

## **RESEARCH ON 3D UNDERGROUND GEOLOGY SURVEY TECHNOLOGY APPLIED IN WINTER OLYMPICS HOST CITY PLANNING**

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2022 Winter Olympics will be held at Yanqing city in Beijing, China. Which will be built into a new town. It has significant impact on urban planning to identify its subsurface structure, stratigraphy, groundwater and active fault information. However, it is very difficult to high resolution identify such information in city where Quaternary deposit is thick and its structure is complex without rock outcrops. This paper focus on how multi-line reflection seismic acquisition technology of different geophone interval is used to overcome difficulties in setting shot point in city. The seismic profiles are used to get high-resolution structural and stratigraphic information of different depths from 30 to 1500 meters underground. 5 beam reflection seismic profiles are collected in 100 square kilometer area and depth migration technique is used to identify structural features of different directions in different development phases, which help us obtain reasonable combination of different periods construction; identify the fault displacement information of active structure in shallow depth of 30m with high-resolution and get the vertical stratigraphic information and occurrence of underground water. Finally, high-resolution 3D model of underground geologic structures of this city is generated. This study offers a new way of quickly detecting layer structure and identifying characteristics of active structure in large area with high-resolution for urban planning.