

THE HYDROGEOLOGICAL CHARACTERS AND EXPLORATORY  
METHOD IN THE SOUTHERN COALFIELDS OF NORTH CHINA

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ABSTRACT

The karst fractured water of coal seam bottom aquifer effected for the main hydrogeologic problem of the mining coal seam coal field of north China. At the southern region of north China, because of the three causes as follow and it is different with the north-side coal field: The distance between coal seam and the aquifer of the thick-bedded carbonate rock of basement, it is increased, emphasized the capability of born hand pressure of coal seam bottom. The western coal fields bared area of bottom aquifer is less, theretore controled the coninued time of water rush. Eastern region, as for the effect of now tectonic movement the formation of cenozoic era deposits high thickness, atmosphere raiafall can't be directly leakage.

The water filled features of the productive colliery as follow: The water rush quantity is less. The water rush probability is less. The tendency of water rush and it is continued time is limited. After water rush, applying the deepened decrease and reinforced discharge is easy of success, generally.

The working of the hydrogeologic coal field exploration method in this area, with the exception of common exploration met-

hod, should be paid attention to the ten aspects especially.

## INTRODUCTION

The Permo-Carboniferous system coal field of north China is belong to the coal-bearing formation of Post-paleozoic era, according to the sedimentary features, generally, may be divided into three sedimentary zone of north, media, south. There are the up lift display of the northern branch of QIN LING which is near by the north latitude of  $35^{\circ}$  line approximately, which southern side is YU XI---LIANG HUAI depression region which divided into southern zone, i.e. This paper is implied that the southern coal field of north China.

The southern coal field of north China covers ten coal field or coal district which is the DING SHAN, XU ZHOU, LIANG HUAI etc. it is stridden over the provinces of HE NAN, AN HUI, JING SU, SAN DONG, coal resource is plenty, within the coal bearing area of  $4000 \text{ km}^2$ , which have been explored that preserved reserves is up to 400 hundred million tons, coal class is complete, traffic is convenient, it is possessed important position for the exploitation-application of chinese coal resources. Deepgoingly studies the hydrogeologic condition of there coal-districts and executing coal field hydrogeologic exploration of economic technique reasonable, these will be helpful for the high development of coal-industry.

## THE HYDROGEOLOGIC FEATURES OF THE COAL SEAM BOTTOM AQUIFERS

The karst fractured water of coal seam bottom aquifer is effected for the main hydrogeologic problem of the mining coal seam coal field of north China. At the southern region of north China, because of the three causes as follow and it is different with the north-side coal field:

1. Within the region, main mining coal seam is placed on Permian system---SHAN SHI group and SHI HE ZI group, the distance bet-

ween coal seam and the aquifer of the thick-bedded carbonate rock of basement it is gradually increased from south to north and from west to east, the thickness of relative aquiclude is 45--195 meters, emphasize the capability of born head pressure of coal seam bottom. The giant water rush probability is less than the north-side coal deposit.

2. The western coal fields of HE NAN province are most shortage of Ordovician system deposit, the bared area of bottom aquifer is less, all most it is hundred square kilometers only, therefore controle the continued time of water rush, bring the favourable condition for the collieries's water prevention and cure. Eastern concealed coal field, although it has Ordovician system deposit, but the surface is bared very bad, water-filled source is recharged shortage, bottom-squeeze water rush can be great shock only, water receded quickly.

3. Eastern region, as for the effect of new tectonic movement the formation of Cenozoic erathem deposits high-thickness, basement is extremely bad bared. Atmosphere rainfall can't be directly leakage, produces the recharge obstruction.

#### THE WATER FILLED FEATURES OF THE PRODUCTIVE COLLERY

There are hundred of productive collieries in this area, although occurred the instance of water-rush and inundated mine in some cases, but through a lot of practical informations, it may be indicated that the water-rush flow and water-rush probability all are decreased on compasion with the north side of same coal field.

The MI CUN mine of XIN MI coal field within this area occurred fractures and then appeared bottom water-rush at the east heading in 21 th. an. 1972, flow was  $75 \text{ m}^3/\text{min}$  after inundated mine carried out intensified discharge and then brought to this mine, only ten days, ground water level had fallen to the altitude

of water-rush shot, it's steady water flow was  $11 \text{ m}^3/\text{min}$ . PING DING SHAN coal field which was approximated to hundred times in the records of water-rush, the max. is PING BA mine when the tunnel of ventilated TON FAN shaft was driven, the bottom occurred water-rush at  $-273 \text{ m}$  in 17 th. Oct. 1971, water-rush was  $70 \text{ m}^3/\text{min}$  after draining, the average decreased annual-amplitued was a few tens meters, the water level of upper limestone of TAI YUAN group had brought down to the beneath of  $-100 \text{ m}$ . The east partion of this area, east-side section of XU ZHOU coal field whose overburden lager is very thin and bring on the water flow is larger (especially in rain season). QING SHAN QUAN NO.2 colliery it's max. water-rush flow was  $34 \text{ m}^3/\text{min}$ , HAN QIAO mine was  $22 \text{ m}^3/\text{min}$ . The other concealed coal field whose water-rush flow is more less than the western part, the continuous time was short, as example, HUAI NAN coal field ever since the mining was developed in 1924 XIE YI mine, the max water-rush was at  $-250 \text{ m}$  level occurring a small fault which occurred water-rush to be submerged that mine in 14 th. Oct. 1977, water flow was  $13 \text{ m}^3/\text{min}$ . As mentioned above, water-rush instances in this area by the comparison to the mining area of large flow of north side, which was summarized that the recent mining depth within the range has the features as follow:

1. The water rush capacity is greater than the  $60 \text{ m}^3/\text{min}$ , the amount is very less.
2. The water rush probability is less, water rush and submerged colliery are no more.
3. The tendency of water rush and it's continued time is limited, water rush is quicker.
4. After water rush, applying the deepened decrease and reinforced discharge is easy of success, generally, it is unnecessary of pro-obstruction and post-discharge.

## THE HYDROGEOLOGIC EXPLORATION METHOD OF COAL FIELD

The working of the hydrogeologic coal field exploration method in this area, with the exception of common exploration method, should be paid attention to the aspects as follows especially:

1. Point to the features of this region, from the regional is acknowledged the hydrogeologic condition of deposit.
2. It should be representative of the hydrogeologic bore hole, can't be fastened the position of bore hole mechanically.
3. Grasp the main water filled factor, the emphasised point of exploration is put on the bottom water.
4. Emphasise the research working of water regime make it of main exploration procedure.
5. Raising the application value of water quality pay attention to study the chemical features of ground water.
6. To service for the production-reconstruction, especially noticed that it is concerned with the built colliry engineering of overlying aquifer.
7. To prevent the water rush the factor of man making, the isolated job quality of bore hole must be insured.
8. Advocate the pumping test of group borehole, the selection dia. of main-borehole is to be solved in accordance with the hydrogeologic problem.
9. To be apid attention to the economic beneficial result, the hydrogeologic-geophysical prospection is to be made good.

10. To estimate overall, submit the scheme of synthesized application of ground water.

#### REFERENCES

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