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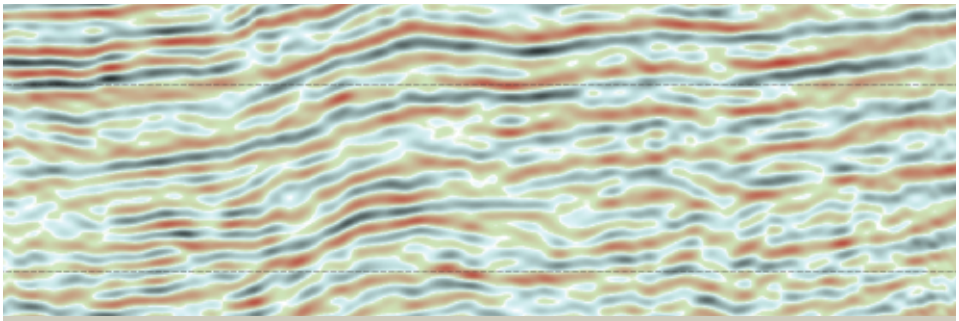
Caroona Coal Project 2010
Community Information Paper

Three-Dimensional (3D) Seismic Survey



UN-INTERPRETED SEISMIC DATA IN THE CAROONA EXPLORATION LICENCE AREA. SEE PAGE 2 FOR DETAILS ON UPCOMING THREE-DIMENSIONAL SEISMIC WORKS SOON TO BE UNDERTAKEN.

June 2010

Facts On This Sheet

Background Information

BHP Billiton was granted the exploration licence (EL 6505) in April 2006.

Since the granting of the licence, the Caroona Coal project team has been working across a number of fronts to determine the coal resource and its relationship to the surrounding environment. Exploration work to date has included:

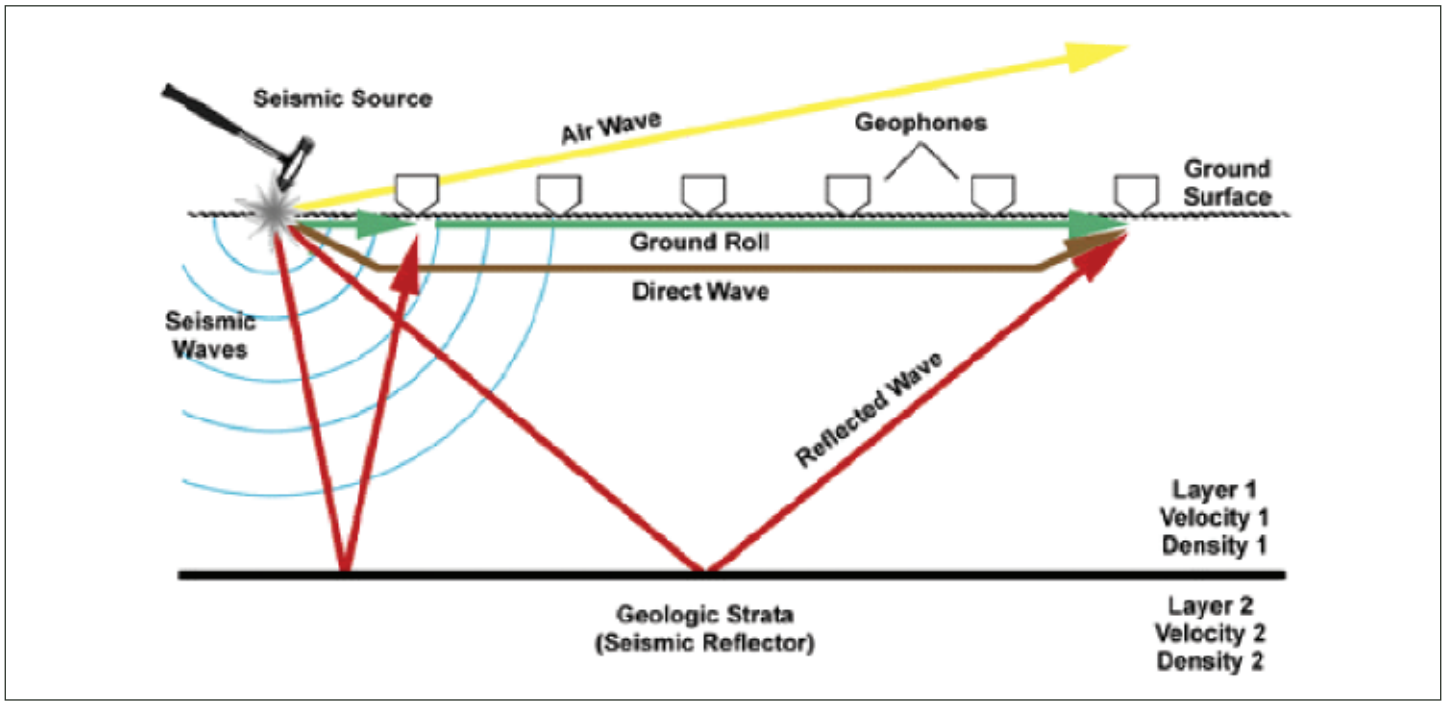
- drilling slim core boreholes, two-dimensional (2D) seismic surveys and aerial sensing;
- hydrogeological and hydrological monitoring, with a focus on establishing groundwater monitoring sites and gathering data about the location and characteristics of aquifers and surface water flows; and
- environmental, social and cultural studies to understand the existing environment and cultural characteristics of the exploration area and its surrounds.

To date, BHP Billiton has completed 190 exploration drill holes and used a range of remote sensing processes including:

- extensive airborne surveys with BHP Billiton's FALCON® remote sensing technology to gather geological data; and
- 139 kilometres of 2D seismic survey which have provided information for modelling structures such as coal seams and fault zones.

What is Seismic Exploration?

Seismic exploration uses artificially-generated sound ('seismic') waves to image sub-surface geological conditions. A vibration source is used to generate seismic waves at or near the surface. Receiving devices called 'geophones' are placed in a geometric array on the surface to detect the seismic signal that is partially reflected back from subsurface geological features, such as changes in rock type or faults ***(see below)***. 2D seismic exploration involves acquiring seismic data along a single line of geophones to detect the reflected seismic energy generated by the vibration source. It gives you data through a two-dimensional, or 2D, vertical cross-section.



SEISMIC REFLECTION SURVEYING:
A simplified cross-sectional view of a 2D seismic recording system with some of the signal and noise ray paths associated with a reflection survey.

In 2D seismic surveys undertaken for the Caroona Project, the vibration source used was a truck-mounted Vibroseis unit called an EnviroVibe minibuggy ***(Figure 1)***. The system comprises a small truck with a vibratory plate which is lowered to the ground then activated to produce a vibration source. The truck moves along slowly stopping every 6 to 20 metres to lower the plate and produce a vibration. Geophones are placed along the same alignment on the surface to receive the seismic data.

The 2D seismic surveys provided valuable information to geologists on the location and orientation of coal seams and geological structures. However in some sub-surface areas where geological conditions are more complex, more detailed seismic information is required. In these areas, collection of geological data can be dramatically improved through the use of a three-dimensional, or 3D, seismic survey.

How Do 3D Seismic Surveys Differ From 2D Surveys?

3D seismic surveys provide a more detailed picture of subsurface geological conditions for interpretation by geologists than 2D surveys. 3D surveys use a grid of geophones and vibration source points to gather seismic data over an area rather than a single cross-section, and from a range of different angles. This essentially provides a 3D picture of subsurface conditions resulting in much more detailed information for building into the geological model.

It is proposed to conduct a 3D seismic survey within the Caroona EL to provide more detailed information on the geological structures under the ridges. Seismic activities require approval from the NSW Department of Industry and Investment before they can proceed.

Trial 3D Seismic Survey Program

A trial program has been approved by the NSW Department of Industry and Investment following a Review of Environmental Factors (REF). The trial program will be undertaken to determine the best method of 3D seismic survey in the local area given the geological conditions. The trial will use two different methods of vibration, varying vibration intensity, and different spacings of the

FIGURE 1: 3D seismic survey truck-mounted vibroseis unit called the EnviroVibe minibuggy.

vibration source and geophone receivers. Four primary geometries are to be trialled. The results of the trial survey will be used to determine the best approach to design a broader 3D survey program.

The proposed trial 3D seismic survey will cover an area of approximately 90 hectares on Doona Ridge. The trial area is located predominantly within the Doona State Forest, with a minor portion occurring on the BHP Billiton owned property "Doona Vale".

The proposed trial 3D seismic survey will use two different vibration sources as follows:

- Consistent with the 2008 and 2009 2D seismic survey programs, one of the vibration sources for the trial 3D seismic survey is a truck-mounted Vibroseis unit called the EnviroVibe minibuggy. The system comprises a truck fitted with a vibratory plate. The plate is lowered to the ground approximately every 6 to 20 metres along the seismic line, depending on the required resolution, then actuated to produce a vibration source. The vehicle is approximately 6 metres long by 2.3 metres wide and is rubber tyred.
- The second vibratory source will involve the use of small charges loaded into drilled shot holes. The shot holes will be drilled at approximately 14 metre intervals along each shot line to a depth of up to 50 metres. Drilling will be undertaken using a small tractor-mounted drill rig which can drill numerous holes per day. Charges will generally be set at a depth of 5 metres and will only be set at the deeper depths in small areas to test the accuracy and efficiency of the data collection. The holes are then backfilled and packed firmly with stone aggregate and a shotcap installed, covering and containing the hole ***(Figure 2)***. Charges along a line of holes are then fired sequentially a few minutes apart. Detonated charges make a barely audible 'pop' noise and cannot be felt.

FIGURE 2: Detonated charges make a barely audible 'pop' noise and cannot be felt.

The geophone receivers will be laid out in lines initially 20 metres apart, over a distance of approximately 200 metres either side of the vibration source area, and then 40 metres apart over a further approximately 200 metre distance. These lines will be approximately 1100 metres long.

Seismic data received at each of the geophones following each vibration event will be relayed to computers and recorded for later interpretation by geologists.

The proposed lines for the vibration sources (the Vibroseis truck and blast holes) will

require vehicle access. Safe access will also be required along the geophone lines so that the geophones and cables can be put in place. To provide safe access along these lines, the grass and small shrubs / juvenile trees will be slashed and any logs or stumps will be moved to the side of the lines. No mature trees will be cleared and no formed access tracks will be constructed. Any disturbed land will be rehabilitated in accordance with the Caroona Project Exploration Environmental Management Plan at the completion of the seismic survey.

The trial program has been approved by the NSW Department of Industry and Investment following a Review of Environmental Factors (REF). The REF found that with the proposed controls in place, the impact of the proposed seismic program on the local environment and community is expected to be low.

The trial will be undertaken over a period of approximately eight weeks and is due to commence in June 2010.

Main 3D Seismic Survey Program

The trial 3D seismic survey program results will be analysed after the trial to understand which methodology provides the optimum resolution of the geological structure. The 'resolution' of the images produced and an assessment of any potential environmental impacts associated with the various methodologies will be used to determine the geometry, vibration source, and data acquisition parameters for the main 3D seismic survey program.

The main program will be a simpler program than the trial as there will only be one vibration source and the geophone design layout that offers optimal resolution will be known. Analysis of the data will also be much more straightforward as there will only be one set of acquisition parameters. Depending on the outcomes of the trial results, the broader 3D program will cover an area between 6 and 14 sq km.

It is expected that the proposed main program will be undertaken over a period of approximately twelve weeks in the second half of 2010. Further approval from the NSW Department of Industry and Investment will be required, and a further Review of Environmental Factors will be prepared for the main study to accompany the approval application.

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IF YOU WOULD LIKE FURTHER INFORMATION ON ANY ASPECT OF THE BHP BILLITON CAROONA COAL PROJECT, PLEASE CONTACT THE PROJECT TEAM.

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