CASE HISTORIES IN THE CONTROL OF ACID MINE-DRAINAGE

Mining is not an ordinary industry. Its basic difference is that it is continually moving into new conditions. Even the most carefully engineered mine is subject to day by day adjustment to meet these changing situations.

Many of the water and water quality problems acquired by the mining industry are also unusual. Since they are largely the result of the conditions encountered, they vary from mine to mine and may also vary from day to day. They are a part of the problems of mining. As such, the operating personnel of any particular mine, if they are competent to do so, are in the best position to determine and apply the most practical procedures for the solution of the problems.

The control measures embodied in *ORSANCO* Resolution 5-60 recognize these factors. The degree to which they are given consideration by those charged with the administration and enforcement of the measures will undoubtedly depend upon the initiative taken by each individual mine or mining company in conscientiously applying them in their day to day operations.

The Principles and Guide to Practices contained in this publication are general in their application. Specific procedures cannot be recommended for any and all conditions. However, certain procedures which have proven successful in one mine under certain conditions may be applicable to another mine under similar conditions, be adaptable to other conditions or serve to create an idea which would lead to an applicable procedure. For this reason a section on Case Histories has been included.

It is intended that additional Case Histories will be prepared from time to time and added to the manual in accordance with the following outline:

Control Measure I (a)

Determination of the source of mine water from:

- 1a-1 Water-bearing strata overlying the coal
- 2 Water-bearing strata underlying the coal
- 3 Cracks to the surface
- 4 Adjoining mines and mine workings
- 5 Shaft, drift or slope openings

Efforts made to control water inflow by:

- 6 Filling surface cracks with earth
- 7 Grouting methods
- 8 Diverting surface water around openings
- 9 Sealing openings
- 10 Maintaining diversion ditches above high wall
- 11 Diverting stream water flows from surface mining operations

Control Measure I (b) – (Accumulation and removal of mine drainage)

- 1b-1 Acceptable underground water drainage
- 2 Unacceptable underground water drainage
- 3 Other underground water storage facilities
- 4 Piping of mine drainage underground
- 5 Piping of mine drainage in surface mines
- 6 Underground water drainage ditches free from acid-producing materials
- 7 Surface water drainage ditches free from acid-producing materials
- 8 Unsuitable drainage ditches
- 9 Local pick-up or suction stations for feeding central water disposal system
- 10 Good housekeeping techniques with respect to acid-producing materials, both surface and underground

Control Measure II – (Coal refuse disposal)

- 2-1 Compaction of coal refuse in a refuse pile
- 2-2 Crushing or other control of coal refuse size consist
- 2-3 Channeling of run-off water away from coal refuse pile
- 2-4 Piping of water under or through coal refuse pile
- 2-5 Inundation of coal refuse
- 2-6 Burial of coal refuse in strip pits and/or other depressions
- 2-7 Covering and seeding coal refuse pile
- 2-8 Conditions resulting from improper use of coal refuse for road surfacing

Control Measure III – (Mine drainage discharge equalization)

- 3-1 Adjustment of pump size to fit discharge requirements
- 3-2 Adjustment of pump discharge to fit discharge requirements
- 3-3 Controlled release from lagoon or reservoir

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