

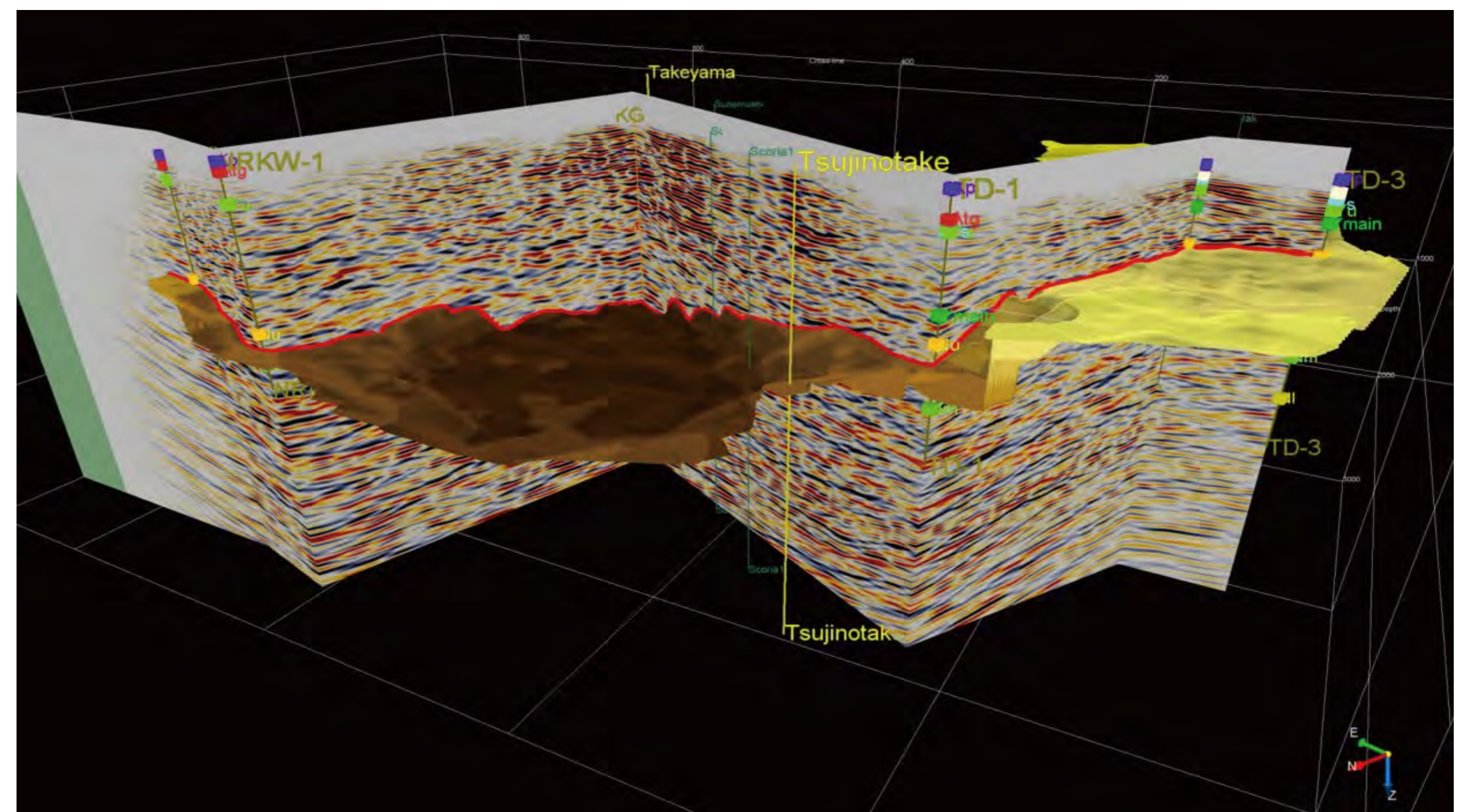
# Advanced Technology Development of Exploration for Geothermal Resources

## Exploration Technology

In the initial stages of geothermal exploration, it is quite important to visualize subsurface structures in detail. Then JOGMEC will try to develop the technology so as to reduce exploration risk by the application of seismic survey which has recently showed remarkable achievement in the oil exploration fields.



Vibrators



Geological interpretation using 3D seismic data

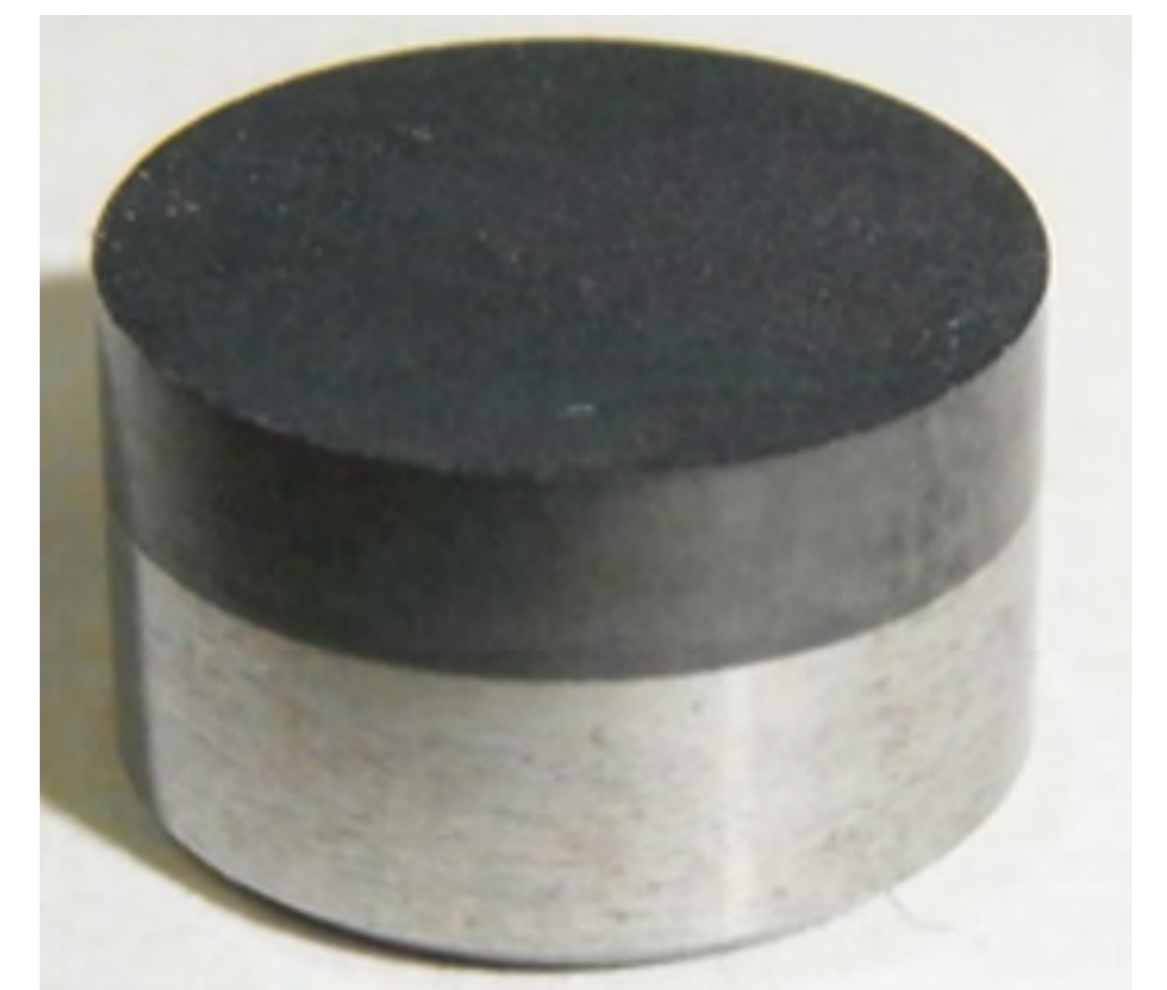
## PDC Bit

Replacing a roller corn bit which had been used in geothermal drilling with a PDC (Polycrystalline Diamond Compact) bit usable also in the wells, JOGMEC will make effort to improve dramatically penetration rates and lifetime of bits to reduce costs related to well drilling.

As a result, a development period until operation of a power plant could be shortened as well, if a period of well drilling, during which several number of wells are required for geothermal development, could be decreased.



Our prototype (6-1/2 inch PDC Bit)



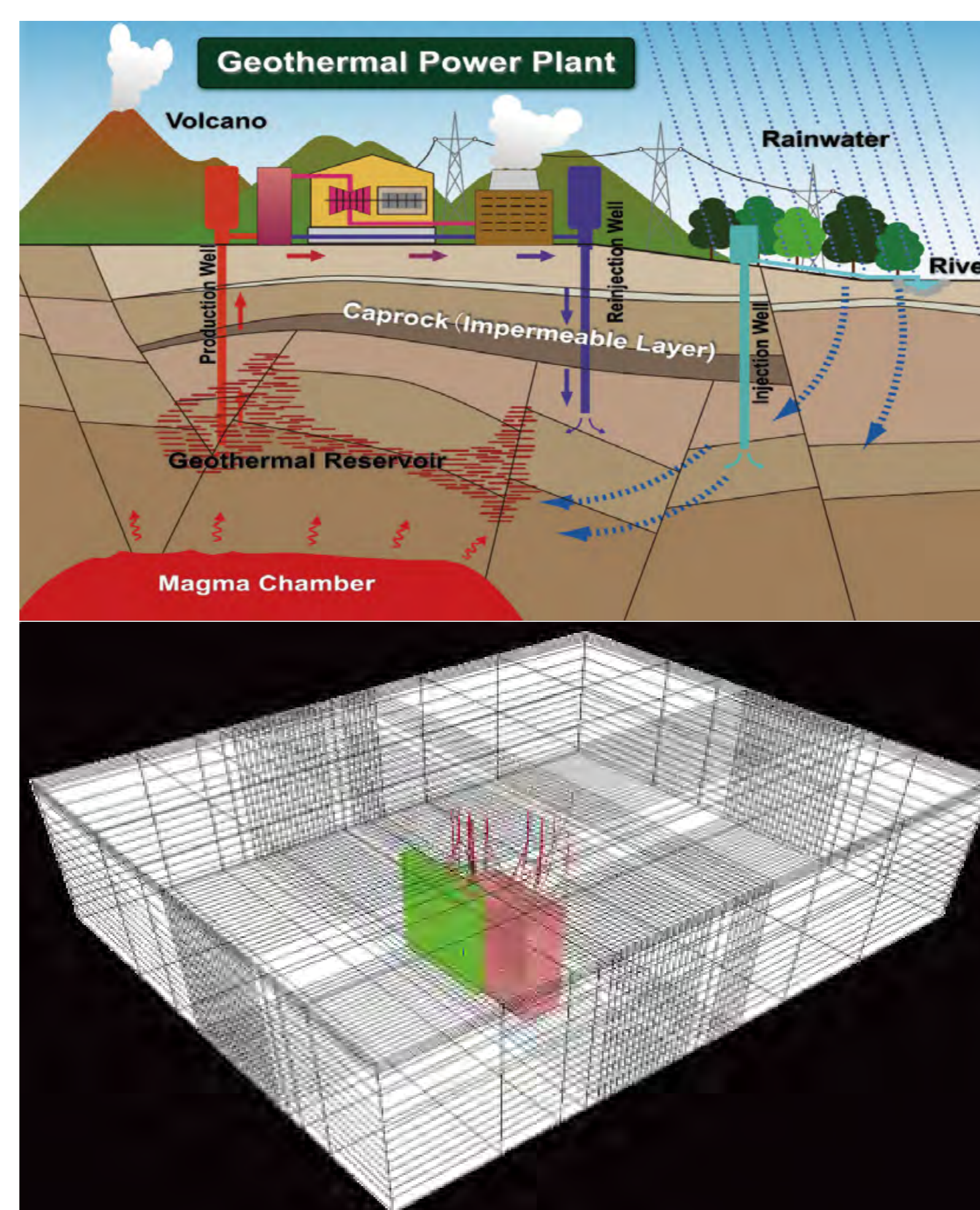
Our prototype (PDC cutter; Diameter 8.2mm, Height 5.0mm)

## Enhanced Geothermal Systems

In Japan, there are some power plants where fluctuations of power generation often occur because of the uncertainty of required volumes of steam or hot water. In order to work out such issues, JOGMEC will develop technology to extract optimal and stable volumes of steam and hot water by proper injection to underground geothermal reservoirs.



Test place: Yanaizu-Nishiyama Geothermal Plant (Fukushima Pref.)



General geothermal model

EGS simulation model