskaya # 1, Donbass, Artema, Rock,Productivity, Economics, Electrical Power, pump, Roadheader, Explosives, up-raise mining, Mine Development

TRANSLATED 1075R

Kodentsov, A.Ya., "DEHYDRATION OF COAL, ROCKS, AND CLARIFICATION OF RETURN WATER IN UNDERGROUND CONDITIONS," Chapter 2 of "Conducting Up Raise Mining Workings by the Hydromechanization Method," Terraspace Survey Library # 1073, pp 27-45, 1972

KEY WORDS: Hydraulic Mining, Coal, Rock, Dewatering, Coal Preparation , Water clarification, Screen, Settling, Hydraulic Stowing, Yanovskiy Mine, Tomashevskaya-Yuznaya mine, Toskovka mine, Slurry, Mariya Glubokaya mine, Samsonorskaya mine, Karhonit No. 4-6 mine, Donbass

TRANSLATED

1076R

Kodentsov, A.Ya., "HYDROMONITOR WASHOUT OF LEADING CAVITIES AS A NEW METHOD TO DEAL WITH SUDDEN OUTBURSTS OF COAL AND GAS," Chapter 3 of "Conducting Up Raise Mining Workings by the Hydromechanization Method," Terraspace Survey Library No. 1073, pp 45-57, 1972

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Disintegration, Safety, Methane, Roof Falls, Borehole mining, Up-raise mining, Pioneer D-2 mine, Donbass, Samsonovskaya No. 1 mine, Ordzhonikidzeugol No. 4 mine

TRANSLATED

1077R

Kodentsov, A.Ya., "TECHNOLOGY FOR CONDUCTING UP RAISE WORKINGS BY HYDROMECHANIZATION," Chapter 4 of "Conducting Up Raise Mining Workings by the Hydromechanization Method," Terraspace Survey Library No. 1073, pp 58-78, 1972

KEY WORDS: Roof, Hydraulic Mining, Tomashevskay-Yuzhnaya, Toshkovka, Mariya Glubokaya, Donbass, Rock, Hydromonitor, Dewatering, Water Clarification, Water Supply, Slurry, Coal, Upraise Mining, Hydraulic Haulage, Sluices, Disintegration, Karbonit, Conveyor, Productivity, Roadheader, Samsonovskaya # 1, Safety, Explosives, Pump, Pitching Coal Beds, Floor, Coal Hardness, Mine Development

1078R

TRANSLATED

Kodentsov, A.Ya., "TECHNOECONOMIC BASIS AND RECOMMENDED TECHNOLOGY FOR CONDUCTING UP RAISE MINING BY HYDROMECHANIZATION," Chapter 5 of the book "Conducting Up Raise Mining Workings by the Hydromechanization Method," pp 78-86, Terraspace Survey Library No. 1073, 1972

KEY WORDS: Upraise Mining, Mariya Glubokaya, Samsonovskaya # 1, Coal, Rock, Productivity, Hydraulic Haulage, Toshkovka, Karbonit, Capital Investment, Hydraulic Stowing, Economics, Hydromonitor, Hydraulic Mining, Dewatering, Water Clarification, Tomashevskaya-Yuzhnaya, Pitching Coal Seams, Explosives.

1079

Cooley, W.C., "CORRELATION OF DATA ON LIQUID JET CUTTING OF ROCKS AND OTHER MATERIALS," Prepared for the National Science Foundation/RANN, January 1975

KEY WORDS: Jet Cutter

ABSTRACT: A method has been developed using dimensionless parameters to correlate data on the depth of slots cut in materials by traversing high-pressure continuous liquid jets. It is a generalization of an equation presented by Nikonov and Goldin for application to rocks and coal. In addition to the effect of jet pressure and traverse velocity, it permits taking account of the jet and material densities, standoff diatance from the nozzle to the material surface, and the nozzle discharge coefficient. The effect on jet coherence of nozzle Reynolds number and the effect of turbulence and vorticity produced by the feed system at the inlet of experimental nozzles have not been included, although they are believed to be significant factors. It is found that data on slot depth in nozzle diameters can be correlated approximately by a single equation for metals and by a similar equation (a factor of 4 larger) for rocks, coal, concrete, plastics, and ice.

1080

National Science Foundation, "A PROGRAM OF RESEARCH, DEVELOPMENT, AND DEMONSTRATION FOR ENHANCING COAL UTILIZATION TO MEET NATIONAL ENERGY NEEDS," Results of the Carnegie-Mellon University Workshop on Advanced Coal Technology, PB-226-631, October 1973

KEY WORDS: Coal Mining

1081

Stanford Research Institute, "THE POTENTIAL FOR DEVELOPING ALASKAN COALS FOR CLEAN EXPORT FUELS," Phase I, Prepared for the Office of Coal Research, December 1974, PB-238-539

KEY WORDS: Coal, Western U.S.

ABSTRACT: The study objective is to determine the economic feasibility of a coal conversion facility using the large Beluga coal reserves of Alaska. Although this study is site-related and one of a kind research, the data generated should have general application to coal resource development in other western coal mining areas. Even though the Alaskan reserves are somewhat remote from markets for coal and coal-derived fuels, the proximity of the recoverable coal reserves to deep water ports - unique to Alaska and Washington - promises some interesting and potentially low-cost transportation options for development.

1082R

Borts, M.A., Izmanlova, I.S, Stepanova, D.I., "NOVYY GRANULIROVANNYY FLOKULYANT OKA," Obogashchenie I Briketirovanie Uglya, # 2, 1975, pp 19-21
"A NEW GRANULATED FLOCCULANT 'OKA'"

KEY WORDS: Dewatering, coal, coal preparation

ABSTRACT:

The paper described a new water-soluble flocculant OKA, which was investigated with the view of widening the assortment of flocculants for their use in coal industry. The described flocculat OKA is water-soluble polymer, of which the structural formula is given. It is precipitated during synthesis in the form of gray-green granules. Its efficiency is emphasized.

TRANSLATED

1083R

Gubin, V.V., Denisov, S.N., "ISSLEDOVANIE NADEZHNOSTI GIDROTRANSPORTA V USLOVIYAKH SHAKHTOURAVLENIYA "YUBILENOE" KOMBINATA 'YUZHKUZBASSUGOL'," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 1, 1975, pp 19-21, "HYDRAULIC PRODUCTION OF COAL INVESTIGATION OF THE RELIABILITY OF HYDRO-TRANSPORT IN CONDITIONS OF MINE MANAGEMENT 'YUBILEYNOYE' OF THE 'YUZH-KUZBASSUGOL' COMBINE"

KEY WORDS: Ubileinoye, Kuzbass, Hydraulic Haulage

1084

Hume, D.B., "LETTER TO DR. W. C. COOLEY," 4/22/75

KEY WORDS: Hosmer-Wheeler Mine, Canada, Hydraulic Mining

1085R

Grishko, A.P., Polezhaev, A.V., Grishko, A.P., "PARAMETRICHESKOE REZERVIROVANIE ZEMLESOSOV NA GIDROMEKHANIZIROVANNYKH USTANOVKAKH KAR'EROV," Dobycha Uglya Otkrytym Sposobom, # 11, 1974, pp 16-18

"PARAMETRIC RESERVATION OF SUCTION DREDGES IN HYDROMECHANIZED INSTALLATIONS OF QUARRIES"
KEY WORDS: Open pit, hydraulic haulage, coal mining

ABSTRACT:

In the process of its exploitation, a suction dredge's output rate decreases because of the deterioration of operating conditions resulting from the wear of the flow-through part and the decrease in work infallibility. Thus, to assure the assigned output rate during the working season, it is necessary to provide for power reserve of suction dredges. This reserve may be either per-part, when each dredge or group of dredges is provided by machines of analogous power, or parametric, when the assigned output rate is assured due to beforehand increase of working machine's parameters. Based on the above considerations, this paper undertakes complex calculations of such a parameter.

The graph shows the dependence arrived at, of expedient parametric reserve on the relative duration of dredge's repair and on relative geodesic lift of the hydraulic installation.

As is shown by the technoeconomic analysis, the assurance of optimum between-repair resources and parametric reserves allows to increase the output rate of hydraulic installations by 18 to 32%, at corresponding lowering of outlays on the development of opening by hydromechanization method.

This paper deals with surface, open-pit mining, and does not relate to undergroung hydraulic mining.

1086

Ernest Krajeski, Mitre Corp., "COAL SUPPLY," Panel # 4 Energy Self-Sufficiency, How Much and How Soon?, Symposium and Workshop, held by the Mitre Corp., September 1974, pp 181-186

KEY WORDS: Productivity, Coal Mining, Pipelines, Water Supply

1087

International Geomarine Corporation, "PROJECT THUNDERBIRD - AN IN SITU COAL-ENERGY LEASE POSITION AND RESEARCH PROGRAM IN THE POWDER RIVER BASIN OF WYOMING," Wold & Jenkins, Casper, Wyoming, 1970

KEY WORDS: Coal, Western U.S.,Hydraulic Mining

ABSTRACT: Project Thunderbird is a unique underground coal-energy package designed for a research and development program. The Project gives participants a leasehold on more energy than exists in all the proven oil reserves in the U.S. today. Many energy companies are beginning to look at in-situ conversion of coal on an experimental basis. Project Thunderbird is located in the most attractive area in this country for such experimentation, and has available water, excellent transportation facilities, and a suitable cultural setting.

1088

Bureau of Mines, "WORK STATEMENT FOR 'A STUDY INVOLVING DESIGN AND DEVELOPMENT OF A COAL INJECTOR FOR COARSE SLURRY TRANSPORT,'"

KEY WORDS: Hydraulic Haulage, Coal, Coal Mining, Pipeline, Feeder, Pump, Continuous Miner, Hydraulic Hoist, Wear and Abrasion

1089R

Dokukin, A.V., Bukhgol'ts, V.P., Dinershteyn, V.A., "OB AVTOMATIZATSII GIDROZAKLADOCHNYKH USTANOVOK NA SHAKHTAKH," UGol # 2, 1975, pp 36-39

"ON THE AUTOMATION OF HYDRAULIC STOWING INSTALLATIONS IN MINES"

KEY WORDS: Hydraulic Stowing, Coal Mining

1090R

Khaydakin, V.I., "ISPYTANIYA AVTOMATIZIROVANNOGO KOMPLEKSA STREKHPRODUKTOVYMI GIDROTSIKLONAMI NA TSOF 'TKVARCHEL'SKAYA'," Obagashchenie I Briketirovanie Uglya, # 12, 1974, pp 5-7

"TESTS OF AN AUTOMATED COMPLEX WITH THREE-PRODUCT HYDROCYCLONES IN THE CENTRAL PREPARATION PLANT 'TVARCHEL'SKAYA'"

KEY WORDS: Dewatering, Coal, Coal Preparation, Slurry

1091R

Baydin, P.T., Nikitchenko. I.A., Tarlykov, A.I., "SISTEMA AVTOMATICHESKOGO REGULIROVANIYA RABOTY SGUSTITEL'NYKH GIDROTSIKLONOV," Obogashchenie I Briketirovanie Uglya, # 12, 1974, pp 14-15

"SYSTEM OF AUTOMATIC REGULATION OF WORK OF THICKENING HYDROCYCLONES"

KEY WORDS: Dewatering, Coal, Coal Preparation, Slurry

1092

Wilson-Snyder, "CENTRIFUGAL PUMP PERFORMANCE TESTING & REFINING PETRO-CHEMICAL INDUSTRIAL PROCESS," Brochures, ADWS:18-74 and ADWS:1-66

KEY WORDS: Pump

1093

DuPont Company, "FASLOC RESIN ANCHORED BOLTS," Pamphlet & Letters, June 1974.

KEY WORDS: Roof support, Rock bolts

1094

Fairhurst, C. & Singh, B., "ROOFBOLTING IN HORIZONTALLY LAMINATED ROCK," Reprint from Engineering and Mining Journal, Feb. 1974

KEY WORDS: Roof Support

ALTHOUGH ROOFBOLTS ARE EXTENSIVELY USED for support of stratified mine roof rock, the mechanism by which the bolts provide support is poorly understood. The need for a better appreciation of roofbolt action is underlined by the fact that roof falls are the single largest cause of underground mining fatalities. This paper discusses qualitatively the effect of bolting on the stability of laminated roof rock and indicates why the increasingly popular full-column, resin-grouted bolts may often be superior to mechanically anchored bolts in practical application.

1095

Anderson, R.B., "USE OF RESIN-ANCHORED ROOF BOLTS IN ADVERSE CONDITIONS," Mining Congress Journal, Jan. 1974

KEY WORDS: Roof Support

1096

McCormick, J.A., Hollop, E.E., Debevec, W.J., " SURVEY OF RESIN BOLTING INSTALLATIONS," Mining Congress Journal, July 1974

KEY WORDS: Roof Support

1097

Center for Prof. Advancement, "HYDRAULIC CONVEYING," Course, Aug. 1975

KEY WORDS: Hydraulic Haulage, Conveyor

1098

Kemmerer Coal Company, "CROSS SECTION OF COAL SEAMS NEAR KEMMERER, WYOMING," 1975.

KEY WORDS: Coal, Seam Thickness

1099R

Il'in, V.I., Tsulauf, Ya.K., "STOIMOSTNYE POKAZATELINA GIDROZAKLADOCHYE RABOTY DLYA USLOVIY SHAKHT PROKOP'EVSKO-KISELEVSKOGO RAYONA," Proektirovanie I Stroitel'stvo Ugol'nykh Predpriyatiy, # 1, 1975, p. 16
"COST INDICATORS OF HYDRAULIC STOWING WORKS FOR THE CONDITIONS OF PROKOP'YEVSKIY-KISELEVSKIY REGION'S MINES"

KEY WORDS: Hydraulic Stowing, Coal Mining, Kuzbass, Cost Per Ton, Economics

1100

Parkes, D.M., Grimley, A.W.T, "HYDRAULIC MINING OF COAL," Paper presented at the 1975 Coal Convention, Pittsburgh, Pa., May 7, 1975

KEY WORDS: Kaiser Resources Hydraulic Mine No. 1, British Columbia, Hydraulic Mining, Coal Mining, Pitching Coal Bed, Flume, Feeder-Breaker, Monitor, Safety, Pump, Air Flow, Productivity, Slurry, Dewatering, Screen, Continuous Miner, Roof Support, Seam Thickness, Pipeline, Floor, Roof, Coal Dust, Explosion Hazard, Fording Mine

ABSTRACT:

In 4 1/2 years of operation the Hydraulic mine of Kaiser Resources Ltd., Sparwood, British Columbia, has developed a level of production and a safety record of the highest order. Production from the mine using one monitor section has risen to 900,000 tons of raw coal per year with about 130 men underground. One million tons per year are expected to be produced in 1975 using the same equipment. The productivity is about 25 tons per manshift overall.

In the safety field, the Michel mine, which is mostly hydraulic, has won the Ryan Trophy for the best accident rate among underground coal mines in Canada.

Where thickish seams on gradients over 7 degrees exist with fair roofs and floors, then this system offers an attractive system of underground mining. Even if an underground pumping system is necessary, the capital and operating costs compare very favourably.

Considerable improvements have already been made and much more will be done in this comparatively new mining system. With the help of the technology developed by Japanese and Soviet engineers, particularly in the field of coal transportation, new solutions to the problems of coal mining are at hand.

1101

Industrial Research, "LOWER SULFER LEVELS IN LIQUEFIED COAL," Industrial Research, July 1975, pp. 39

KEY WORDS: Coal Preparation

1102

Summers, D.A., Heincker, W., Eck, R.S., Raghavan, S.H., "EXCAVATION OF COAL USING A HIGH PRESSURE WATER JET SYSTEM," Final Report, for the Bureau of Mines, Contract HO232064, Nov. 1974

KEY WORDS: Coal Mining, Longwall, Jet Cutting

ABSTRACT: Experiments are described which investigate the potential of high pressure water jets to act as the cutting unit for a longwall mining machine. The results of the experimentation showed that at lower pressure, larger diameter jet was more effective than the converse, and that the faster the jet was traversed, the more efficiently it mined coal. The contra-oscillation of adjacent cutting arms was found to be an effective method of reducing traverse distance. Dual orifice nozzles, with a diverging angle of 20 degrees between the jets were found most effective in cutting the coal to provide access for the cutting head.

The subsequent design of the mining machine, incorporating these ideas, is detailed and the procedure to be followed in constructing the individual cutting heads and the overall machine is given. The machine is designed to produce 6 tons per minute when operating in a 5 ft 4 in. high seam, with a 2 ft depth of cut. Fifty gallons of water will be used each minute, and the machine will require a 400 hp motor as the prime power source.

TRANSLATED 1103R

Shenderovich, I.M., "SISTEMNYI PODKHOD K OPREDELENYYU RATSIONAL'NYKH ZNACHENIY PARAMETROV TEKHNOLOGICHESKIKH PROTSESSOV," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 2, 1975, p 6
"METHODICAL APPROACH FOR THE DETERMINATION OF RATIONAL VALUES OF TECHNOLOGICAL PROCESSES' PARAMETERS,"

KEY WORDS: Coal Mining, Shortwall, Productivity

1104R

Ivanov, P.N., Kotkin, A.M., "OSNOVNYE NAPRAVLENIYA RAZVITIYA OBOGASHCHENIYA KAMENNYKH UGLEY I ANTRATSITOV NA UKRAINE," Ugol Ukrainy, # 2, 1975
"BASIC DEVELOPMENT TRENDS OF BITUMINOUS COALS' AND ANTHRACITES' PREPARATION IN THE UKRAINE"

KEY WORDS: Coal Mining, Dewatering, Bituminous, Coal, Anthracite, Coal Preparation

1105R

Tarasenko, V.V., "NOVAYA TEKHNOLOGIYA PREDVARITEL'NOGO OSLABLANIYA UGOL'-NOGO MASSIVA NA ANTRATSITOVYKH PLASTAKH," Ugol Ukrainy, # 2, 1975, pp 14-16

"NEW TECHNOLOGY OF THE ADVANCE WEAKENING OF A COAL MASSIF CONSISTING OF ANTHRACITE SEAMS

KEY WORDS: Water Infusion, Coal Mining, Coal, Anthracite, Explosives

ABSTRACT

Advance weakening of a coal massif contributing to intensification of coal mining of feebly-jointed coals has a particular importance in case of anthracite seams, whose resistance to cutting is over 150 kgs/cm^2.

There are four known basic methods of advance coal massif loosening:
- blasting with sandy-clayey tamping of holes;
- flameless blasting;
- water infusion into the seam under high pressure;
- utilization of blasting work technology under excess water pressure with its advance infusion into the coal massif.

The first method results in overpulverization of coal, lowering of anthracite grade and negative influence on host rocks. The flameless blasting method is of little efficiency and high cost. The advance loosening of the coal massif by water infusion into the seams decreases by 40 to 45% the resistance of the coal massif at shearing by a the USB-installation. However, this method is limited to coals with specific water absorption of more that 0.0035/cm/atm.s.

As is shown by numerous experimental works in USSR and foreign mines, the utilization of technology of blastingworks at surplus water pressure allows the lowering of coal resistance to cutting to the required norms practically on all anthracite seams and sharply broaden the region of application of shave (planer) installations.

The author presents in Fig.1 a scheme of water injection into the seam by a semi-stationary pumping installation through the short blast holes and in Fig.2 the construction of the blasthole charge itself. He then describes in considerable detail the essence of blasting works under excess or surplus pressure of water.

In conclusion it was found that the loosening of a coal massif by blasting works under hydraulic pressure permitted the use of the planer UST-2a in a seam with coal's resistance to cutting up to 230 kgs/cm and assure a daily loading of 450 to 500 tons. This method is more effective with advance loosening than without it. For a broad use of this technology, a mass production of waterproof explosives must assured, the latter being developed by Maknii. It must be pointed out that because of difficulty to drill holes conditioned by the overall dimensions of the conveyer, this technology cannot be recommended in longwall faces with seams less than 1 m thick.*

1106R

Kolokolov, O.V., "O GEOLOGICHESKIKH OSOBENNOSTYAKH VYBROSOOPASNYKH PLASTOV I O VYBORE SPOSOBA UPRAVLENIYA GORNYM DAVLENIEM,"
"ON THE GEOLOGICAL PECULIARITIES OF OUTBURST-PRONE SEAMS AND A CHOICE OF A METHOD TO CONTROL MINE PRESSURE," Ugol Ukrainy, # 2, 1975, pp. 42-44
KEY WORDS: Hydraulic Stowing, Coal, Coal Mining, Safety & Health, Roof, Roof Support

SUMMARY

This paper is a response of the author to the earlier paper by A. F. Shak and S. V. Mirer entitled "Influence of the composition and structure of rocks of the main and immediate roof on the hazard of outburst-prone coal seams", (Ugol' Ukrainy, No.2, 1974).

In the present paper the authors bring forth the results of detailed analysis of cases of sudden outbursts for the past 20 years, taking into account the ratio of the force of collapsing rocks of the immediate roof h to that of the seam m, and also that of the lithological composition of the rocks of immediate roof to that of the main roof. In fact, the ratio h/m may be used as one of the criteria available for the estimate of outburst hazards. There is, of course, an influence of other factors inducing the sudden outbursts, such as depth of the working, the structure, gas content, angle of pitch and the geological disturbance of the seam, coal metamorphism etc. The present authors refer to figure 2 of the former paper, of which it is difficult to comprehend the remark without having it on hand. However, judging from that graph, the maximum seismic activity and of the specific weight of the quantity of values of avrage activity correspond to the ratio h/m = 2, the cause of which authors do not explain.

There is a long discussion with a number of concrete examples on the role of hydraulic stowing of the goaf to control mine pressure. The conclusion is that both hydraulic and self-flowing hydraulic stowing may serve as an effective measure to prevent sudden outbursts of gas and coal and to the decrease in the settling of the ground surface.

There is a clear dependence of the degree of hasard of outburst-prone seams on the direction of their working. There is also a different degree of hasard for the same seam on different wings of an anticline. Tables indicate concrete examples to that effect.

On the whole, the conclusion of this extremely complex paper is that during exploitation of outburst-prone seams, alongside with accounting for the composition and structure of the rocks of the immediate and main roof, the choice of the method to control mine pressure should be tied up with the order and direction of seam exploitation on the wings of the mine field and of the anticline as a whole.

1107R

Yur'ev, A.P., Privalov, N.I., Brusentsev, G.K., "OPREDELENIE EKONOMICHESKO GO USHCHERBA OT PODZEMNYKH AVARIY," Ekonomika Ugol'noy Promyshlennosti, # 2, 1975, "DETERMINATION OF ECONOMIC LOSS RESULTING FROM UNDERGROUND ACCIDENTS" pp. 26-27

KEY WORDS: Coal Mining, Safety & Health

ABSTRACT:

This paper discusses the various sources of accidents occurring in underground mines, emphasizing the difficulties to arrive at accurate estimates. Tables 1 and 2 show the magnitude of direct losses from various forms of accidents, such as fires, gas and coal dust explosions, sudden outbursts of gas and coal, flooding, collapse of workings, various accidents in coal prospects and on the surface installations, such as preparation plants etc...

The conclusion is that the absence of a unique direction in taking account of the total economic losses results in unreliability of the annual official indicators, which often fail to reflect the real situation.

1108R

Fomin, I.K., "GIDRAVLICHESKIY IZMERITEL' SKOROSTI POTOKOV ZHIDKIKH SPED," Gornye Mashiny I Avtomatika, # 2, 1975
"HYDRAULIC MEASURER OF FLOW VELOCITY OF LIQUID MEDIA"

KEY WORDS: Slurry

1109R

Maryuta, A.N., Mladetskiy, I.K., Novitskiy, P.A., "VLIYANIE SKOROSTI PUL'PY NA EE MAGNITNUYU VOSPRIIMCHIVOST'," Gornyy Zhurnal, # 2, 1975, pp 154-159
"INFLUENCE OF THE SPEED OF SLURRY ON ITS MAGNETIC SUSCEPTIBILITY"

KEY WORDS: Slurry

TRANSLATED 1110R

Petrakov, A.I., "IMPUL'SNYE VODOMETY DLYA RAZRUSHENIYA GORNYKH POROD," Ugol Ukrainy, # 3, 1975, pp 39-41
"PULSED WATER CANNONS FOR THE DISINTEGRATION OF ROCKS"

KEY WORDS: Water Cannon, Roadheader, Rock, Disintegration, Mining Machinery, USSR

TRANSLATED 1111R

Timoshenko, A.T., "VOPROSY PROIZVODSTVENNIKOV - V TSENTRE VNIMANIYA UCHENYKH Ugol' Ukrainy, # 3, 1975, pp 23
"QUESTIONS BY PRODUCERS AT THE CENTER OF ATTENTION OF SCIENTISTS,"

KEY WORDS: Coal, Coal Mining, Methane, Safety & Health, USSR, Water Infusion

1112R

Gavrilenko, V.V., Kerznerman, D.K., Nemlienko, O.P., "ANALIZ SAMOPROIZVOL'-NYKH OTKLYUCHENIY TURBOKOMPRESSOROV GIDROSHAKHTY 'KRASNOARMEYSKAYA'," Ugol Ukrainy, # 3, 1975, pp 47-48
"ANALYSIS OF SPONTANEOUS SWITCHING OFF OF THE TURBOCOMPRESSORS OF THE 'KRASNOARMEYSKAYA HYDROMINE'"

KEY WORDS: Hydraulic Hoist, Airlift, Coal, Hydraulic Mining

BRIEF SUMMARY

This paper discusses only the electric power equipment of the mine in question, which is one of the most power-fitted out of all Donbass mines.

Coal is delivered from the mine by means of airlift hoisting for the operation of which 10 turbo-compressors K-500-61-1 are installed with drive from a synchronous electric motor CTM3500-2. During the last few years cases of spontaneous switching off were observed without visible causes or accidents.

To deal with the situation and ensure uninterrupted operation, a modification of electric power feed is recommended.

1113

Coal Age, "ARE COAL SLURRY PIPELINES INFLATION-PROOF?" Coal Age, April 1975, p. 194

KEY WORDS: Slurry, Pipeline, Coal

1114

Belton, A., "EVALUATING UNDERGROUND COAL HAULAGE SYSTEMS," Paper Presented at the 1975 Mining Convention, Pittsburgh, Pa., May 1975

KEY WORDS: Safety, Conveyor, Hydraulic Haulage, Coal

ABSTRACT: The mining engineer and management that are responsible for designing, selecting, and constructing and operating haulage systems must consider a variety of factors that affect each method. This paper treats each phase of the evaluation from the explosion program to making final cost comparison of each system. A haulage system must comply with governmental regulations, must be safe, must be dependable, have some flexibility, cope with underground physical conditions; furthermore, mine labor must be able to install and maintain the system economically.
Guidelines for selecting underground haulage for a new mine using proven equipment are given. Advantages and disadvantages of belt conveyor haulage and track haulage are listed. Finally, a flow diagram shows the steps in the selection of underground haulage system.

1115

Boky, B., "NEW METHODS OF WORKING COAL DEPOSITS UNDERGROUND," chapter 15 of the book "Mining," MIR Publishers, Moscow, 1967

KEY WORDS: Hydraulic Mining, Monitor, Coal

1116

Whitehead, K.L., "DUST CONTROL ON LONGWALL SHEARERS," Paper presented at the 1975 Coal Convention, May 6, 1975

KEY WORDS: Longwall mining, Coal Dust, Coal Mining

ABSTRACT: The reduction of respirable dust levels would result in a significant improvement for both the health and safety of the miners and the operating efficiency of the mine. BCR is currently conducting a project funded by the U.S. Bureau of Mines to determine the feasibility of applying bit-flushing sprays to a longwall shearer. Two new spray systems are being compared to the standard drum-mounted sprays currently in use, and to a static spray system of the type originally used on the miner. The new systems consist of spray nozzles mounted in the bit blocks in front of and behind the bits and directed at the bits.

Although tests have not been completed, preliminary analysis indicates that the standard sprays and the test nozzles mounted in front of the bits are nearly equivalent, and those mounted behind the bits are least effective. It is anticipated the higher operating pressures planned for future tests will improve the performance of the bit-flushing systems.

1117

Gregory, M.J., "PROBLEMS ASSOCIATED WITH CLOSING PLANT WATER CIRCUITS," Paper presented at the 1975 Coal Convention, May 1975

KEY WORDS: Dewatering, Water Supply, Water Pollution, Settling, Coal Preparation

ABSTRACT: There has been a growing concern in the mining industry over proposed legislation for water quality standards from preparation plants. The biggest concern is the fact that all water circuits may have to be closed. No discharge of process water will be allowed. If these proposals are enacted, it is predicted that only 40 percent of the coal preparation plants will be affected but this will probably be more. Some of the alternatives available to close plant water circuits are as follows: impoundment; underground disposal; mechanical dewatering; self incineration; chemical mixing; spherical agglomeration; pelletizing; and thermal drying. Each alternative offers mechanical operating advantages and disadvantages along with operating and capital cost considerations.

1118

Komar, C.A., Overbey, W.K., Pasini, J., "DIRECTIONAL PROPERTIES OF COAL AND THEIR UTILIZATION IN UNDERGROUND GASIFICATION EXPERIMENTS," Bureau of Mines Advancing Energy Utilization Program, Technical Progress Report, # 73, Nov. 1973

KEY WORDS: Coal, Permeability and Porosity, Coal Hardness

ABSTRACT:

Renewed interest in the underground gasification of coal evolves from comprehensive studies of earth fracture systems that indicate that the movement of fluids can be controlled in the coalbed. In particular, directional property studies of natural microfissure occurrence, permeability, ultrasonic velocity, tensile strength, and orientation of intervals of inherent rock weakness, together with geologic structure setting and fracture trace analysis, can predict the gaseous flow paths in the coalbed. Having this information, the dominant direction in which gases generated and/or liberated by heat would move can be determined so that appropriate well patterns can be developed. Together with advances made in drilling technology that permit long horizontal holes to be drilled through the coal seams, tests can be conducted to determine whether directional control will permit devolatilization of the coalbed and gasification of the remaining hot coke in a systematic manner to produce a low-Btu gas suited for the generation of electricity.

1119

Anderson, J.C., "COAL WASTE DISPOSAL TO ELIMINATE TAILINGS PONDS," Paper presented at the 1975 Coal Convention, May 1975

KEY WORDS: Dewatering, Coal, Coal Preparation

ABSTRACT: Coal Preparation facilities throughout the U.S. generated approximately 96 million tons of refuse in 1974. Of that total quantity of refuse, an estimated 11,500,000 tons of coal tailings or slimes required disposal, generally through the use of tailings impoundments.

A host of stringent Federal and State regulations have been promulgated or proposed regarding the control and management of refuse and tailings disposal. Emphasis of the regulations is directed toward coal operations conducted in the Appalachian region. Such regulations with respect to tailings impoundments lend a very high degree of difficulty in maintaining the continued use of tailings impoundments from now on into the future. Alternatives to the use of tailings impoundments require study, research, and application of other systems regarding refuse tailings dewatering. Techniques available for dewatering this slurry are: 1) mechanical, 2) thermal, 3) in situ, and 4) chemical and cementation solidification.

1120

AMSCO, "BROCHURE," Bulletin BP-274, 1974

KEY WORDS: Slurry Pump

1121

National Mine Service, "BROCHURE & LETTER," Feb. 1975

KEY WORDS: Feeder Breaker

1122

Pennsylvania Crusher Corporation, "BROCHURE AND LETTER," June 1975

KEY WORDS: Coal, Crushers

1123

Coal Week, "JAPANESE IMPORTED COAL PRICES," Coal Week, Vol. 1, # 6, May 5, 1975, p. 4

KEY WORDS: Coal Mining, Economics, Japan

1124

Coal Week, "ANTHRACITE CONTRACT GAINS ARE RUNNER-UP UNION CONTRACT CHAMP," Coal Week, Vol. 1, # 6, May 5, 1975, p. 4

KEY WORDS: Coal Mining, Economics

1125

Barth, J.R., Bennett, J.T., "AN ECONOMIC ANALYSIS OF PRICE INCREASES IN THE U.S. COAL INDUSTRY," Prepared for American Public Power Association, Emergency Committee for the Tennessee Valley, National Rural Electric Cooperative Association, Tennessee Valley Public Power Association, October 1, 1974

KEY WORDS: Coal, Economics, Cost per Ton

1126

Washington Post (Newsclippings), "PROCESS PROMISES CHEAP COAL CLEANUP," Washington Post, June 1975

KEY WORDS: Coal, Coal Preparation

1127

Deurbrouck, A.W., "WASHING FINE-SIZE COAL IN A DENSE-MEDIUM CYCLONE," Research FY-74 Report for the Bureau of Mines, PB-237-850

KEY WORDS: Coal Preparation

ABSTRACT:

Dense medium cyclone tests in 4- and 8-inch diameter units have shown the ability of cyclones to make sharp separations down to 100-mesh when washing coals of a reduced top size compared to those normally fed to dense medium cyclones. The reduced top size of the feed apparently allows the finer size particles to report to the proper product by reducing the effect of very coarse particles in the congested separation zone of the dense medium cyclone.

1128

Ingersoll-Rand Research, Inc., "WATER JET CUTTING (Bibliography)", 1975

KEY WORDS: Bibliography

1129

Wilson-Snyder, "HORIZONTAL MULTIPLEX PLUNGER PUMP SELECTION DATA," Brochure # M29-865-1, received 1974

KEY WORDS: Pump

1130

Hitachi America, Ltd., "BOOKLET ON HYDROHOIST," 1975

KEY WORDS: Japan, Coal, Slurry, Hydraulic Hoist,

1131

Subramanian, R.V, Austin, H., Raff, R.A.V., Franklin, J.C.,"MINE ROOF REINFORCEMENT BY SPECIFICALLY DESIGNED EPOXY RESIN SYSTEMS," Report of Investigations 7907, 1974

KEY WORDS: Roof, Rock, Coal, Safety, Health

ABSTRACT:

This project financed by the Bureau of Mines investigated the use of polymers to achieve rock bonding and reinforce coal mine structures for better or permanent ground support. Support was achieved by pumping the polymers into the rock interstices to bond the mass together for increased structural competence. Holes were drilled in the mine roof, after which the polymers were injected at about 100 psi to permeate the cracks.

Initial laboratory work indicated that of all the resin systems tested, the epoxy resins could most likely be modified to be suitable for rock injection. This was confirmed when several potentially suitable resin systems underwent intensive evaluation.

In a series of three field tests, two conducted in a copper mine with coal mine-type shale and the third in a coal mine, it was shown that the polymers penetrated cracks less than 0.005 inch wide. The fast-setting epoxy systems, cured out in thin films under mine conditions, produced a bond exceeding the strength of the uncracked virgin rock.

1132

Glenn, L.A., "THE MECHANICS OF THE IMPULSIVE WATER CANNON," Computers & Fluids, Vol. 3, Pergamon Press, 1975, pp. 197-215

KEY WORDS: Water Cannon, Jet Characteristics

ABSTRACT: A model is proposed to descrive the operating characteristics of the impulsive water cannon. The important parameters governing the system dynamics are identified and the influence of these on performance is studied with the aid of a unique "1 1/2 d" finite-difference code. The algorithm upon which this code is based is described as are its principle features. The results of the calculations are compared with recently developed incompressible theory and with experiment.

1133

Brichant & Cooley, "Discussion of Glossary," Letter & Glossary, Nov. 1974

KEY WORDS: Pump, Roof, Production Rate, Hydraulic Mining, Hydromonitor

1134

Victaulic Company, "PIPING DATA," brochure, letter.Jan 1975.

KEY WORDS: Pipeline

1135

Dorr-Oliver, Inc.,"Oliver Diaphragm Slurry Pump" Brochure, 1971

KEY WORDS: Valve, Slurry Pump

1136

Hazleton Pumps, "Hydraulic Transport of Minerals," from "Mining Magazine,", April 1972 , Brochures.

KEY WORDS: Pumps, Coal, Pipeline, Slurry

1137

USS, "SLURRY PIPE AND PUMPS," Pamphlet, 1974

KEY WORDS: Slurry Pipe

1138

Hydro-Jet Corporation, "Titanium Pumps" Letter and Brochure, May 1972

KEY WORDS: Pump

1139

Kobe, Inc., "Hydraulic Triplex Pumps", Brochures,

KEY WORDS: Pump

1140

Taylor, N.S.H., Hilden, H.O., Noren, C.A., "TUNNELING MACHINE HAVING GENERATOR MEANS FOR LIQUID JETS CARRIED ON CUTTER HEADS," Assigned to Atlas Copco Aktiebolag, U.S. Patent # 3,799,615, March 26, 1974

KEY WORDS: Tunneling Machine, Rock, Jet Cutter, Disintegration

ABSTRACT: A machine for making tunnels through rock by slitting the tunnel front wall by means of high speed liquid jets which machine comprises a main frame, a carrier movably mounted thereupon, a cutter unit movably mounted on the carrier, whereby the cutter unit is able to cover the tunnel front wall with slots. The cutter unit consists of high speed jet generators which are powered by a non-movable low pressure driving fluid source on the main frame. Impacting devices are provided for breaking down of the remaining parts of the rock intermediate the slots.

1141

International GEOMARINE Corporation, "WYOMING COAL PROJECT," April 1970

KEY WORDS: Coal, Western U.S.

1142

Ingersoll-Rand Co., "GT-40 VERSATILE 4000Hp GAS TURBINE SYSTEM," Report, Diagrams,

KEY WORDS: Pump

Envirotech Corporation, A-S-H Pumps, Brochures and Letter, 1974. 1143

Key Words: Pump, Slurry pump

1144

Crow, S.C., "DESIGN PRINCIPLES FOR JET TUNNELING MACHINES," For NSF/RANN, Grant No. GI37193, October, 1974

KEY WORDS: Jet Cutter, Rock, Jet Characteristics, Mine Development

ABSTRACT: This paper draws upon data from the UCLA hydraulic rock cutting program to produce design guideliens for jet tunneling machines. For the sake of comparison and contrast, the power and thrust requirements of a conventional tunnel boring machine are first deduced. The conventional machine proves to be a constant specific energy deivce, the power being proportional to advance rate and insensitive to design details. The torque decreases with number of disc cutters and increases with disc radius. The UCLA data are next organized into the form of a universal law of hydraulic rock cutting. The relevant rock properties are a critical pressure P_c and an intrinsic speed c_e, which are tabulated for a spectrum of rock types. The law of hydraulic rock cutting implies that a large number of small diameter jets should be used for initial penetration and a disc cutter for final breakage. The jet pressure for minimum power tunneling is $3P_c$, about 12,000 psi for sandstone and 37,000 psi for granite. Formulas and plots are developed for the radial distribution of jets and power requirements of optimum jet tunneling machines. The formulas permit design for specified tunnel diameter, rock properties, & advance rate. Driving a 20 ft diameter tunnel in red granite at 10 ft/hr, for example, requires 1870 hp of jet power. The power requirement is reasonable, and the advance is far beyond the capability of a conventional machine.

1145

LFE Corporation-Fluids Control Division, "Weinman Type L Single Stage, Horizontally Split Case Centrifugal Pumps" Brochure & Letter

KEY WORDS: Pump

1146

Long-Airdox Company, "Long-Airdox Rosco I Feeder-Breaker, Rosco II, III Feeder-Crushers" Brochures, Sept. 1965

KEY WORDS: Feeder-Breaker, Crusher, Conveyor

1147

Rockwell International,"Rockwell Composite Valve Catalog," Pamphlet, 1972

KEY WORDS: Valves

1148

Williams Patent Crusher and Pulverizer Co., Inc., "Big Hammer Mills," Brochures & Letter, Feb., 1975.

KEY WORDS: Crushers

1149

Atlas Copco, "Fullfacer Tunnelling Machines," Brochures, 1969

KEY WORDS: Tunneling Machine, Rock

1150

Tate Engineering Inc., "Tate Packaged Compressor & Vacuum Pump Systems," Brochures.

KEY WORDS: Pump

1151

Sturtevant Mill Co., "Sturtevant Rotary Crushers," Brochure

KEY WORDS: Crusher, Coal

1152

Crane Co., "Bronze & Iron Valve Catalog, Letters & Pamphlet, April, 1975

Key Words: Valve

1153

Portec Inc., "Pioneer Feeders," Pamphlets,

KEY WORDS: Feeders

1154

Linatex Corporation of America, "LINATEX ABRASION AND CORROSION RESISTANT LININGS," Letters and Brochures, Feb. 1975

KEY WORDS: Flume, Screen

1155

Gaso Pumps, Inc., "Gaso Pumps Have a Lifetime Guarantee..." Brochure & Letter.

KEY WORDS: Pump

1156

Jeffrey Mining Machinery Co., "Jeffrey Heliminer- 20 Inches Low," Brochure and Letter

KEY WORDS: Continuous Miner

1157

Nalco Chemical Company, "Chemical Aids and Technical Service for Coal Preparation," Brochure and Letter

KEY WORDS: Coal Preparation, Slurry, Dewatering

1158

Tyree, P.O., Anderson, M.M., "Pilot Studies in Wet Dust Control," Pamphlet, Sept. 1973.

KEY WORDS: Crushers, Feeder, Dust, Water Supply

1159

Gundlach Machine Co., "Gundlach Roll Crushers," Letter & Brochures, Feb. 1975.

KEY WORDS: Crusher

1160

Gruendler Crusher & Pulverizer, Co., "How to Select Your Coal Crusher," Letter & Diagram, Feb., 1975

KEY WORDS: Crusher, Coal

1161

Delaval Turbine Inc., "IMO HYDRAULIC PUMPS AND MOTORS" Brochure,

KEY WORDS: Pump

1162

Allis-Chalmers,"SLURRY AND SOLIDS HANDLING PUMPS," Pamphlet

KEY WORDS: Slurry Pump

1163

Lawrence Pumps., Inc., "Slurry Pumps" Brochures & Letters,Mar., 1975

KEY WORDS: Slurry Pump

1164

Duraline, Inc.,"ALL AROUND THE PLANT," Heavy Duty Chute Lining, Brochure, Letters,Feb. 1975

KEY WORDS: Wear and Abrasion

1165

Clarkson Company, The, "CLARKSON VALVES," Letters & Brochures, Feb. 1975

KEY WORDS: Valves, Slurry, Coal.

1166

Jamesbury Valves, "DESIGN ADVANTAGES THAT CAN IMPROVE FLUID HANDLING FOR YOU," Brochure

KEY WORDS: Valves

1167

Pioneer, Inc., "PRODUCT DIRECTORY," Pamphlet

KEY WORDS: Conveyor, Feeder, Screen, Crushers

1168

Lambert Drilling Company, "METHANE DRILL," Letter & Diagram.

KEY WORDS: Methane, Coal Mining

1169R

Beylinov, Ya.I., Govorunov, V.G., "ECONOMIC EFFECTIVENESS OF CIVIL STRUCTURES PROTECTION BY PNEUMATIC STOWING OF THE GOAF," Ugol Ukrainy, April 1975, pp. 50-51
"EKONOMICHESKAVA EFFEKTIVNOST' ZASHCHITY GRAZHDANSKIKH EDANIY PNEVMATICHESKOY ZAKLADKOY VYRABOTANNOGO PROSTRANSTVA"

KEY WORDS: Hydraulic Stowing, Roof Support

SUMMARY

The roof control in stopings by hydraulic and pneumatic stowing of the goaf is one of the most progressive and effective mining measures to protect buildings and structures on the surface. Having studied the domestic and foreign experience, the Mining Institute (IGD) in the name of A. A. Skochinskiy recommends a full pneumatic stowing as means of control of mine pressure, and also as an effective protection of edifices or structures on the surface, category III- IV of civil structures' preservation with 1 through 4 stories.*

* Rules and regulations for the protection of edifices in the Donetz Coal Basin. - Ukrainian branch of All-Union Scientific Research Institute of Mine Surveying (VNIMI), 1972

1170

Parkes, D.M.,"LETTER TO DR. COOLEY", Letter, May 1975.

KEY WORDS: Kaiser hydraulic mine #1, Canada, USSR, Japan,

Asbury, J.G., Costello, K.W., "PRICE AND AVAILABILITY OF WESTERN COAL IN THE MIDWESTERN ELECTRIC UTILITY MARKET, 1974-1982," Argonne National Laboratory, Report, October 1974.

KEY WORDS: Coal, Western U.S., Economics, Cost Per Ton

ABSTRACT

The prices of low sulfur Western coals selling in the Midwestern electric utility market have been estimated for the period 1974 to 1982. The price estimates follow from a cost analysis of Western coal production and transportation that takes into account possible constraints on the rate of Western coal development.

Lowest prices for "new" Western coal will occur under conditions of demand growth less than 25% per year. This lowest-cost coal will consist mostly of subbituminous coal produced from large surface mines in the Powder River Basin in Wyoming and Montana. For Western coal demand growth in excess of 25% per year, shortages of large-scale surface mine equipment will force the opening of less efficient surface mines and will cause production costs to increase.

Analysis of railroad rates shows that current transportation costs can be represented by the relation $r = 6.3 + 600/X$, where r is the unit cost of transportation (mills per ton-mile) and X is the size of the annual shipment (thousands of tons per year). Transportation costs, expressed in constant dollars, are projected to increase by 3% per year.

Information provided by this study should assist government regulatory bodies and electric utility companies in evaluating alternative sulfur dioxide control strategies.

1172

Sakamoto, M., "DEVELOPMENT OF HYDROHOISTS: SLURRY FEEDERS WITHOUT CONTAMINATION," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper A-1, pp. A1-1-16

KEY WORDS: Hydraulic Hoist, Feeder, Japan, Sunagawa Mine, Coal

Summary

Hydrohoists are often called lock-hopper feeders and are used for slurry transport, with minimum erosion in the equipment.

However, contamination due to direct contact between mixture and clear liquid (such as clear water) had been a shortcoming of the hydrohoist. The author studied the performance of contamination of the hydrohoist, developed by new types of hydrohoists and came to the following conclusion:

1. The hydrohoists using gravity feed cannot prevent contamination.

2. In the horizontal hydrohoist adopting forced flow and our special devices, the contamination of clear liquid by slurry is negligible. This type is fit for transport of coarse material.

3. In the vertical hydrohoist adopting separator and our special devices, contaminations both of clear liquid and of mixture are negligible. This type is fit for transport of fine slurry.

1173

Harzer, H., "HYDRAULIC HOISTING IN THE MINING INDUSTRY OF THE FEDERAL REPUBLIC OF GERMANY," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper A2, pp. A2-17-22

KEY WORDS: Hydraulic Hoist, Feeder, Germany, Gneisenau, Carl Funke Mine, Coal

Summary

Three hydraulic hoisting rigs are described in some detail:

1. At the iron ore mine Lengede Broistedt, the entire conventional cage-winding equipment has been superseded by hydraulic transport. Up to 5,000 tons of ore per day with a size fraction up to 30 mm is pumped using centrifugal pumps from a depth of 120m.

2. In a trial installation for hydraulic winning of coal in the Carl Funke mine in Essen, the size fraction less than 1mm has been pumped over a distance of 5,500m from a 750m depth to the surface washery using reciprocating pumps. The capacity was 800 tons fine coal per day.

3. In a second large-scale trial at the Gneisenau coal mine in Dortmund, the entire hydraulically won coal is broken to less than 60mm and transported by a pipe-feeder from 700m depth to the surface. The capacity is 2,500 tons run-off-mine coal per day.

This paper will describe the most important stages in the development, the experimental programmes, and the essential technical and economic results for the three plants.

1174

Schriek, W., Smith, L.G., Haas, D.B., Husband, W.H.W., Shook, C.A., "EXPERIMENTAL STUDIES ON THE HYDRAULIC TRANSPORT OF COAL," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper B-2, pp. B2-21-26

KEY WORDS: Hydraulic Haulage, Canada, Coal

Summary

The results of an experimental programme on the hydraulic transport of coal are summarized. The behaviour of coal-water mixtures was investigated in 50, 100, 150, 200, 250 and 300 mm diameter pipelines. Solids concentrations were varied from 20 to 50% by volume. Pressure drops and deposit velocities were recorded. The importance of accounting for surface phenomena is discussed.

1175

Broersma, G, Harris, F.R., "HYDRAULIC TRANSPORT OF MATERIALS TO AND FROM MARINE TERMINALS," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper C2, pp. C2-17-26

KEY WORDS: Coal, Hydraulic Haulage

Summary

The analysis of a number of design system projects for the hydraulic transport of bauxite, coke, iron ore and wood chips through river or sea terminals has led to the establishment of criteria for choosing this means of transport.

Typical criteria applying to the terminals are:

1. The possibility of handling simultaneously, vessels carrying different types of cargo.
2. The possibility of handling different types of cargo through the same pipe systems and mixing and de-fluidising tanks.
3. Absence of interference with other port activities.

On of the design studies concerns the alternate use of piping systems for the export of oil products and the import of bauxite over a trestle connected to an off-shore jetty.

Hydrotransport is considered as an alternate means of discharging bulk cargo from vessels at a harbour berth and transmitting it to an inland aluminium plant.

In a coke and iron ore handling study, hydrotransport was proposed as an alternate method of supplying an upriver steelworks from a seaport.

Hydrotransport of wood chips instead of moving the material in the form of logs from tropical inland forests to ocean-going ships lying at a river berth.

The introduction of hydrotransport to the traditional world of shipping may prove to be as difficult as that of pneumatic transport ashore half a century ago, although neither the civil nor the mechanical engineers involved foresee fundamental problems in applying the principle to existing or new berths.

1176

Faddick, R.R., "FLOW PROPERTIES OF COAL-WATER SLURRIES," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper H-1, pp. H1-1-8

KEY WORDS: Coal, Slurry, Hydraulic Haulage

Summary

Properties of coal-water slurries were studied in two separate phases: a rheological phase and a pipeline phase. The primary purpose of the study was to investigate the rheology of fine coal slurries. The secondary purpose was to determine if the energy requirements to pipeline the coal-water slurries could be predicted from the rheology data.

The slurries consisted of 6x10, 100x200, and 200x0 mesh coal in water. A fourth slurry consisted of a mixture of the 6x10 and 200x0 mesh coal. Brookfield and Stormer rotational viscometers were used to obtain or simulate rheograms for a range of fine coal concentrations, temperatures, and particle sizes. All the slurries were pumped through a 1-inch diameter acrylic pipe.

The fine coal slurries were found to encompass four distinct rheological models. A scale-up method applicable to Bingham plastics was found satisfactory for predicting pipeline headlosses of fine coal slurries from rheology data.

1177

Lavingia, N.J., Faddick, R.R., "INVESTIGATION OF A SLURRY BENCH TEST," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper H-2, pp. H2-9-20

KEY WORDS: Coal, Slurry, Hydraulic Haulage

Summary

A coarse- slurry bench test was investigated using a commercial mixing tank, agitator, motor, and torque scale to measure the power required to suspend completely mineral slurries in a mixing tank. The objective was to determine if the mixing input power to achieve complete suspension could be correlated with the energy requirements necessary to transport aqueous slurries of coarse minerals in suspension in pipelines.

Test data were obtained for the mixing of two sizes of coal and one size of sand, slurried in water at various concentrations. The data were plotted as parameters of power number versus the Reynolds number of mixing. The same slurries were pumped through a 1-inch diameter smooth pipeline. In a analogous manner the pipeline data were plotted on Moody diagrams of friction factor versus Reynolds number of flow.

The data indicated a potential for correlating slurry mixing power to energy requirements for the pipeline transportation of slurries.

1178

Constantini, R., "THE ECONOMIC AND ENVIRONMENTAL IMPACT OF LONG DISTANCE SLURRY PIPELINES," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper K-1, pp. K-1-12

KEY WORDS: Coal, Slurry, Pipeline, Economics

1179

Aude, T.C., Thompson, T.L., Wasp, E.J., "ECONOMICS OF SLURRY PIPELINE SYSTEMS," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper K-2, pp. K2-13-24

KEY WORDS: Coal, Slurry, Pipeline, Black Mesa, Economics

Summary

The economics of transportation of solids in slurry pipeline systems is presented, including the impact of cost escalation on this transportation mode. Costs of alternate forms of transportation are discussed. The physical dimensions and experience with existing commercial systems are reviewed, and the environmental impacts and energy requirements of commercial slurry pipeline transportation systems are described.

1180

Link, J.M., Lavingia, N.J., Faddick, R.R., "THE ECONOMIC SELECTION OF A SLURRY PIPELINE," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper K3, pp. K3-25-26

KEY WORDS: Coal, Slurry, Pipeline, Economics

Summary

A technique is presented for the economic selection of a slurry pipeline with the aid of a computer. Mathematical models for the flow of homogeneous slurries are utilized. Only the pipeline and its prime movers are considered.

Slurry flow properties are first obtained from rheology and/or pipeline data measurements. A rheological model is then selected for the slurry. It must be emphasized that the accuracy of the slurry flow-property data.

Approximate cost parameters may be selected from data for plain and lined pipes, centrifugal and positive displacement pumps, motors and engines. Cost data for the purchase, operation and maintenance of slurry pipelines are also included. A total cost equation for the ownership and operation of a slurry pipeline system is then established. The complexity of the equation is a function of the rheological model selected to describe the slurry. The equation is solved with the aid of a computer for several combinations of pipeline diameters and throughputs to yield minimum total annual cost for the system.

A mean velocity is then computed to give the required throughput. The velocity is constrained by an upper and lower bound. A high velocity is undesirable from an energy consumption viewpoint and if pipeline wear is possible. On the other hand, the velocity must exceed the deposition velocity for a heterogeneous suspension or the critical velocity for a homogeneous suspension. There is no guarantee that the velocity developed by this method will lie within the constraints applied, nor that the constraints are even known. This is particularly true for heterogeneous slurries.

An important feature of the method is the ease with which the variables can be adjusted to measure the sensitivity of the total cost to the variables.

1181

Harrah, H.W., "SLURRY STORAGE FOR SLURRY PUMPING," Hydrotransport 3, BHRA, Golden, Colorado, May 1974, Paper B4, pp. B4-43-52

KEY WORDS: Slurry, Hydraulic Haulage, Coal, Black Mesa Pipeline

Summary

For continuous slurry pipelining the pumps require an adequate reserve of slurry in a homogeneous condition. Slurry storage is thus an essential part of slurry pumping. Slurry storage includes many of the same problems encountered in pumping such as particle size, density, abrasion, settling rates, velocities, and volumes. Slurry storage is an established process which has been used in the mineral processing industry for many years. Most problems are known and solutions have been developed. Some typical problems encountered in large volume slurry holding agitators are discussed together with various factors which should be considered. Case history examples of how the solids were maintained in suspension in large holding agitators assist pipelining engineers to relate known conditions to projected operations.

1182

Bolton, D.H., Jeffrey Mining Co., "EXTERNAL PROBLEMS CONTINUE TO HINDER REMOTE CONTROL USAGE IN MINES," Coal Age, May 1975, pp. 66-69

KEY WORDS: Productivity, Roof, Continuous Miner, Coal, Economics, Conveyor, Hydraulic Mining, Safety, Coal Dust, Methane, Ventilation

1183R

Tsyapko, N.F., "OPREDELENIE PARAMETROV TRAEKTORIN POLETA GIDROMONITORNOY STRUI VODY," PP 3-7.
"DETERMINATION OF FLIGHT TRAJECTORY PARAMETERS OF HYDROMONITOR WATER JETS." Proceedings of VNIIGidrougol', Novokuznetsk, 1969

KEY WORDS: Monitor, Jet Characteristics, Hydraulic Mining

1184R

Chermenskiy, G.P., "IZBYTOCHNOE DAVLENIE V IMPULSNOY STRUE ZHIDKOSTI," Proceedings of VNIIGidrougol', Novokuznetsk, 1969, pp. 7-14
"EXCESS OF PRESSURE IN THE PULSED JET OF A LIQUID"

KEY WORDS: Water Cannon, Hydraulic Mining, Jet Characteristics

1185R

Cherminskiy, G.P., Chubrik, S.S., "SILA UDARA IMPUL'SNYKH STRUY," pp 15-28.
"FORCE OF IMPACT OF PULSED JETS" Proceedings of VNIIGidrougol', Novokuznetsk, 1969

KEY WORDS: Water Cannon, Hydraulic Mining, Jet Characteristics

1186 R

Chubrik, S.S., Chermenskiy, G.P., "IZMERENIE IMPUL'SNYKH SVERKHVYSOKIKH DAVLENI ZHIDKOSTI," pp. 28-32
"MEASUREMENT OF LIQUID'S SUPERHIGH PRESSURES" Proceedings of VNIIGidrougol', Novokuznetsk, 1969

KEY WORDS: Water cannon, Hydraulic mining, Jet characteristics,

1187R

Yushkov, V.G., Khrameshkin, S.I., Chubrik, S.S., "REZUL'TATY STENDOVYKH ISPYTANIY POVYSITELYA DAVLENIYA," pp 32-39.
"RESULTS OF STAND TESTS OF A PRESSURE BOOSTER" Proceedings of VNIIGidrougol', Novokuznetsk, 1969

KEY WORDS: Pressure Intensifier, Hydraulic Mining

1188R

Zamyatin, Yu.P., "REZUL'TATY SHAKHTIYKH ISPYTANIY SERIYNYKH POVOROTNYKH UPLOTNENII PROTOCHNOY SASTI GIDROMONITOROV GMDTS-3," Proceedings of VNIITidrougol', Novokuznetsk, 1969, pp. 39-46
"RESULTS OF MINE TESTS OF MASS-PRODUCED TURNING PACKINGS (GASKETS) FOR THE FLOW-THROUGH PARTS OF GMDTS-3 HYDROMONITORS,"

KEY WORDS: Monitor, Hydraulic Mining

1189R

Zamyatin, Yu.P., "USTANOVKA SDI-2 DLYA ISSLEDOVANIYA PROTSESSOV TRENIYA I IZNOSA POVOROTNYKH UPLOTNEKIY GIDROMONITOROV," pp 47-52.
"THE SDI-2 INSTALLATION FOR THE INVESTIGATION OF FRICTION AND WEAR PROCESSES OF HYDROMONITORS' TURNING PACKINGS" Proceedings of VNIIGidrougol' Novokuznetsk, 1969

KEY WORDS: Monitor, Hydraulic Mining, Pump, Wear and Abrasion

1190R

"Shcherbina, G.S., "K RASCHETY KOEFFITSTENTA POLEZNOGO DENSIVIYA GIDROELEVATORA ," pp 52-60
"ON THE COMPUTATION OF HYDROELEVATOR'S EFFICIENCY" Proceedings of VNIIGidrougol', Novokuznetsk, 1969

KEY WORDS: Pump, Hydraulic Mining, Hydraulic Haulage, Hydraulic Hoist, Coal

1191

Cherminsky, G.P., "RESEARCH TESTING OF IMPULSE WATER CANNON SAFETY," Khmelnitsky Technological Institute, Khmelnitsky, USSR,

KEY WORDS: Water Cannon, Wear & Abrasion

1192

Cherminsky, G.P., "COAL AND ROCK CUTTING BY MEANS OF WATER IMPULSE JETS," Khmelnitsky Technological Institute, Khmelnitsky, USSR.

KEY WORDS: Water Cannon, Krasnogorskaya, Polysayevskaya-Severnaya, Yubileinoye, Kuzbass, Rock

1193

Oil & Gas Journal, "RUSSIA STILL PUSHING COAL GASIFICATION," Oil & Gas Journal, August 4, 1975, p. 38

KEY WORDS: Coal, Water Infusion, Disintegration

1194R

TRANSLATED
Chermenskiy, G.P., "LETTER TO W. C. COOLEY," May 12, 1975

KEY WORDS: Pulsating Jets

1195

Doolin, John, " PUMPING ABRASIVE FLUIDS," Worthington Pump International, November 1972

KEY WORDS: Pump, Slurry, Rock, Abrasion & Wear,

1196

Wilson, G., "THE DESIGN ASPECTS OF CENTRIFUGAL PUMPS FOR ABRASIVE SLURRIES," October, 1971.

KEY WORDS: Pump, Slurry, Pipeline, Abrasion& Wear,

SUMMARY

Satisfactory hydraulic performance of a centrifugal slurry pump is not the only design criterion. If abrasive wear exists the severity of any damage can be reduced and the life of the wearing parts prolonged by selecting the correct pump to suit the conditions of service. This paper is concerned with the design and construction of centrifugal pumps for handling abrasive solids.

The wear phenomena due to the slurry being pumped and the materials used to combat abrasive wear are outlined.

The hydraulic design of the impeller and casing and their relationship to wear and the hydraulic radial and axial unbalance is discussed.

The prediction of abrasive wear in pumps can not be precise as many factors are involved and this is the object of current research.

1197T

TRANSLATED

Hume, Donald, B., "DATA ON SUNAGAWA MINE," 1975

KEY WORDS: Japan, Sunagawa, Hydraulic Mining,

1198

Rzhevsky, V.V., Dobretsov, V.B., "M.M. PROTODYAKANOV'S CLASSIFICATION OF ROCKS," from "Elements of Open-Cut Mining," April 1970, pp. 365-366

KEY WORDS: Hardness, Rock

1199

Rzhevsky, V.V., Dobretsov, V.B., "MAIN MECHANISMS AND EQUIPMENT FOR OPEN CUT MINING OF PLACERS," from the book "Elements of Open-Cut Mining," April 1970, pp 184-196

KEY WORDS: Open Pit, Dredging, Hydraulic Mining, Hydraulic Haulage

ABSTRACT: This paper deals with the equipment typical of placer deposits: dredges and equipment of hydraulic mechanization as well as some mechanisms for auxiliary operations.

1200

Rzhevsky, V.V., Dobertsov, V.B., "HYDRAULIC PLACER MINING METHOD," from the book "Elements of Open Cut Mining," April 1970, pp. 226-245

KEY WORDS: Hydraulic Mining, Open Pit

1201

Rzhevsky, V.V., Dobretsov, V.B., "DREDGE METHOD OF PLACER MINING, from the book "Elements of Open Cut Mining, April 1970, pp. 246-259

KEY WORDS: Open Pit, Dredging, Hydraulic Mining, Hydraulic Haulage

1202

Wilson-Snyder Pumps, "PIPELINE ENGINEER INTERNATIONAL: SLURRY PIPELINING," November 1969. THE BLACK MESA STORY & SLURRY PUMPS: SOME DESIGN CONSIDERATIONS

KEY WORDS: Pump,Slurry, Pipeline, Coal, Black Mesa,

1203

Strong, Ann L., "BIBLIOGRAPHY," from "Electric Power Rights: One Approach to Rationing," NTIS, July 1973, pp 30-31.

KEY WORDS: Bibliography, Water Supply.

1204

Strong, Ann L.,"WESTERN WATER RIGHTS," from "Electric Power Rights: One Approach to Rationing," NTIS, July 1973, pp 4-14.

KEY WORDS: Water supply, Western US.

1205

Pennsylvania Crusher Corporation, "CRUSHERS AND GRANULATORS", Letters and Brochures.

KEY WORDS: Crushers

1206

Katell, S., Hemingway, E.L., "BASIC ESTIMATED CAPITAL INVESTMENT AND OPERATING COSTS FOR UNDERGROUND BITUMINOUS COAL MINES," Mines with Annual Production of 1.03 to 3.09 Millions Tons from a 48 Inch Coalbed, Bureau of Mines, IC 8641

KEY WORDS: Capital Investment, Productivity, Economics, Bituminous, Coal, Coal Mining, Manpower, Continuous Miner, Roof Bolts, Water Supply, Electric Supply, Cost Per Ton, Feeder, Conveyor, Safety, Health

ABSTRACT:

This Bureau of Mines study estimates capital investment, operating costs, and selling prices for three underground bituminous mines producing coal with annual production ranging from 1.03 to 3.09 million tons. It is assumed that the mines have a 20-year life. Wages and union welfare payments are considered as of November 12, 1973, under the Bituminous Wage Agreement of 1971, and costs for material and equipment are based on 1973 indexes.

Initial capital investment ranges from $12,938,200 for the 1.03-million-ton-per-year (MM tpy) mine to $31,435,500 for the 3.09 MM tpy mine. Total capital investment ranges from $21,607,200 to $51,982,000 for the same mines. Corresponding selling prices for the coal range from $9.11 to $8.06 per ton, assuming a 12-percent discounted cash flow rate of return after Federal income taxes.

1207G

Bergbau A. G., "MELYEPTERV BUDAPEST," Verbundbergwerk, Gneisenau,

KEY WORDS: Gneisenau, Germany, Hydraulic mining.

1208

Rad, Parviz F., "MECHANICAL PROPERTIES AND CUTTING CHARACTERISTICS OF COAL," Twin Cities Mining Research Center, Minneapolis, Minnesota, 1973. IC 8584

KEY WORDS: Coal hardness, Coal, Bibliography

ABSTRACT: This report reviews laboratory and in-mine techniques for determining mechanical properties of coals, with special emphasis on the relationship between these properties and the minability of coal. An extensive bibliography is included.

1209

Irani, M.C., Jeran, P.W., Deul, Maurice, "METHANE EMISSIONS FROM U.S. COAL MINES IN 1973, A SURVEY," Pittsburgh Mining and Safety Research Center, Pittsburgh, Pa., 1973, IC 8659 (A SUPPLEMENT TO IC 8558)

KEY WORDS: Coal,Coal mining, USA, Methane.

ABSTRACT

This Bureau of Mines survey of methane emissions indicates that total daily emissions have declined from 227 MM ft^3 in 1971 to 214.7 MM ft^3 in 1973. The highest average daily emissions in million cubic feet per day observed in U.S. bituminous coal mines were, in decreasing order, Monongalia County, W. Va., 40.7; Marion County, W. Va., 23.1; Buchanan County, Va., 22.1; Washington County, Pa., 12.4; Greene County, Pa., 11.7; McDowell County, W. Va., 11.4; Cambria County, Pa., 9.8; Jefferson County, Ala., 9.5; Wyoming County, W. Va., 6.0; Marshall County, W. Va., 4.8; and Indiana County, Pa., 4.8.

1210

Lohn, Peter D., Frank, Jacob N., "AIRBORNE RESPIRABLE DUST GENERATED DURING CUTTING OF COAL WITH WATER JETS," Twin Cities Mining Research Center, Twin Cities, Minnesota, 1975. RI-8014

KEY WORDS: Jet cutter, Coal,Hydraulic mining, Dust.

ABSTRACT

The Bureau of Mines conducted both laboratory and field investigations to study the effectiveness of medium-pressure (up to 30,000 psi) water jets in controlling the generation of airborne respirable dust during the hydraulic fragmentation of coal. Laboratory studies were conducted at the Farmington High Energy Test Site of the Twin Cities Mining Research Center, and field studies were carried out at the Humphrey No. 7 mine, Mount Morris, Pa., in the Pittsburgh coalbed. The water jets were produced by commercially available triplex pumps. The dust samples were collected by midget impinger samplers, and analyzed by electronic and optical counting techniques. Respirable dust concentration for a full-scale production model was projected at below 2 mg/m^3, the maximum exposure allowed by the Federal Coal Mine Health and Safety Act of 1969.

1211

McCullogh, C.M., Jeran, P.W., Sullivan, C.D., "GEOLOGIC INVESTIGATIONS OF UNDERGROUND COAL MINING PROBLEMS," Pittsburgh Mining and Safety Research Center, Pittsburgh, Pa. 1975, RI-8022

KEY WORDS: Coal, Appalachian area, Methane, Roof support.

ABSTRACT

A series of geological surveys were completed in six coal mines in connection with a Bureau of Mines research program on methane control. The aim of these surveys was twofold: First, to study the overall geology of the coalbed, and second to use the resulting data to evaluate the influence of the geological characteristics of the coalbed on safe and efficient coal extraction.

This report explains the advantages of geologic maps and fence diagrams in coal mining, and how the knowledge gained from such geologic investigations of mines can help control many underground problems.

1212

McCullogh, C.M., Deul, Maurice, Jeran, P.W., "CLEAT IN BITUMINOUS COALBEDS," Pittsburgh Mining and Safety Research Center Pittsburhg, Pa.,1974, RI-7910

KEY WORDS: Coal, Coal preparation, Appalachian area, Methane, Bituminous.

ABSTRACT

The natural vertical fracture system in bituminous coalbeds is called cleat. Cleat orientation commonly controls the direction of mining with major development paralleling the face cleat.

Previous researchers have categorized the origin of cleat as endogenetic, relating the origin of cleat to compaction and coalification, and exogenetic, relating the origin of cleat to tectonic forces. In the coalbeds studied for this report it was found that tectonic forces were the controlling factor of cleat formation. Face cleats were formed as extension fractures during structural deformation, and butt cleats, as release fractures during erosion and uplift.

The face cleat of the Pittsburgh coalbed rotates from N 80° W in northwestern West Virginia to N 57° W in southwestern Pennsylvania; the face cleat maintains a perpendicular orientation to the shifting axial trend of local structures. Cleat orientation in other bituminous coalbeds in Virginia, Utah, Oklahoma, and Central Pennsylvania showed a similar relationship to local structure.

Directional permeability of coal is directly related to cleat. Holes drilled perpendicular to the face cleat yield from 2.5 to 10 times the amount of gas released as compared with holes drilled perpendicular to the butt cleat.

1213

Lohn, Peter D., Frank, Jacob N., "REFERENCES," from "Airborne Respirable Dust Generated During Cutting of Coal With Water Jets," Twin Cities Mining Research Center, Twin Cities, Minnesota, 1975.

KEY WORDS: Bibliography.

1214

Singh, Madan M., Labus, Thomas J., Finlayson, Lawrence,A., "REFERENCES," from "Design of a Hydraulic Jet Coal Miner," Twin Cities Mining Research Center, February 1974.

KEY WORDS: Bibliography.

1215

Oil & Gas Journal, "HIGH PRESSURE JET DRILLING SEEN FEASIBLE," Oil & Gas Journal, July 28, 1975, pp. 41.

KEY WORDS: JET DRILL, ROCK

1216

Deul, M., Skow, W., "SPEEDING COAL MINING OPERATIONS BY RECOVERING AND UTILIZING METHANE FROM COAL BEDS," Coal Age, July 1975, pp 104-106

KEY WORDS: Methane, Coal

1217

Reese, H.B., "Bibliography of Hydraulic Contracts Awarded FY 1975 by Bureau of Mines," Letter of May 19 to W.C. Cooley, 1975

KEY WORDS: Bibliography

1218

Johnson Division, UOP Co., "BROCHURE," 1975

KEY WORDS: Dewatering, Slurry, Coal, Coal Preparation

1219

Westlake Plastics Company, "BROCHURE AND LETTER," June 1975

KEY WORDS: Sluicing (Flume), Wear and Abrasion, Coal, Slurry, Coal Preparation

1220

Krebs Engineers, "BROCHURE AND LETTER," June 1975

KEY WORDS: Coal Preparation, Dewatering, Slurry, Coal

1221R

TRANSLATED

Vlaskin, Yu.K., Prit'mov, V.N., Matveev, V.D., "SOZDANIE KONSTRUKTSIY KOMPLEKSOVDLYA KOROTKIKH OCHISTNYKH ZABOEV PRI GIDROMEKHANIZATSII," Tekhnologiya Dobychi Uglya Podzemnym Sposobom # 3, Moscow, 1975, pp. 26-27
"CREATION OF CONSTRUCTION COMPLEXES FOR SHORTWALL STOPINGS DURING HYDROMECHANIZATION,"

KEY WORDS: Coal, Hydraulic Mining, Mining Machinery, Mining Plan, Longwall, Shortwall, Floor, Hydraulic Haulage, Electric Power Required

1222R

Kuksov, N.I., Krotov, L.S., Sergomasov, V.M., "KONTROL' ZA SOSTOYANIEM VYRABOTOK PRI OTRABOTKE MOSHCHNYKH KRUTYKH PLASTOV GORIZONTAL'NYMI POLOSAMI S GIDROZAKLADKOY VYRABOTANNOGO PROSTRANSTVA," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 3, Moscow, 1975, pp. 40-41
"CONTROL OF THE STATE OF THE WORKINGS WHEN MINING THICK STEEP SEAMS IN HORIZONTAL BANDS WITH HYDRAULIC STOWING OF THE GOAF"

KEY WORDS: Kaksovaya Mine, Pitching Coal Beds, Hydraulic Stowing, Roof Support, Roof, Hydraulic Mining, Kuzbass

ABSTRACT

Experiments have been carried out on the seam "Gorelyy", 8.5 to 9 m thick with 60 to 70 deg. angle of pitch in the mine "Koksovaya". Its coal has a clearly expressed jointing of various directions and the host rocks are jointed argillites of average stability. The mining method is in horizontal bands on the strike with hydraulic stowing of the goaf, using a French ANF equipment permitting powered extraction and loading of coal in the winning face.

By thickness the seam is divided in two layers, the first mined being the layer at the lying side. The thickness of the mined layer is 4.5 m, the height of the horizontal band is 5 m and the order of band extraction is ascending. The support of the winning face is combined — metallic, with props reinforced by 4 bolts on the hanging side and 2 on the lying. The problem for controling the steady state was in the use of wooden props, which proved to be cumbersome.

To control the steady state of the coal massif, a method was proposed by including control bolts to measure displacement of the hanging side, which is shown in the drawing and is discussed in detail. The control of the state of the coal mass in the hanging side is done by visual observations of the position of a signal device, said to be simple to install.

1223

Herold Manufacturing Co, Inc., "Brochure & Letter," June 1975

KEY WORDS: Coal Mining, Roof Support

1224

Savanick, G.A., Ricketts, T.E., Lohn, P.D., Frank, J.N., "CUTTING EXPERIMENTS USING A ROTATING WATER JET IN A BOREHOLE," Bureau of Mines, Report of Investigations Manuscript, 1975

KEY WORDS: Hydraulic Mining, Borehole Mining, Coal, Coal Mining, Monitor, Jet Characteristics

ABSTRACT: An experimental hydraulic jetting device intended to operate in a 16 in. diameter borehole was designed, fabricated, and used to cut coal and simulated coal samples. This device consisted of two 0.1007 in. diameter nozzles which rotated in a plane perpendicular to a 50 in. length of high pressure tubing. Experiments were also conducted with stationary jets issuing from a single 0.142 in. diameter nozzle. Numerous experiments were performed using systematic variations of jet parameters coupled with assessments of cutting rates.

These tests showed that when operated at 4,000 psi pressure and a 40 gpm flow rate (1) the device can fragment coal up to a distance of 8 feet from the nozzle, (2) 4,000 psi jets cut more effectively than lower pressure jets with the same nozzle diameter (3) stationary jets do not cut as effectively as moving jets, (4) interkerf breaking occurs when the kerf spacing is less than 2 inches, and (5) if the kerfs are spaced < 1/2 in., the jet is deflected and thereby reduces cutting effectiveness.

1225

Willard Owens Associates, Inc., "HYDROGEOLOGY - FOR EXPLORATION AND DEVELOPMENT," Pamphlet, 1975 (?)

KEY WORDS: Water Supply, Coal, Western U.S.

1226

Cameron Engineers, Inc., "THE PHYSICAL PROPERTIES OF COAL," from the book "Synthetic Fuels Data Handbook, pp. 127-132, 1975

KEY WORDS: Coal, Coal Hardness

1227R

Tsyapko, N.F., Emel'yanov, F.K., "UBELICHENIE OB'EMA PEREDACHI INFORMATSII V SISTEME GIDROUPRAVLENIYA," Gornye Mashiny I Avtomatika, # 3, 1975, pp. 11-14
"INCREASE IN THE VOLUME OF TRANSMISSION OF INFORMATION IN A SYSTEM OF HYDRAULIC CONTROL"

KEY WORDS: Hydromonitor, Hydraulic Mining

ABSTRACT:

In this paper VNIIGidrougol' proposes one of the methods of increase in the volume of transmission of information, verified on an experimental specimen of the system of hydromonitor control. A line diagram of the circuit is shown in Fig.1. The system of program remote-control of the hydromonitor 12 GP is schematized in Fig.2. The operation of the system is described in detail. In order to increase the number of control commands with the aid of an additional cascade, the tests of the hydromonitor, equipped with a discrete system of remote control have shown its high reliability and long lifetime.

1228

Coal Age, "MANY PROBLEMS HOBBLE APPALACHIA'S ANTHRACITE PRODUCTERS," Coal Age, May, 1975, pp. 300-303

KEY WORDS: Anthracite, Coal Mining, Appalachian, Economics

1229

Coal Age, "TECHNOLOGICAL INNOVATIONS ABOUND IN COAL MOUNTAINS OF APPALACHIA," Coal Age, May 1975, pp. 242-364

KEY WORDS: Coal Mining, Appalachian, Longwall, Roadheader, Productivity, Robinson Run Mine, Shortwall, Mining Machinery, Economics, Conveyor, Hydraulic Haulage, Roof Support

1230

McCain, D., "DATA ON LENGEDE MINE (LIMONITE) IN GERMANY," Personal Communication with Dr. W. C. Cooley, Terraspace, June 6, 1975

KEY WORDS: Slurry, Pump, Hydraulic hoist, Rock

1231

Crow, S.C., "JET TUNNELING MACHINES, A GUIDE FOR DESIGN," Tunnels & Tunnelling, March 1975, pp. 23-94

KEY WORDS: Mining, Machine, Jet Cutter, Disintegration, Rock

1232

Bockosh, G.R., "FACE ILLUMINATION - A REVIEW OF AVAILABLE TECHNOLOGY," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Safety, Coal Mining

ABSTRACT

The Bureau of Mines is presently engaged in an experimental program to develop illumination systems for underground mines. The systems will provide illumination inby the last open crosscut while men are working in these areas. Minimum illumination requirements have been determined, and research is now being directed toward the measurement of mine lighting levels and the evaluation of acceptable hardware. Several systems have been developed and are presently being evaluated in coal mines.

1233

Edwards, G.E., "COAL PREPARATION IN AUSTRALIA," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Coal Preparation

1234

Haynes, R.M., "MANNING THE COAL MINES," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Coal Mining, Manpower

1235

Justice, J.H., "REMOTE CONTROL - CONTINUOUS MINING IN LOW COAL WITH AUXILIARY VENTILATION AND CONTINUOUS HAULAGE," Presented at the Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Coal Mining, Mining Machinery

1236

Morris, G.H., "RECLAIMING COAL FROM REFUSE PONDS," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Coal Preparation, Slurry, Dewatering

1237

Rechard, P.A., "HYDROLOGICAL IMPACTS ASSOCIATED WITH COAL MINING", Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Water Availability, Hydraulic Mining, Coal, Western U.S, Environmental Effects

1238

Yancik, J.J., "RESEARCH TO IMPROVE COAL MINING PRODUCTIVITY," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Coal Mining, Productivity

1239

Wegrzyk, Z., "SUCCESSFUL AUTOMATED LONGWALL SYSTEMS IN POLISH COAL MINES," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Poland, Coal Mining, Longwall, Hydraulic Stowing

SL 1240

Norton, G. & Bluck, W., "A HIGH INTENSITY FINE COAL FLOTATION CELL," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Coal Preparation, Dewatering, Settling

1241

Blankenship, J.B, "NEW MATERIALS FOR SLIDABILITY PLUS LONGER WEAR," Presented at the 1975 Coal Convention of the American Mining Congress, Pittsburgh, May 1975

KEY WORDS: Flume, Hydraulic Mining, Coal, Coal Preparation, Slurry, Dewatering

TRANSLATED

1242R

Sagayda, I.M., Aksenov, A.V., Protas, B.T., "OPYT ISPOL'ZOVANIYA INFORMATSIONNOY SISTEMY UCHETA DOBYCHI UGLYA NA GIDROSHAKHTE," Ugol Ukrainy, March, 1975, pp 11-12, "EXPERIENCE IN UTILIZING AN INFORMATION SYSTEM OF ACCOUNTING FOR THE PRODUCTION OF COAL IN A HYDROMINE"

KEY WORDS: Pioneer Mine, Donbass, Hydraulic Mining, Coal, Production Rate, Instrumentation, Slurry

SUMMARY

The system of accounting production from a hydromine is quite imperfect. for many reaons: on intermediate stages of coal transport the production is counted only according to the level of hydraulic chambers filling by slurry; the exact amounts of produced coal are known to the mine only after loading in cars and weighing, which are delayed; flowing along parallel pipelines from several hydraulic sections, the problem of mutual accounting arises also, etc.

All this conditions the requirement of creating some means of automatic accounting of coal production without introducing additional operations in the technological process. - One of such variants, tested in conditions of the hydromine "Pioner", which is described in detail, is the principal object for the present paper.

Fig.1 gives the block diagram of the information system to account for the hydraulic production. Fig.2 shows the scheme of apparatus' disposition in the preparation plants' building.

Tests have shown the probability of flawless operation as being 0.982 and the satisfactory errors of measurement systems — 7 to 8%. Thus far, the system was tested in only one of the four sections of hydraulic mining. Its extension to all four sections is planned for the near future.

1243

Newsweek, "COAL-POWDER POWER," Newsweek, June 23, 1975, p. 63

KEY WORDS: Coal, Coal Preparation, Coal Dust

1244

Ductile Iron Pipe Association, "PIPELINE 74 (Autumn) AND PIPELINE 75 (Winter) BULLETINS," and letter May 1975

KEY WORDS: Slurry, Pipeline, Rock

1245

Atanov, G.A., "A PULSED WATER JET WITH SECONDARY OSCILLATIONS," Fluid Mechanics - Soviet Research, Vol. 4, No. 1, Jan-Feb., 1975, pp. 109-112

KEY WORDS: Pulsating Jet, Rock, Water Cannon, Jet Characteristics

A design is suggested for a pulsed water get which provides for an adjustment of the jet discharge in such a manner that additional oscillations are superimposed on the main pulsations. A method is presented for calculating the internal ballistics of such a water jet and computational examples are presented.

1246

Dement'yev, M.A., INTERNAL FRICTION AND LATERAL PARTICLE INTERACTION IN HIGH-DENSITY SLURRY FLOWS," Fluid Mechanics - Soviet Research Vol. 4, No. 1, Jan-Feb. 1975, pp 17-28

KEY WORDS: Slurry, Pipeline, Coal, Rock

A general description is presented of flow of slurries of granular material in small amounts of liquid. Formulas are derived for the internal friction and for transverse interaction of homogeneous nondeformable grains in the slurry flow with shear under two limiting (quasi-laminar and quasi-turbulent) conditions. Theoretically derived formulas are compared with experimental data of Bagnold, so as to verify and define the probability functions of granule contacts and of efficiency of transport of the slurries.

1247

Nalco Chemical Co., "BROCHURE AND LETTER," 1975

KEY WORDS: Dewatering, Water Purification, Coal Preparation

1248R

Panov, V.A., Zaydal'skiy, I.I, Vitel, O.I, Bovkun, V.K., "PUTI POVYSHENIYA EFFEKTIVNOSTI ISPOL'ZOVANIYA ZEMEL'NYKH RESURSOV PRI SKLADIRAVANII PROMYSHLENNYKH OTKHODOV NA GORNO-OBOGATITEL'NYKH KOMBINATAKH KRIVBASSA," Gornyi Zhurnal, # 4, 1975, pp. 39-43

KEY WORDS: Hydraulic Haulage, Slurry, Open Pit, Rock

1252R

Myshinskiy, L.N., Nemkovskiy, V.V., "OPRESNENIE SHAKHTNYKH VOD," Ugol # 4, 1975, pp. 51-53 "DEMINERALIZATION OF MINE WATERS"

KEY WORDS: Water Supply, Purification, Water Pollution, Donbass, Coal Mining, USSR

ABSTRACT:

The collieries of the USSR annually dispose of nearly 1 billion m^3 of salt water, which constitutes 53% of the total volume of industrial drainage in this field, including the Donbass mines with the Rostov region's share, which themselves discharge 500 million m^3 of waters containing 1.9 million tons of salts.

Waters of the Western Donbass have the highest mineralization, namely in the Samara river watershed.

As the deficit of fresh water increases, the discharge of highly-mineralized water of the Donbass may cause a serious damage to industry, agriculture and population. Accordingly, measures have been taken to preserve the Samara watershed from pollution by mine waters. The adopted demineralization process, consisting in treatment of brines in-situ, can be divided in two stages: 1) distillation with getting fresh water and brines; 2) concentration of brines and their liquidation by way of apparatus separation into fresh water and crystalline salts by any method. Projecting stage I required special research because of mine waters being quite different from natural salt waters. The subject is discussed in great detail.

Particular attention is given to the so called adiabatic vaporizer, which is described in great detail and schematized in Fig.1.

The general content of salt in the distillate is compiled in Table 1. The technoeconomic indicators of industrial installations of adiabatic evaporation are shown in Table 2.

Another experimental-industrial electro-dialysis installation EDU-50 is schematized in Fig.2, of which a detailed description is given. This installation is recommended for distillation of mine water with 3 - 5 g/liter salt content.

TRANSLATED 1253R

Ugol, "PO STRANITSAM ZARUBEZHNYKH ZHURNALOV, Ugol # 4, 1975, pp. 63 (Deutsche Hebe-und Fordertechnic, 1974, No. 12, p. 21) "EXCERPTS FROM FOREIGN JOURNALS"

KEY WORDS: Gneisenau Mine, Germany, Methane, Coal Mining

1254

Kleysteuber, W.K., Nasiatka, T.M., "CONTINUOUS FACE-TO-PREPARATION PLANT COAL HAULAGE SYSTEMS," Coal Age, July 1975, pp 117-122

KEY WORDS: Hydraulic Haulage, Coal

1255R

TRANSLATED

Ugol, "PO STRANITSAM ZARUBEZHNYKH ZHURNALOV," Ugol # 4, 1975, pp. 63-64, (Neue Bergbautechnik, 1974, No. 8, pp. 596-602)
"EXCERPTS FROM FOREIGN JOURNALS"

KEY WORDS: Germany, Mine Development, Coal Mining, Roadheader

1256

Bethlehem Mines Corp., "DATA FOR HYDRAULIC COAL MINING STUDY," Letter and Illustrations, June 1975

KEY WORDS: Coal, Appalachian, Anthracite, Pitching Coal Beds

1257

Flow Equipment Corporation, "HIGH PRESSURE INTENSIFIER PUMPS," Brochure, 1975

KEY WORDS: Pressure Intensifier, Pump, Jet Cutter

1258

Flow Equipment Corp., "WATER JET CUTTING SYSTEMS," Brochure, 1975

KEY WORDS: Jet Cutter, Pressure Intensifier

1259

Reese, H.B., Strebig, K., "NEW CONCEPTS AND TECHNIQUES SPARK THE BUREAU'S ADVANCED MINING SYSTEMS PROGRAM," Coal Age, July 1975, pp 125-127

KEY WORDS: Hydraulic Mining, Coal, Borehole Mining

1260

McPherson, F.A., Reed, H.C., "MINING METHOD, AND APPARATUS THEREFOR," Assigned to Kerr-McGee Coal Corporation, U.S. Patent # 3,881,775, May 1975

KEY WORDS: Borehole Mining, Coal, Hydraulic Mining, Coal Mining, Hydraulic Hoist

ABSTRACT: Method and apparatus for mining through a borehole, a subterranean coal seam located as much as 200 ft below the surface of the earth without need of personnel working below the earth's surface. The apparatus includes an elongated rotatable member, an enlongated powered cutting member pivotally attached near one end of the rotatable member, and an actuator associated with the rotatable member and the cutting member adapted to move the cutting member between a position perpendicular to the rotatable member and a stored position parallel to the rotatable member. In operation, a borehole is cut through the overburden into the seam to be mined. The cutting member is positioned parallel to the rotatable member and inserted into the borehole, to a position within the coal seam, by the surface station. The rotatable member is rotated, the cutting member is driven and extended from its initial position until it contacts the coal and begins to cut the coal, and the cut coal is recovered. Preferably, the area being mined is flooded with a fluid having a specific gravity of from about 1.1 to about 2.5, whereby the small pieces of coal float in the fluid and are transportable by circulation of the fluid from the surface to the mined area and back to the surface.

SL 1261

Poundstone, W.N., Miller, W.J., "HYDRAULIC METHOD OF MINING AND CONVEYING COAL IN SUBSTANTIALLY VERTICAL SEAMS," Assigned to Continental Oil Company, U.S. Patent # 3,874,733, April 1, 1975

KEY WORDS: Borehole Mining, Coal, Hydraulic Mining, Coal Mining, Hydraulic Hoist

ABSTRACT: This method for mining coal from a vertical or steeply inclined seam consists of forming a cavity in the seam, either from the top or from a desired depth, filling the cavity with magnetite slurry which has a specific gravity greater than the specific gravity of coal, and then dislodging the coal mechanically, so the coal will float to the surface and be pumped from the cavity by the excess magnetite slurry being supplied thereto. Separators are used to separate the coal, and the slurry is pumped back into the cavity along with additional magnetite, if needed, to maintain specific gravity above that of coal. Accumulation of debris is overcome by drilling a borehole to a desired depth in the coal seam, anchoring a magnetite recovery pipe at the bottom of the borehole, and mounting a mechanical dislodging apparatus around the magnetite recovery pipe, As the coal is dislodged, the apparatus is pulled up in the manner of raise drilling.

1262R

TRANSLATED

Ekber, B.Ya. & Gontov, A.E., "1500 TYS TONN UGLYA V GODREZUL'TAT TVORCHESKOGO OSVOENIYA TEKHNOLOGII GIDRODOBYCHI BRIGADOY G.N. SMIRNOVA," Ugol # 5, 1975, pp. 31-35
"1,500 THOUSAND TONS OF COAL PER ANNUM AS A RESULT OF CREATIVE ADOPTION OF HYDRAULIC PRODUCTION TECHNOLOGY BY THE G.N. SMIRNOV BRIGADE"
Key words; Hydraulic Mining, Coal, Kuzbass, Yugileinoye, Mining Machinery, Pitching seam, Pump, Production Rate, Hydromonitor, Coking, Slurry, Hydraulic Haulage, Roadheader, Mine Development, Roof Support, Shortwall, Water Supply, Roof, Mining Plan, Hydraulic Hoist, Slurry Pump, Productivity, Cost Per Ton

1263R

Vinokup, B.Sh., Nevolin, N.V., "O NAGNETANII VODY V NIZKOPORISTYY UGOL' V ZONE PREDEL'NO NAPRAVAZHENNOGO SOSTOYANIYA," Ugol # 5, 1975, pp 37-40
"ON WATER INFUSION INTO A COAL OF LOW POROSITY IN A ZONE OF STATE OF PRESSURE LIMIT"
KEY WORDS: Water Infusion, Coal, Permeability & Porosity, Roof Falls, Coal Hardness,

ABSTRACT:

Water infusion into the seam is one of local measures to control rockbursts. The possibility of applying this method is determined by its water intake capability. VNIMI had demonstrated that with coal porosity less than 4% it is impossible. VNIMI carried out a very large number of experiments in numerous mines on rockburst-prone seams at different depths. Some of the results are schematized in three figures. Fig.1 shows the water permeability of sections of a seam No.11 in the zone of increased stresses and the seismic-acoustic activity in the process of infusion. Fig.2 gives the diagrams of water pressure as a function of the volumetric rate of infusion. Fig.3 shows the plan of disposition of the water receiving part of the hole relative to the zone of increased pressures. As a whole, this complex paper does not lend itself to abstracting. Here are the essential conclusions of all the experiments: it is established that coal of low porosity is capable of absorbing water in the zones of threshold state of pressure. When infusing water in such a coal, a zone of inelastic deformations is forming in that zone, which is evidence of neutralization of rockburst-prone state of that section of the seam. The proposed method is effective for preventing rockbursts. Its efficiency depends on the state of pressure, on the disposition of water-receiving part of the hole with respect to the region of the state of pressure limit and on the strength of coal.

1264

Brown, Howard, "COAL SLURRY PIPELINES ISSUE BRIEF NUMBER IB75050", The Library of Congress, Congressional Research Service, Major Issues System, 6/17/75

KEY WORDS: Coal, Slurry, Pipeline, Water Supply, Hydraulic Haulage

1265R

Malyushitskiy, Yu.N., Gazalov, G.T., Stepanov, Yu.P., "UKLADKA SUKHIKH PORODNA STARYE GIDROOTVALY UGOL'NYKH RAZREZOV," Ugol # 5, 1975, pp50-51 ("Stacking up Dry Rocks Over Old Hydraulic Dumps of Coal Pits")

KEY WORDS: coal, Slurry, Coal Mining, Coal Preparation, Rock, Kuzbass coal preparation, & Environmental Impact

Summary
~~ABSTRACT~~: Old hydraulic dumps occupy more than 2,000 ha only in the Kuzbass; besides, new areas had to be set aside to stack up dry dumps of semi-rocky formations. This was done because no adequate methods were available to stack up dry rocks on old hydraulic dumps. Two methods are proposed to deal with the problem: to build around the hydraulic dump a protecting dam consisting of dry rocks so as to prevent slurry outflow beyond the limits of the occupied parcel of land, or to select such cross profiles of dump banks, at which rock sags or cavings ahead of operating mechanisms are excluded.

Figures 1 & 2 show examples of determination on models of steady transverse profiles of dry dumps slopes poured on hydraulic dumps in conditions of minimum (meter) and maximum (20 meter) rise of the front of the dump above the surface of the slurry.

More than 2 million m^3 of dumps per annum were stacked by this method in the coal pits of the Kuzbass, if only economizing more than 150,000 rub and without occupying useful land for new dumps.

1266R

Gayko, E.I., Zelentsova, G.A., Khetsev, V.P., "EFFEKTIVNOST' PRIMENENIYA GIDRAVLICHESKOY ZAKLADKI NA SHAKHTE 'KRASNYY OKTYABR'' KOMBINATA 'ORDZHONIKIDZEUGOL'," Ugol # 5, 1975, pp. 62-66 ("Efficiency of Hydraulic Stowing Application in the Mine "Krasnyy Oktyabr' of Ordzhonikidzde-Ugol'" Concern")

KEY WORDS: Hydraulic Stowing, Coal Mining , Donbass, Longwall

ABSTRACT: In order to protect the industrial erections of the group of Yenakiyevo heavy industry factories from their being undermined by the mine workings of the "Krasnyy Oktyabr" mine of the Ordzhonikidzeugol' concern, hydraulic stowing was applied for the first time on the steep seams of the Central Donbass.

The crushing-stowing complex scheme is shown in Fig.1. The technology of the hydraulic stowing is then described in great detail. The technological scheme of stowing erection in the stope is shown in Fig. 2.

Most of the latter part of the paper is devoted to the economic aspects of hydraulic stowing, compiled in 4 tables.

Following are the conclusions of the described project:

1. The application of the hydraulic stowing in the mine "Krasnyy Oktyabr'" has demonstrated its validity for controlling mine pressure and preserving the erections on the surface.

1266R CONTINUED

2. The introduction of that method permitted to do away with accidents in the stopings resulting from cave-ins and sudden outbursts of coal and gas, thereby diminishing the consumption of lumber.

3. Statistics point to the improvement of technoeconomic indicators of longwall faces worked out with hydraulic stowing, by comparison with the use of other methods.

4. Analysis of capital outlays shows that the bulk of them goes to the preparation of the stowing material, cleaning the workings, making the stopes ready for receiving the stowing. This requires automation of work in the crusher complex, improvement of the scheme of waste water control and in the organization of stowing operations.

5. To further imporve the technoeconomic indicators of the faces applying hydraulic stowing, acceleration is recommended for passing to coal mining by shearers and cutter-loaders in the stopings with the use of powered supports.

6. The success of the experiment at the mine "Krasnyy Oktyabr'" corroborates the expediency of extending this method to other mines of the Central Donbass.

1267R

Krylov, V.F., "RETSENZIYA NA KNIGU A.E. SMOLDYREVA 'TEKHNOLOGIYA I MEKHANIZATSIYA ZAKLADOCHYKH RABOT'," Ugol # 5, 1975, p. 79
"REVIEW OF THE BOOK ENTITLED 'TECHNOLOGY AND MECHANIZATION OF STOWING OPERATIONS',"

KEY WORDS: Hydraulic Stowing, Coal Mining

ABSTRACT:

While during the past years the creation of effective technology of coal seams with stowing of the goaf has acquired a greater importance, little was done in that regard during the past 10 - 15 years.

The reviewed book closes to a significant degree this gap, presenting, moreover, an interesting experiment on technology and mechanization of stowing.

Alongside with the merits of the book, consisting in clear recommendations regarding the technical implementation of the method, there are are a series of shortcomings which the reviewer brings forth with great detail.

Despite these shortcomings the book does not lose its value and may be recommended as a practically useful contribution for the broad circle of specialists in coal industry.

1268R

TRANSLATED

Aleynikov, A.A., Krupin, N.N., Dromidontov, Yu.M., "PRIMENENIE GIDROMONITORNOY USTANOVKI DLYA NAREZKI SHCHELEY V VYBROSOOGPASNOM PLASTE," Ugol Ukrainy, # 5, 1975, pp. 28-29
"UTILIZATION OF A HYDROMONITOR INSTALLATION FOR SLOTTING IN AN OUTBURST-PRONE SEAM"

KEY WORDS: Hydromonitor, Hydraulic Mining, Pump, Artema Mine, Coal, Mine Development, Up-Raise Mining, Kirovskaya Mine, Methane, Disintegration

1269R

Orfeev, Yu.V., Leypi, L.V., Zamyatin, Yu.P., "VLIYANIE NESTABIL'NOSTI RABOCHIKH REZHIMOV UGLESOSOV NA RESURS ROTOROV," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 4, 1975, pp 16-17 ("Effect of the Instability of Coal Pumps' Working Conditions on the Rotor Resource")

KEY WORDS: Coal, Pump, USSR, Kuzbass, Hydromine # 2 (Inskoe seam), (Combinat Kuzbassugol), Productivity, Hydraulic Hoisting

SUMMARY: Based on an extremely complex definition, a range is established of coal pump units' working conditions instability and a classification is proposed. It is shown that the resource of coal pump rotors prior to replacement is determined essentially by the condition of operation. As its instability decreases the rotor reliability increases. To fully comprehend this paper a complete translation would be required.

1270R

TRANSLATED

Luk'vanchenko, E.S., Semenov, L.G., Fishchenko, V.I., "BEZLYUDNAYA VYEMKA UGLYA IZ SKVAZHIN GIDROMONITORNYM AGREGATOM AGS," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 4, 1975, pp. 23-24
"MANLESS MINING OF COAL FROM HOLES BY HYDROMONITOR UNIT AGS"

KEY WORDS: Hydromonitor, Hydraulic Mining, Coal, Donbass, Samsonovski - "50th Anniversary of USSR," Borehole Mining, Up-raise Mining, Pitching Coal Beds, Seam Thickness, Roof

1271R

Mikhaylov, P.G., Il'in, V.I., Grinev, V.I., Ruzanov, V.D., Peshkov, I.S., "VYBOR TEKHNOLOGII ZAKLADOCHNYKH RABOT NA SHAKHTE 'TAYBINSKAYA' KOMBINATA 'PROKOP'EVSKUGOL'," Tekhnologiya Dobychi Uglya Podzemnym Sposobom, # 4, 1975, pp 44-45, "CHOICE OF STOWING OPERATIONS TECHNOLOGY IN THE MINE 'TAYBINSKAYA' OF THE 'PROKOP'YEVSKUGOL' CONCERN"

KEY WORDS: Hydraulic Stowing, Coal Mining, Kuzbass, Taybinskaya Mine

1272R

Shuberov, E.A., "ANKERY DLYA KREPLENIYA GORNYKH VYRABOTOK," Proektirovanye I Stroitel'stvo, # 4, 1975, pp 7-8
"ANCHORS FOR THE SUPPORT OF MINE WORKINGS" (Anchorage by jack)

KEY WORDS: Roof, Rock, Roof Support, Roof bolts, USSR, Coal Mining

1273R

TRANSLATED

Aksenov, A.V., Protas, B.T., Morozov, E.G., "SOVERSHENSTVOVANIE TEKHNOLOGII PROVEDENIYA PODGOTOVITEL'NYKH VYRABOTOK NA GIDROSHAKHTE 'Pioner," Proektirovanye I Stroitel'stvo, #4, 1975, pp. 18-19
"IMPROVEMENT OF TECHNOLOGY FOR CONDUCTING DEVELOPMENT WORKINGS IN THE HYDROMINE 'PIONER'"

KEY WORDS: Hydraulic Mining, Donbass, Coal, Pioneer Mine, Productivity, Hydromonitor, Mine Development, Explosives, Roof Support, Sluice (Flume), Mining Machinery,

1274R

TRANSLATED

Buryakov, V.F., Bogatko, E.N., "VLIYANIE GLUBINY RAZRABOTKI NA SEBESTOIMOSTY DOBYCHI UGLYA," Gornyy Zhurnal, # 4, 1975, pp. 28-29
"INFLUENCE OF THE DEPTH OF A WORKING ON THE COST OF COAL PRODUCTION"

KEY WORDS: Coal Mining, Overburden, Donbass, Economics, Cost Per Ton

SL 1275R

Mazurov, V.A., "NUMERIC CHARACTERISTICS OF MINING UNDER CONDITIONS OF COMBINED BLASTING AND HYDRAULICKING OF COAL," Ugol, # 11, 1961, pp. 34-37
"O PARAMETRAKH OTBOIKI PRI GIDROVZRYVNOM SPOSOBE VYEMKI UGLYA"

KEY WORDS: Hydraulic Mining, Coal, Explosives, Economics, Cost/Ton, USSR

ABSTRACT: Formula for calculation of charge weight required for loosening bench; power of hydraulic jet and parameters on which it depends.

1276R

KUZNETSOV, G.I., "PRELIMINARY LOOSENING OF COAL MASSIF IN HYDRAULIC MINES OF DONETS BASIN," Ugol # 11, 1961, pp. 31-34
"PREDVARITEL'NOE RYKHLENIE UGOL'NOGO MASSIVA NA GIDROUCHASTKAKH DONBASSA"

KEY WORDS: Hydraulic Mining, Coal, Donbass, Water Infusion, Disintegration, Mining Plan

ABSTRACT: Advantages of loosening hard anthracite by blasting and consecutive hydraulicking; method requires drilling long blast holes along bedding.

1277R

Nurok, G.A., Antonov, V.A., "MEANS OF IMPROVING HYDRAULIC BREAKAGE OF ROCKS," Gornyi Zhurnal # 11, Nov. 1961, pp. 28-31
"PUTI SOVERSHENSTVOVANIYA GIDRAVLICHESKOGO RAZRUSHENIYA GORNYKH POROD"

KEY WORDS: Hydraulic Mining, Rock, Overburden, Kuzbass, Open Pit

ABSTRACT: Experience with hydraulic mining and stripping operations in various mines is analyzed; suggestions are made to increase head in hydraulic nozzle and to install remote control of hydraulic equipment located closer to bench.

1278R

Chinakal, N.A., "PROSPECTS OF APPLICATION OF SHIELD MINING IN KUZNETSK BASIN," Ugol # 11, 1961, pp. 11-14
"PERSPEKTIVY PRIMENENIYA SHCHITOVOL SISTEMY RAZRABOTKI V KUZBASSE,"

KEY WORDS: Hydraulic Mining, Coal, Kuzbass, Explosives, Roof Support

ABSTRACT: This system is becoming leading among other systems in basin; application of flexible shields under conditions of hydraulic mining

1279R

Ignatov, N.N., "PROSPECTS OF DEVELOPMENT OF HYDRAULIC COAL MINING," Ugol # 10, 1961, pp. 15-19,
"PERSPEKTIVY RAZVITIYA GIDRAVLICHESKOI DOBYCHI UGLYA NA SHAKHTAKH"

KEY WORDS: Hydraulic Mining, Coal, Kuzbass, Donbass, Karaganda Basin, Mining Plan, Polysayevskaya-Severnaya, Ziminka, Tominskaya, Odesskaya-Komsomolskaya

ABSTRACT: Up-to-date experience with hydraulic mining indicates that this method reduces costs of coal by 20 to 40 percent as compared to conventional method of mining; by 1965 hydraulic method of mining is expected to supply 21 to 22 percent of all coal mined in Soviet Union; in Kuznetsk coal basin hydraulic mining will produce 50 percent of all coal.

1280R

Kondrashov, V.M., "NEW REMOTE CONTROLLED HYDRAULIC GUN," Gornyi Zhurnal, # 2, 1962, pp. 52-55,
"NOVYE GIDROMONITORNYE USTANOVKI S DISTANTSIONNYM UPRAVLENIEM"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor

ABSTRACT: Installation consists of control board, pressure hoses, and 2 hydraulic guns of GMTs-250 type; installation handles water at rate of 340 to 2700 cu m/hr at pressure of 12 atm; nozzles of gun are 51, 63, and 76 mm in diameter.

1281R

Gubanov, M.S., Markus, M.N., "EXPERIENCE WITH PRACTICAL APPLICATION OF HYDRAULIC COAL MINING IN THIN COAL BEDS OF DONBASS," Ugol # 6, 1962, pp. 28-34 "OPYT OSVOENIYA DOBYCHI UGLYA GIDRAVLICHESKIM SPOSOBOM PRI RAZRABOTKE TONKIKH PLASTOV DONBASSA"

KEY WORDS: Hydraulic Mining, Coal, Donbass, Mining Plan, Krasnoarmeyskaya D1 & D2, Production Rate, Coal Preparation, Odesskaya-Komsomolskaya, Yanovskiy

ABSTRACT: 16 Mines of basin produce coal by hydraulic method; details on Yanovskiy hydraulic mine producing average 570 tpd; expected daily output is 1500 tpd; system of mining and circuit of hydraulic system.

1282R

Sivaks, P.Kh., "TECHNICAL & ECONOMIC DATA ON PERFORMANCE OF ODESSKAYA-KOMSOMOL'SKAYA HYDRAULIC SHAFT NO. 2 DURING 1961-1962," Ugol # 9, 1963, pp. 44-45, "TEKHNIKO-EKONOMICHESKIE POKAZATELI RABOTY GIDROSHAKHTY 'ODESKAYA-KOMSOMOL'SKAYA',NO. 2 ZA 1961-1962 GG,"

KEY WORDS: Hydraulic Mining, Coal, Odesskaya-Komsomol'skaya # 2, Anthracite, Pitching Coal Beds, Economics, Donbass

ABSTRACT: Mineable anthracite bed of 1.28 m thickness dipping at 12-15° is mined by entirely hydraulic method preceded by blasting; coal of plus 30 mm size is transported to surface; coal of minus 30 mm size is handled by hydraulic means; loss of coal underground reaches 34.1%.

1283R

Tolkatser, D.Ya., Neienburg, V.E., "COSTS OF OPERATIONS OF HYDRAULIC MINES WITH LOW ANGLE OF DIP UNDER CONDITIONS OF DONBASS," Ugol # 11, Nov. 1963, pp. 44-46, "STOIMOSTNYE PARAMETRY DLYA GIDROSHAKHT S POLOGOPADAYUSHCHIMI PLASTAMI V USLOVIYAKH DONETSKOGO BASSEINA,"

KEY WORDS: Hydraulic Mining, Coal, Donbass, Economics, Pitching Coal Beds, Hydraulic Haulage, Cost/ton

ABSTRACT: Costs of 1 cu m of water used during development and operation of hydraulic mine; costs of preparatory workings when hydraulic method is combined with blasting and under conditions when development is performed by hydraulic method only.

1284R

Ishchuk, I.G., "RESULTS OF COMPETITION ON HYDRAULIC METHODS OF MINING," Ugol # 10, 1963, pp. 35-39, "O REZUL'TATAKH DONDURSA PO GIDRODOBYCHE"

KEY WORDS: Hydraulic Mining, Coal, Mining Machinery, Roadheader, Hydromonitor, Monorail, Donbass, Roof Support

ABSTRACT: Equipment designed in projects submitted is represented by system of combined mechanical and hydraulic manless mining, hydraulic coal cutter, vibrational-hydraulic cutter, remote controlled suspension type monitor, and system of hydraulic mining with movable shield.

1285R

Puchkov, Ya.D., Muslin, K.E., Pereverzev, M.P., Novitskii, V.V., Gritzenko, V.G., "UNMANNED COAL MINING APPLYING HYDRAULIC MECHANIZATION," Ugol # 2, 1963, pp. 26-27, "BEZLYUDNAYA VYEMKA UGLYA S PRIMENENIEM GIDROMEKHANIZATSII,"

KEY WORDS: Hydraulic Mining, Coal, Roof Support, Hydromonitor, Lutuginsky # 4 Mine (ILLIRISKI Mine Management), Donbass

ABSTRACT: Method in experimental stage of development was tested in thin coal bed dipping at 86 to 90° in No. 4 Lutugin mine in Donbass; production of 1000 tons of coal requires 60 to 70 m of preparatory workings; boreholes 300 mm in diameter are drilled between levels and accommodate suspension type remotely controlled hydraulic monitor.

1286R

Gubin, V.V., "CONDITIONS OF APPLICATION AND PARAMETERS OF MINING SYSTEM WHEN CUTTING COAL WITH WIRE ROPE SAW IN COMBINATION WITH HYDRAULICKING," Gornyi Zhurnal, # 2, 1964, pp. 15-22, "USLOVIYA PRIMENENIYA I PARAMETRY SISTEM RAZRABOTKI PRI VYEMKE UGLYA KANATNOI PILOI V KOMPLEKSE S GIDROMEKHANIZATSIEI"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Mining Plan, Mining Machinery, Production Rate, Productivity

ABSTRACT: Method designed to make use of rock pressure; hydraulicking of undercut coal produces 1500 to 1800 tpd; method is suggested for calculation of width of strip being mined and power of wire rope saw; this method is based on capacity of hydraulic equipment.

1287R

Aleinikov, A.A., Chubenko, P.F, Smaliy, V.E., "TECHNICAL AND ECONOMIC ANALYSIS OF HYDRAULIC COAL MINING CONDITIONS IN THIN BEDS," Ugol # 6, 1964, pp. 34-38, "TEKHNIKO-EKONOMICHESKII ANALIZ REZHIMOV GIDROOTBOIKI UGLYA NA PLASTAKH MALOI MOSHCHNOSTI,

KEY WORDS: Hydraulic Mining, Coal, Economics, Nagolchanskaya # 4, Darevskaya # 3, Odesskaya-Komsomolskaya # 2, Novo-Grodovka # 3, Belyanka # 7, Pioneer, Mining Plan, Disintegration, Coal Hardness

ABSTRACT: Dependence of efficiency in hydraulic coal mining on system of mining, stability of roof, and hydraulic power of monitor

1288G

Maurer, H., Lemke, K., "HYDROMECHANICAL COAL MINING AND HYDRAULIC COAL TRANSPORT - MEANS OF CUTTING COSTS FROM COALFACE TO POWER PLANT," Brennstoff-Waerme-Kraft, # 8, 1968, pp. 395-401, "HYDROMECHANISCHE KOHLENGEWINNUNG UND HYDRAULISCHE KOHLENFOERDERUNG - EIN WEG ZUR KOSTENSENKUNG VOM KOHLENSTOSS BIS ZUM KRAFTWERK,"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Germany, Hydraulic Haulage, Slurry, Mining Plan, Pitching Coal Beds, Pump, Coal Preparation, Water Supply

ABSTRACT: Application of hydromechanical coal mining results in reduction in costs and increased safety; new methods and new machines are described; under certain conditions hydraulic transport of entire solid material even from large depths can be economic; transfer of hydromechanically mined coal into combustible coal-water suspension underground would not be advisable from economic viewpoint; pumping grades below 2 mm from depth of 750 m can be technically and economically satisfactory.

1289

Dolbear, S.H., "MISSILE MINING BY IMPACT," Eng. & Min. J., # 2, 1968, pp. 112-113

KEY WORDS: Water Cannon, Rock, Disintegration, Coal

ABSTRACT: Methods and equipment suggested for breaking of mineral ore-bodies in place by jet stream of water, air, or other media containing solid particles having sufficient hardness and strength to survive function required of missiles; in case of jets of liquids, method of handling soluble and insoluble minerals are discussed.

1290

Powell, J.H., Simpson, S.P., "THEORETICAL STUDY OF MECHANICAL EFFECTS OF WATER JETS IMPINGING ON SEMI-INFINITE ELASTIC SOLID," Int. J. Rock Mechanics & Min. Sciences, v. 6 # 4, July 1969, pp. 353-364

KEY WORDS: Disintegration, Rock, Coal, Jet Cutter, Coal Hardness

ABSTRACT: Method is developed for determining the stress distribution in an elastically homogeneous semi-infinite solid when its plane free surface is subjected to an axially symmetrical load. This method is used to determine the stress field induced in an elastic solid by a water jet impinging on its surface. The theoretical stress distribution is used, together with theory of crack propagation in solids to predict the rock cutting properties of water jets in relation to the mechanical strength of the target rock. The theoretical predictions are compared with experimental findings.

1291 R

Abdurashitov, S.A., Tupichenkov, A.A., Vershinin, I.M., Tenengol'ts, S.M., "JET PUMPS," Chptr 7, Part 4 of book entitled "Nasosy i Kompressory," ("Pumps & Compressors"), Moscow, Nedra, 1974, pp. 174-178

KEY WORDS: Jet Pump

1292

Canadian Mining Journal, "COAL PUMPING POSSIBLE," Canadian Mining Journal, v. 94, # 8, Aug. 1973, p. 56

KEY WORDS: Hydraulic HOist, Pump, Hydraulic Mining

ABSTRACT: According to engineers at the West Virginia University, coal which is too deep to mine or strip may be pumped out of the ground in a liquid or slurry form. The theory behind the new method is to drill a hole in the seam, pump in a solvent and then pump the resulting slurry back up to the surface. The only difficulty has been to find a solvent that would make the process economical. Different types of coal are more suitable for liquefaction than others. Sub-bituminous coal dissolves fastest, lignite second, and semi-anthracite the slowest. Though some solvents dissolve the coal better than others, they are not always financially feasible. Napthalene compounds showed best results but were too expensive. Anthracene oil, a coke by-product while not as effective as napthalene was within the range of most companies and had a high coal dissolving ratio.

1293

Bhutani, J., Brice, A., Elliott, J., Ellis, D., Jacobsen, W., Just, J., Krajeski, E., and Savadelis, J., "AN ANALYSIS OF CONSTRAINTS ON INCREASED COAL PRODUCTION," Prepared for the Department of the Interior, January 1975, PB-240-613

KEY WORDS: Water Supply, Coal Mining, Western U.S., Midwestern U.S. Appalachian

1294

Ankeny, M.J., "RESEARCH IN HYDRAULIC MINING," Proc. Ill. Mining. Inst., 68th Ann. Meeting, 1960, pp. 77-79

KEY WORDS: Hydraulic mining, Coal, U.S., Flat Coal Beds, Pump, West Lebonon Mine

1295R

Ofengenden, N.E., Dolgopolov, V.A, "HIGH PRESSURE PUMP OF 10N8x4A TYPE FOR HANDLING SLURRY WATER IN HYDRAULIC COAL MINES;" Ugol # 1, 1962, pp. 27-28, "VYSOKONAPORNYI NASOS TIPS 10N8x4A DIYA RABOTY NA TSIRKULYATSIONNOI SHLAMOVOL VODE UGOL'NYKH GIDROSHAKHT,"

KEY WORDS: Hydraulic Mining, Coal, Pump, Water Supply

ABSTRACT: Pump originally designed for petroleum pipe lines may supply water at rate of 800 cu m/hr to hydraulic system of coal mines

1296R

Aleksandrov, N.N., Ashkinazi, A.S., Kochergina, A.V., "MONITOR INSTALLATION GUTs-6," Gornyi Zhurnal, # 5, 1964, pp. 40-44 "GIDROMONITORNAYA USTANOVKA GUTs-6"

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Disintegration Surface Hydraulinc Mining, Open Pit

ABSTRACT: Machine is compared with other hydraulic equipment manufactured in Soviet Union; drive of monitor is of electric-hydraulic type; capacity of machine is 52.5 cu m/hr at 65 m head; amount of water necessary to remove 1 cu m of gravel or sand is 15.8 cu m.

1297

Kusui, T., "LIQUID JET FLOW INTO STILL GAS," Japan Soc. Mech. Engrs., Bul, V. 11, # 48, Dec. 1968, pp. 1084-1090

KEY WORDS: Hydraulic Mining, Coal, Hydromonitor, Jet Characteristics, Japan

ABSTRACT: Concerning research on optimum nozzle dimension for hydraulic coal mining and other hydraulic processes, experiment on core-length L of turbulent water jet has been carried out on 45 nozzles of various configurations; with increasing jet velocity, L passes three states - increasing, decreasing, and saturating stage; from consideration of dimensional relation empirical formula for saturated value of L is given

1298

Fly, A.B., "HYDRO-BLAST MINING SHOOTS AHEAD," Min. Eng., v. 21, # 3, Mar. 1969, pp. 56-58

KEY WORDS: Hydraulic Mining, Borehole mining, hydraulic hoist, rock, pump

Abstract; Subsurface hydraulic mining through 16 in. diameter boreholes has been made possible through development of new explosion-type slurry pumping system and related slurry handling equipment; equipment and its potentialities in mining applications are discussed

1299R

Kochergin, G.N., Semivolov, V.G., "HYDRAULIC LIFT OF ROCK AT 'YUZHNAYA' MINE," Ugol # 11, 1961, pp. 39-40, "GIDRAVLICHESKII POD'EM PORODY NA SHAKHTE 'YUZHNAYA;"

KEY WORDS: Hydraulic Hoist, Rock, Yuzhnaya Mine, Donbass, Feeder

ABSTRACT: Design and testing of installation at mine in Donbass for crushing and hydraulic lifting of waste to surface; special mixers with gamma ray control of level of rock are part of system.

1300R

Brenner, V.A., Pezuglov, N.N., Lartsev, G.G., "EXPERIENCE WITH USE OF HYDRAULIC LIFT FOR REMOVING COAL AND WATER FROM SUMPS," Ugol # 12, 1062, pp. 24-25, "OPYT PRIMENENIYA GIDROELEVATORNYKH USTANOVOK DLYA CHISTKI ZUMPFOV OT UGLYA I OTKACHKI IZ NIKH VODY,"

KEY WORDS: Hydraulic Hoist, Coal, Jet Pump, Slurry, Feeder

ABSTRACT: Design of hydraulic lift and performance of lifts in coal mines of Karaganda handling water at rate of 35.3 to 60 cu m/hr and 5.2 to 21.0 tons of coal slurry consisting of 1 part coal and 3 parts water.

1301R

Karpov, M.N., "SOURCES OF ERRORS IN GRAVITATIONAL METHODS OF MEASURING DENSITY OF COAL SLURRY MOVING THROUGH PIPELINES," Ugol # 4, 1962, pp. 36-40, "ISTOCHNIKI POGRESHNOSTEI GRAVITATSIONNYKH METODOV IZMERENIYA PLOTNOSTI UGOL'NOI PUL'PY DVIZHUSHCHEISYA V TRUBOPROVODAKH,"

KEY WORDS: Hydraulic Mining, Coal, Slurry, Instrumentation

ABSTRACT: Analysis of nature of errors during measurement of density according to difference in heat pressure created by water and slurry, determination of density by alteration of weight of horizontal pipe segment; error due to presence of free air in slurry.

1302

Koch, L.W., "SOLIDS CARRYING PIPELINES - WHAT TO CONSIDER IN THEIR PRELIMINARY DESIGN," Eng. & Min. J., v. 163, # 10, Oct. 1962, pp. 74-78

KEY WORDS: Hydraulic Haulage, Slurry, Pipeline, Power Consumption/ Pipeline, Coal, Rock,

ABSTRACT: Economic advantages of pipe line transportation are amenability to automation, dependability, low operating cost, and low maintenance cost; types of solid materials being transported in pipe lines; principles and mechanics of flow as homogeneous suspension, as heterogenous suspension, and by saltation; selection of carrying fluid, preliminary design of pump stations, slurry preparation and handling facilities, cost estimate, and pilot testing.

1303

Chapus, E.E., Condolios, E., Couratin, P., "HYDRAULIC HOISTING OF COAL AND ORES," Min. Congress J., v. 48, # 9, 1962, pp. 46-49

KEY WORDS: Hydraulic Hoist, Coal, Rock, France, Slurry, Power Consumption (Pipeline), Economics, Devillaine Mine (St. Etienne)

ABSTRACT: Mechanical characteristics of hydraulic hoisting; account of industrial pilot plant at Devillaine coal mine in France; hoisting system has been in operation for over a year and has proved to be entirely satisfactory in both its operation and its resistance to wear; system consists primarily of pipeline, lock feed system, and above ground delivery station; capacity of system is 50 to 60 short tph of minus 3 1/4 in. coal.

1304R

Kornelyuk, A.F., "HYDRAULIC MATERIAL HANDLING INSTALLATION IN NO. 6-7 'NIKITOVKA' MINE OF GORLOVSKUGOL TRUST," Ugol # 7, 1962, pp. 28-31 "GIDRAVLICHESKAYA TRANSPORTNAYA USTANOVKA NA SHAKHTE NO. 6-7 'NIKITOVKA' TRESTA GORLOVSKUGOL,"

KEY WORDS: Hydraulic Hoist, Feeder, Pipe Feeder, Nikitovka Mine, Jet Pump, USSR, Mining Machinery

ABSTRACT: Design and data on performance of hydraulic U-shaped system and feeder for handling waste at rate of 30 tph.

1305

McNamara, R.F., "FUNDAMENTALS OF SOLIDS PIPELINING," Pipe Line Industry, v. 15, # 6, Dec. 1961, pp. 64-67, v. 16 # 1, Jan., 1962, pp. 50-53, # 2, Feb. 1962, pp. 31-33 (This was a continued article)

KEY WORDS: Hydraulic Haulage, Coal, Pipeline, Rock, Consolidation Coal Pipeline, Power Consumption (Pipeline)

ABSTRACT: History and development of solids-carrying pipe lines; present status of lines for transporting coal, phosphate rock, grains, wood products, and ore; limitations on materials. Design of systems for colloidal and nonhomogeneous suspensions. Pipe selection and installation, pump selection, additives, deflocculants, and economics of hydraulic transportation

1306R

Trainis, V.V., "METHOD OF CALCULATING FRAGMENTATION OF COAL IN PIPELINES DURING HYDRAULIC TRANSPORTATION," Ugol # 9, 1963, pp. 37-41 "METHOD RASCHETA IZMEL'CHENIYA UGLYA V TRUBOPROVODAKH PRI GIDROTRANSPORTE,"

KEY WORDS: Hydraulic Haulage, Pipeline, Slurry, Coal, Anthracite, Kuzbass, Donbass, Baidayevskaya-Severnaya, Yanovskiy

ABSTRACT: Dependence between diameter of coal fragments before hydraulic handling and after hydraulic transportation, taking into account abrasion and loss of weight by coal fragments, time, velocity of flow, coefficient of friction, and hardness of coal

1307

Moreland, C., "SETTLING VELOCITIES OF COAL PARTICLES," Can. J. Chem Eng., v. 41, # 3, June, 1963, pp. 108-110

KEY WORDS: Slurry, Hydraulic Hoist, Coal, Pipeline

ABSTRACT: As preliminary step in study of pipe line flow of coal-in-oil slurries, sedimentation of coal particles in oil was examined; terminal velocities were within 25% of predicted values for spheres and could be related to particle size; settling velocities of slurries are related to slurry porosity by theoretical equation of A.D. Maude and R.L. Whitmore

1308R

Korshunov, A.P., "CALCULATION OF CAPACITY OF HYDRAULIC MATERIAL HANDLING INSTALLATION," Gornyi Zhurnal, # 10, 1963, pp. 36-39, "RASCHET TRANSPORTIRUYUSHCHEI SPOSOBNOSTI GIDROTRANSPORTNOL USTANOVKI,"

KEY WORDS: Hydraulic Haulage, Coal, Rock, Slurry

ABSTRACT: Formulas designed for calculation of loss of head in vertical and horizontal pipes during handling of rock fragments of various size; determination of head created by earth suction machine; material handling capacity of pipe line taking into consideration densities of material handled; example of calculation.

1309

Condolios, E., Couratin, P., Chapus, E.E., "PUMPING ORES UP VERTICAL SHAFTS," Can. Min. & Met. Bull, v. 56, # 611, Mar. 1963, pp. 187-198

KEY WORDS: Hydraulic Hoist, Rock, Coal, Feeder, France, Devillaine Mine (St. Etienne)

ABSTRACT: Basic laws and design criteria for hydraulic hoisting installations; description of coal hoisting installation in France which has been in industrial operation since 1960, with vertical lift of 600 ft and annual capacity of 500,000 tons of minus 3 1/4 in. coal; tentative appraisal of process, including cost estimates.

1310

South African Mining & Engineering Journal, " HYDRAULIC LIFTING OF COAL FROM UNDERGROUND," South African Min. & Eng. J., v. 74, # 3668, May 24, 1963, pp. 1203-1204

KEY WORDS: Hydraulic Hoist, Coal, Australia, Slurry Pump, Feeder

ABSTRACT: System called hydro-lift developed in Australia for lifting coal and metalliferous ores vertically from any depth underground to surface of mines consists basically of pump, pipeline, and hopper; coal mined at face is transported to hopper, where stream of h-p water lifts it up pipe to surface; solids up to 75% of pipe diameter can be carried; pipe line which has diameter of 4 in. lifts solids of 3 1/2 in.; high lifting capacity of low velocities is claimed; line with diameter of 18 in. will lift at about 500 tph.

1311

Mining & Chemical Engineer Review, "HYDRO-LIFT," Min. & Chem. Eng. Rev., v. 55, # 6, March 1963, pp. 39-44

KEY WORDS: Hydraulic Hoist, Hydraulic Haulage, Coal, Rock, Australia, Feeder, Slurry Pump, Pipeline, Power Consumption (Pipeline)

ABSTRACT: Method of introducing controlled amounts of solids and liquids into pipe developed in Australia; hydro-lift system is suitable for vertical transport by water pressure of run-of-mine coal or ore up to 24 in. in size; New South Wales mine plans to use single 14 in. centrifugal pump to lift minus 8 in. coal about 120 ft vertically; design of batch, continuous and intermediate units; construction of hydro-lift

1312R

Markov, Yu.A., Smoldyrev, A.E., "HYDRAULIC HANDLING OF COAL AND ROCK THROUGH VERTICAL PIPES OF LIFTS," Ugol # 6, 1963, pp. 28-32, "GIDRAVLICHESKII TRANSPORT UGLYA I POROD PO VERTIKAL'NYM TRUBOPROVODAM POD'EMYKH USTANOVOK,"

KEY WORDS: Hydraulic Hoist, Coal, Rock, USSR, Power Consumption (Pipeline), Slurry

ABSTRACT: Hydraulic handling of coal, iron ore, sand, lead-zinc ore, and crushed rock was studied using pipes of 63, 78, 150, and 204 mm in diameter; formulas are deduced indicating conditions most efficient for hydraulic handling of materials.

1313

Koch, L., "SOLIDS IN PIPES," Int. Science & Technology, # 26, Feb. 1964, pp. 68-72, 75-76, 78

KEY WORDS: Hydraulic Haulage, Coal, Rock, Pipeline, Slurry, Power Consumption (Pipeline)

ABSTRACT: State-of-art review of hydraulic transport of bulk commodities like coal, phosphates and ores, principally in United States and Canada; theory of solid-in-liquid transport and technical aspects of process are discussed; next development predicted in transportation of slugs of materials or carrier capsules

1314R

Spivakovskii, A.O., Smoldyrev, A.E., "PRESENT STATE OF DEVELOPMENTS IN HYDRAULIC TRANSPORTATION IN COAL INDUSTRY," Ugol # 5, 1964, pp. 42-48 "SOVREMENNYI ETAP RAZVITIYA GIDRAVLICHESKOGO TRANSPORTA V UGOL'NOI PROMYSHIENNOSTI,"

KEY WORDS: Hydraulic Haulage, Coal, Hydraulic Hoist, Donbass, Karaganda Basin, Slurry, Pipeline, Hydraulic Mining

ABSTRACT: Comparison of economic efficiency and fields of applicability of conveying and hydraulic transportation of coal; design of hydraulic systems for handling coal in mine and for transportation of coal for long distances.

1315

Street, N., "RHEOLOGY OF COAL SLURRIES," Illinois Min. Inst. - Proc. 1964, pp. 40-48

KEY WORDS: Slurry, Coal, Pipeline

ABSTRACT: Equations used for describing suspension flow behavior; experiments with coal slurry in rotational viscometer indicate that coal system exhibits non-Newtonian behavior and can be approximated by equations describing Bingham flow; possible reduction of slurry viscosity by increasing surface potential

1316

Pipilen, A., Weintraub, M., Orning, A.A., "HYDRAULIC TRANSPORT OF BROKEN COAL," Soc. Min. Engrs. of AIME - Trans. v. 229, # 4, Dec. 1964, pp. 427-435

KEY WORDS: Hydraulic Haulage, Coal, Slurry, Slurry Pump, Bituminous, Power Consumption (Pipeline), U.S.

ABSTRACT: In study of principal factors affecting transport of coal-water mixtures through centrifugal pump and pipe line, interrelation between solids concentration, velocity and pressure drop was established for -2 in. bituminous lump coal in concentrations up to 48% by weight; optimum concentrations exist for maximum capacity of given pipeline and for minimum energy requirements per ton of coal; system of studying flow of solid-liquid mixtures in pipe lines by determination of relative sound intensities was developed.

1317R

Ivanov, P.A., "INVESTIGATION OF SOME PARAMETERS CHARACTERIZING HYDRAULIC TRANSPORTATION OF CLASSIFIED COAL IN OPEN FLOW," Izvestiya Vysshikh Uchebnykh Zavedenii, Gornyi Zhurnal, # 12, 1964, pp. 86-90, "ISSLEDOVANIE NEKOTORYKH PARAMETROV GIDROTRANSPORTA KLASSIFITSIROVANNOGO UGLYA V OTKRYTOM POTOKE,"

KEY WORDS: Hydraulic Haulage, Coal, USSR, Flume (Sluicing), Slurry

ABSTRACT: Increase of average diameter of particles causes increase in hydrodynamic pressure; however, latter is not as high as resistance when depth of flow is smaller than diameter of particle; effect of gradient on particles of various diameter; dependence between carrying capacity of flow and flow rate.

1318

Bomberger, D.R., "HEXAVALENT CHROMIUM REDUCES CORROSION IN COAL-WATER SLURRY PIPELINE," Matls Protection, vol 4, # 1, 1965, pp. 43-46, 48-49

KEY WORDS: Hydraulic Haulage, Coal, Pipeline, Wear and Abrasion, Corrosion, Slurry

ABSTRACT: Chemically active factors in coal slurry pipeline include coal, oxygen, steel (pipe wall), corrosion inhibitors, dissolved inorganic salts, and other unidentified substances, as well as temperature; break point in corrosion rate time curve is at approximately 1/2 ppp dissolved oxygen; in uninhibited system, dissolved oxygen is consumed by coal and pipe wall; with inhibitor protection, coal, alone, removes oxygen; conclusion of laboratory tests was that optimum inhibitor schedule of 20 ppm Cr^{+6} added at beginning of pipe line will provide protection well within design; this formula was adopted as standard.

1319

Wolfe, S.E., "TRANSPORT OF SOLIDS IN HELICALLY-RIBBED PIPES," Can. Min. & Metl. Bul., vol. 60, # 658, Feb. 1967, pp. 221-223

KEY WORDS: Hydraulic Haulage, Slurry, Pipeline, Rock, Power Consumption (Pipeline), Canada

ABSTRACT: Presence of helical ribs in smooth-bore round pipe results in transport of granular solid particles in water at much lower velocity than required to transport same solids in smooth pipe; helical motion imparted to flowing mixture effectively returns settled solid particles to main stream; flow may be stopped and restarted without difficulty; due to lower velocity required for satisfactory transport, large power savings are realized; also, due to lower velocity, wear on pipe walls is much reduced.

1320

Rao, T.C., "EFFECTS OF PARTICLE CHARACTERISTICS ON APPARENT VISCOSITIES OF SOLID SUSPENSIONS," Chem. Age India, v. 21, # 1, 1970, pp. 76-77

KEY WORDS: Hydraulic Haulage, Rock, Coal, Slurry, India

ABSTRACT: In any mineral or metallurgical industry, the viscosities of the pulps involved during processing need careful control and handling. Author attempts to relate the apparent viscosities of a pulp to the size and specific gravity of particles and also the percent solids in a suspension. The consistometer developed by F.D. Devaney and S.M. Shelton was used for measuring apparent viscosities of several common hydrometallurgical pulps (coal, silica, felsite, pyrite, and galena)

1321

Forney Testing Equipment, "BROCHURE - 'SPEEDY MOISTURE TESTER'," 1975

KEY WORDS: Coal, Instrumentation

1322

Mink, F., "DATA ON STANSBURY MINE, RELIANCE, WYOMING," Personal Telecon with W.C. Cooley, August 19, 1975

KEY WORDS: Coal, Pitching Coal Beds, Bituminous, Western U.S., Water Availability, Mining Plan

1323

Micromeritics Instrumentation Corp., "LETTER & BROCHURES ON MERCURY POROSIMETER AND GAS COMPARISON POROMETER," 1975

KEY WORDS: Coal, Instrumentation, Permeability & Porosity

1324

Steinkohlenbergbauverein, "LETTER, GERMAN ADDRESSES, AND BROCHURES," 1975

KEY WORDS: Hydraulic Mining, Hydraulic Haulage, Coal, Rock, Hydraulic Hoist, Gneisenau Mine, Germany, Hydromonitor, Feeder

1328

American Auger, Inc., "LETTER AND BROCHURES," 1975

KEY WORDS: Mine Development, Coal Mining

1329.

Leach, D.L. "HIGH-EXPLOSIVE-INDUCED FRACTURES IN COAL AT KEMMERER, WYOMING," Prepared for U.S. Energy Research & Development Admin. under Contract No. W7405-ENG-48, UCRL-51764, Feb. 1975

KEY WORDS: Coal, Western U.S., Pitching Coal Beds, Disintegration, Water Infusion

ABSTRACT: Pre and post shot studies of cores from the Kemmerer Coal Company's No. 1 seam, Kemmerer, Wyoming, have been made to determine the extent of high-explosive-induced fractures. The results indicate that the fracture zone extends out to at least 1.2 m from the high explosive. The post-shot cores at 1.8 m are indistinguishable from the pre-shot cores. Deviation of the core axis from vertical appears to have been influenced by a line of weakness determined by the intersection of the two pre-shot cleat (fracture) systems.

TRANSLATED

1330R

Ministerstvo Ugol'noi Promyshlennosti SSSR, "UPLOTNENIE DLYA RABOCHIKH KOLES UGOLSOSOV ARMIROVANNOE TVERDYM SPLOVOM PO SPETSI AL'NO RAZRABOTAN NOI TEKHNOLOGII," Novokuznetsk, VNIIGidrougol', 1968 ("PACKING FOR RUNNING WHEELS OF COAL PUMPS REINFORCED BY A HARD ALLOY ACCORDING TO SPECIALLY DEVELOPED TECHNOLOGY")

KEY WORDS: Pump, Coal, Slurry

TRANSLATED

1331R

Ministerstvo Ugol'noi Promyshlennostii SSSR, "TEKHNICHESKOE UPRAVLENIE ZADVIZHKA PARALLEL'NAYA RAZGRUZOCHNAYA ZPR-5," Novokuznetsk, VNIIGidrougol' 1968 ("THE PARALLEL DISCHARGE GATE VALVE 3 PR - 5").

KEY WORDS: Valve, Hydraulic mining, Coal mining

1332R

Melikhov, N.F., "700 M SHTREKA ZA 24 RABOCHIKH DNYA," Ugol # 6, 1975, pp. 31-33, "700 M OF HEADINGS IN 24 WORKING DAYS,"

KEY WORDS: Krasnoarmeyskaya Mine, Mine Development, Roadheader, Donbass

1333R

Sokolov, E.M., "SOVERSHENSTVOVANIE PROVETRIVANIYA SHAKHT PODMOSKOVNOGO BASSEYNA," Ugol # 6, 1975, pp. 66-69
"IMPROVEMENT OF MINE VENTILATION OF THE MOSCOW DISTRICT BASIN"

KEY WORDS: Coal, Methane, Krasnoarmeyskaya, Donbass

1334R

Urazalinov, Sh.A., Danchina, A.A., Lur'e, I.G., "VYBOR OPTIMAL'NOY SKHEMY RASPREDELENIYA POTOKOV PYL'PY PO FRONTU FLOTATSIONNOY MASHINY," Obogaschenenie I Briketerovanie Uglya, # 4, 1975, pp. 13-15
"SELECTION OF THE OPTIMUM FLOWSHEET FOR THE DISTRIBUTION OF SLURRY FLOWS ALONG THE FLOTATION MACHINE"S FRONT"

KEY WORDS: Coal, Slurry, Coal Preparation

1335R

Vlasova, M.I., Timofeeva, S.S., Danchin, I.A., "VLIYANIE UGLOV KONUSNOSTI NA REZUL'TATY OBOGASHCHENIYA V GIDROTSIKLONE S VODNOY SREDOY," Obogashchenie I Briketerovanie Uglya, # 4, 1975, pp. 16-17
"INFLUENCE OF THE CONCITY ANGLES (ANGLES OF TAPER) ON THE RESULTS OF PREPARATION IN A HYDROCYCLONE WITH AN AQUEOUS MEDIUM"

KEY WORDS: Coal Preparation, Slurry, Dewatering

TRANSLATED

1336R

Mitrofanov, I.A., Luk'yanchenko, E.S., Drupov, N.A., "SHAKHTNYE ISPYTANIYA GIDROMONITORNOGO SKVAZHINNOGO AGREGATA AGS," Gornye Mashiny i Avtomatika, # 4, 1975, pp. 8-10
"MINE TESTS BY THE HYDROMONITOR BOREHOLE UNIT AGS"

KEY WORDS: Hydromonitor, Up-raise Mining, Coal, Hydraulic Mining

1337R

Borisov, A.A., Mokryy, G.V., "SISTEMA KOMPLEKSNOY ZASHCHITY I STABILIZATSII REZHIMOV RABOTY NASOSNYKH I GIDROTRANSPORTNYKH USTANOVOK," Gornye Mashiny i Avtomatika # 4, 1975, pp. 20-23
"SYSTEM OF COMPLEX PROTECTION AND STABLIZATION OF WORK CONDITIONS OF PUMPING AND HYDROTRANSPORT INSTALLATIONS"

KEY WORDS: Hydraulic Mining, Hydraulic Haulage, Coal, Donbass, Pump, Instrumentation and Control, Slurry Pump

1338R

Sandalov, V.F., "ISPYTANIE MODELI GIDROMEKHANICHESKOGO ZASHCHITNOGO USTROYSTVA PRIVODA ISPOLNITEL'NOGO ORGANA EKSKAVATORA," Gornye Mashiny i Avtomatika, # 4, 1975, pp. 28-29
"TEST OF A MODEL OF A HYDROMECHANIC SAFETY DEVICE OF EXCAVATOR"S EXECUTIVE BODY DRIVE"

KEY WORDS:

1339R

Sytnikov, M.E., Kuleshov, N.T., "RADIOIZOTOPNOE RELE TIPA GRP," Ugol Ukrainy # 6, 1975, pp 24-25
"THE TYPE-GRP RADIOISOTOPIC RELAY"

KEY WORDS: Instrumentation & Control, Coal Mining, USSR

1340R

Shmatkov, N.A., Degtyarev, V.I, Kiklevich, Yu.N., "O PRIMENENII PNEVMATICHESKOY ENERGII NA SHAKHTAKH RAZRABATYVAYUSHCHIKH KRUTYE PLASTY," Ugol Ukrainy, # 6, 1975, pp. 32-34
"ON THE APPLICATION OF AIR POWER IN MINES EXPLOITING STEEP SEAMS"

KEY WORDS: Yushnaya Mine, Donbass, Economics, Cost Per Ton, Mining Machinery

1341R

Marinovskiy, E.S., "NOMOGRAMMY DLYA VYBORA VENTILYATORA," Ugol Ukrainy, # 6, 1975, pp. 41-42
NOMOGRAMS FOR THE SELECTION OF A FAN"

KEY WORDS: Ventilation, Coal Mining, USSR

1342R

Kipko, E.Ya., Lagunov, V.A., Polozov, Yu.A., Ivachev, L.M., Salamatov, M.A., "GIDRAVLICHESKIE SOPROTIVLENIYA V TRUBAKH PRI IZOLYATSII VODONOSNYKH GORIZONTOV," Ugol Ukrainy, # 6, 1975, pp. 45-46
"HYDRAULIC RESISTANCES IN PIPES DURING ISOLATION OF WATER-BEARING HORIZONS"

1343

Brown Engineering, "DEVELOPMENT OF A SAFER, MORE EFFICIENT HYDRAULIC-BASED TECHNIQUE FOR RAPID EXCAVATION OF COAL, ROCK, AND OTHER MINERALS," Final Report for the Bureau of Mines, Contract No. HO232062, April 1975

KEY WORDS: Disintegration, Hydromonitor, Jet Cutting, Rock, Jet Characteristics,

ABSTRACT: This report discusses the results of the development and in situ testing of a prototype hydraulic mining machine which uses a water jet with solid particles added. Of the 124 tests performed with the excavator, 89 were carried out to evaluate the ability of the excavator to cut in situ rock. Several different particle materials, which ranged from coal to steel shot, were injected; target material consisted of limestone and concrete. Two different water/particle nozzle systems wer developed and tested. One system combined axial particle feed with an annular water nozzle; the other system was the inverse, having particles peripherally fed into an axial water nozzle. The following conclusions were drawn from the test results. Solid particles can be injected into a high-velocity stream without great difficulty at reasonable feed rates and without significant deterioration in the downstream jet. The addition of particles does appear to improve the cutting ability of the jet as compared to the use of water alone. The cutting ability appears to increase as the mass of the particle is increased. At the pressures tested (i.e., P $\geq$ 15,000 psi), and even with the addition of particles, hydraulic jets do not appear to be as energy-efficient in excavating hard rock as other techniques. However, hydraulic methods appear to improve as the pressure is increased or as hardness (i.e, more easily excavated material) is decreased.

1344

Read, R.G., Tarter, J.H., Smith, C.K., Walter, R.P., "DESIGN OF A HYDRAULIC JET COAL MINER," Final Report for Period July 1973 to Jan. 1974, for the Bureau of Mines, Contract No. HO133052, Bendix Report No. BRL/TR-74-7020, April 1974

KEY WORDS: Mining Machinery, Jet Cutter, Coal Mining, Hydraulic Mining

ABSTRACT:

Results are described of a design study investigating the feasibility of using high-pressure water-jet cutting in the continuous mining of coal in underground mines. The potential advantages of this approach include the reduction of dust and sparking hazards and the minimization of damage to overlying rock strata thus reducing the roof fall hazard.

An analysis is presented of previously obtained data on the kerfing of coal during tests performed both in the laboratory and underground. This is used to predict kerf depth as a function of cutter nozzle horsepower and traversing speed. A jet cutter head design concept suitable for use on a continuous mining machine is developed. This includes mechanical cutters to maintain a uniform geometry at the periphery of the working face and wedging devices which ride the kerfs made by the cutter jets and break coal from the face. A design layout and other design information is given showing the adaptation of a Joy 12CM mining machine to provide a vehicle suitable for prototype testing of the jet cutter concept.

Based on a study of the predicted coal cutting characteristics of the high-pressure jet cutter continuous miner, it was concluded that achievement of a competitive production rate would require more power than is practical to install on an underground machine. Recommendations are given that no further development on this concept be undertaken until further investigation into the kerfing and fracturing of coal with high-pressure water jets is performed.

1345

Singh, M.M., Labus, T.J., Finlayson, L.A., Silks, W., "DESIGN OF A HYDRAULIC JET COAL MINER," Report for the Bureau of Mines, Contract No. HO133119, Feb. 1974

KEY WORDS: Mining Machinery, Hydraulic Mining, Coal Mining, Jet Cutter

ABSTRACT: Results are described of a study investigating the feasibility of using high-pressure water-jet cutting in continuous mining of coal in underground mines. In the report, a design concept is developed in which eight water jets would be mounted on a modified Goodman 968 loader with standard gathering headarms and drive. According to the design, four double acting intensifiers feed the eight jets at 50,000 psi with a flow rate of 28.8 gpm. A traversing mechanism is described that would move the jets across the face at 30 ips in a programmed cutting pattern.

1346

Coal Age, "HYDRAULIC MINING IN CANADA," Excerpt from article entitled "AMC Coal Convention Draws Record Crowd," Coal Age, June 1975, pp. 107-109

KEY WORDS: Hydraulic Mining, Canada, British Columbia, Slurry, Monitor, Feeder-Breaker, Coal, Coal Mining, Flume, Screen, Pump, Monorail, Hydraulic Transportation, Conveyor,

1347

Gray, W.S., Mason, P.F., "SLURRY PIPELINES: WHAT THE COAL MAN SHOULD KNOW IN THE PLANNING STAGE," Coal Age, Aug. 1975, pp. 58-62

KEY WORDS: Coal, Pipeline, Slurry, Hydraulic Haulage, Black Mesa Pipeline, Western U.S., Pump, Powder River - Arkansas Pipeline, Environmental Impact

1348

Coal Age, "QUEENSLAND COAL PRODUCTION JUMPS TO 20 MILLION TONS: WILL DOUBLE IN NEXT FOUR YEARS," Coal Age, Aug. 1975, pp. 63-65

KEY WORDS: Coal, Coal Mining, Australia

1349

Stambaugh, E.P., "BATTELLE DEVELOPS LEACHING PROCESS TO DESULFURIZE COAL," Coal Age, Aug. 1975, pp. 72-74

KEY WORDS: Coal, Coal Preparation, Slurry

1350

Coal Age, "DECLINE IN ANTHRACITE USE CAN BE REVERSED BY BETTER PROMOTION, STUDY FINDS," Coal Age, Aug. 1975, pp. 170

KEY WORDS: Coal, Anthracite, Production Rate, Appalachian,

1351R

TRANSLATED

Bondarevskiy, V.S., Klyuchevskiy, Yu.E., "INERTIAL HYDROPULSATOR," Invention (Patent) No. 144454 (Russian), Subscriber Group # 11, April 1961 "INEKTSIONNYAI GIDROIMPULSATOR"

KEY WORDS: Pulsating Jet, Monitor,

Beck, E. J., "DREDGING METHOD EMPLOYING INJECTION AND SUCTION NOZZLES", U.S.Patent 3,646,694, Mar. 7, 1972

KEY WORDS: Hydraulic mining, Rock, Hydraulic hoist, Hydraulic haulage

ABSTRACT: A dredging method and apparatus employing high-velocity directed injector nozzles which hydraulically dislodge and drive discrete bodies of large inertia from a position at rest on an aqueous floor into a cooperating vacuum device which collects such bodies and removes them to another area for further treatment.