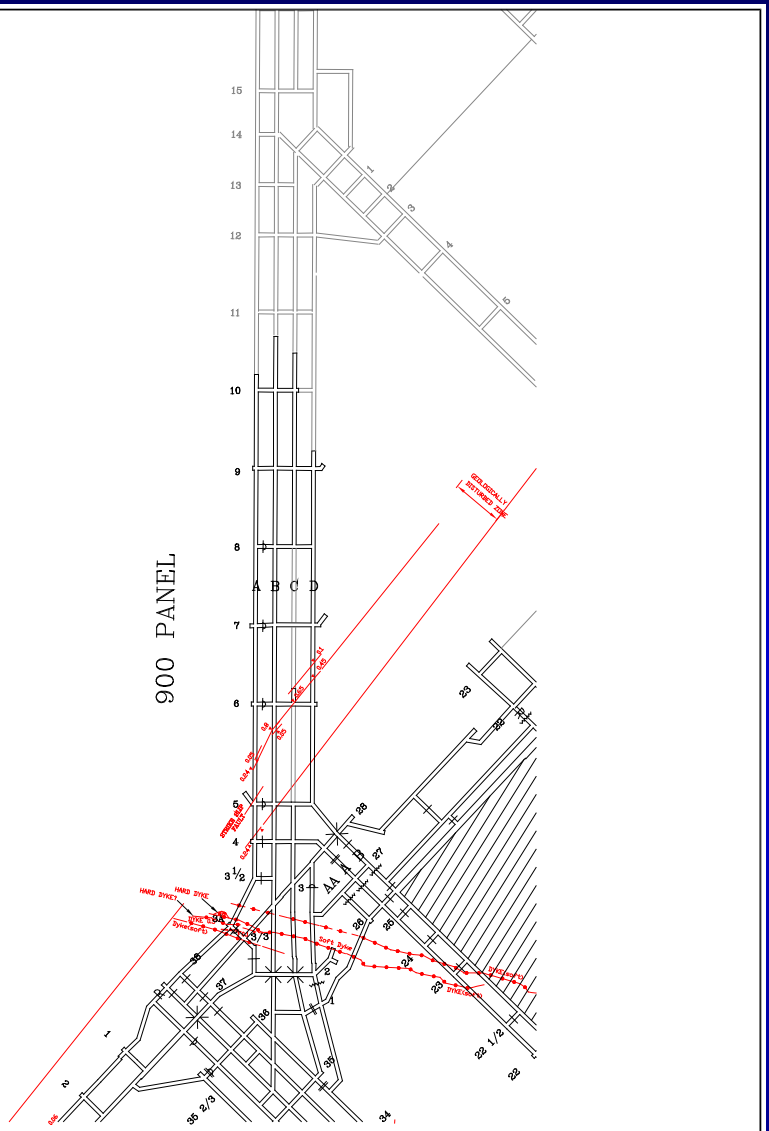
Negotiating Adverse Drilling Environments – Tahmoor 900 Panel

Frank Hungerford
Valley Longwall Drilling

Development into Tahmoor North Longwall Domain

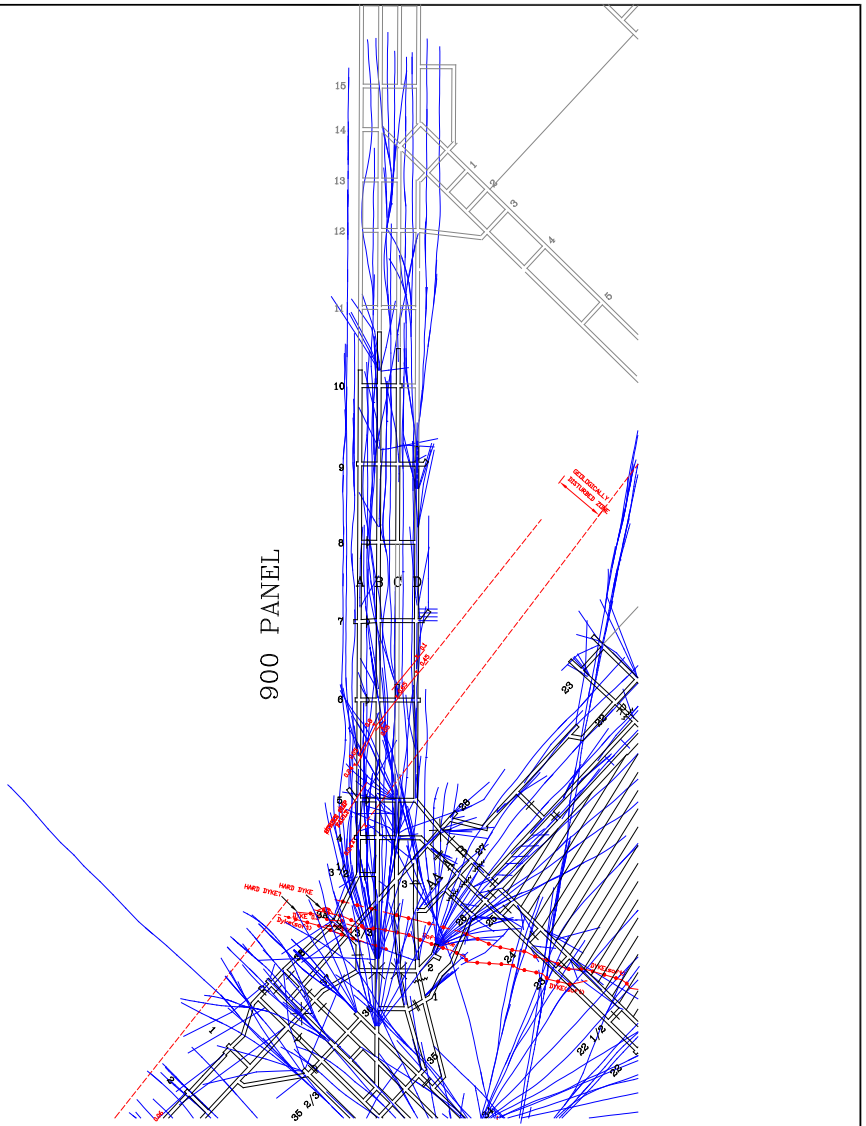
- **Main Development – 900 Panel from the northern point of the mine.**

900 Panel

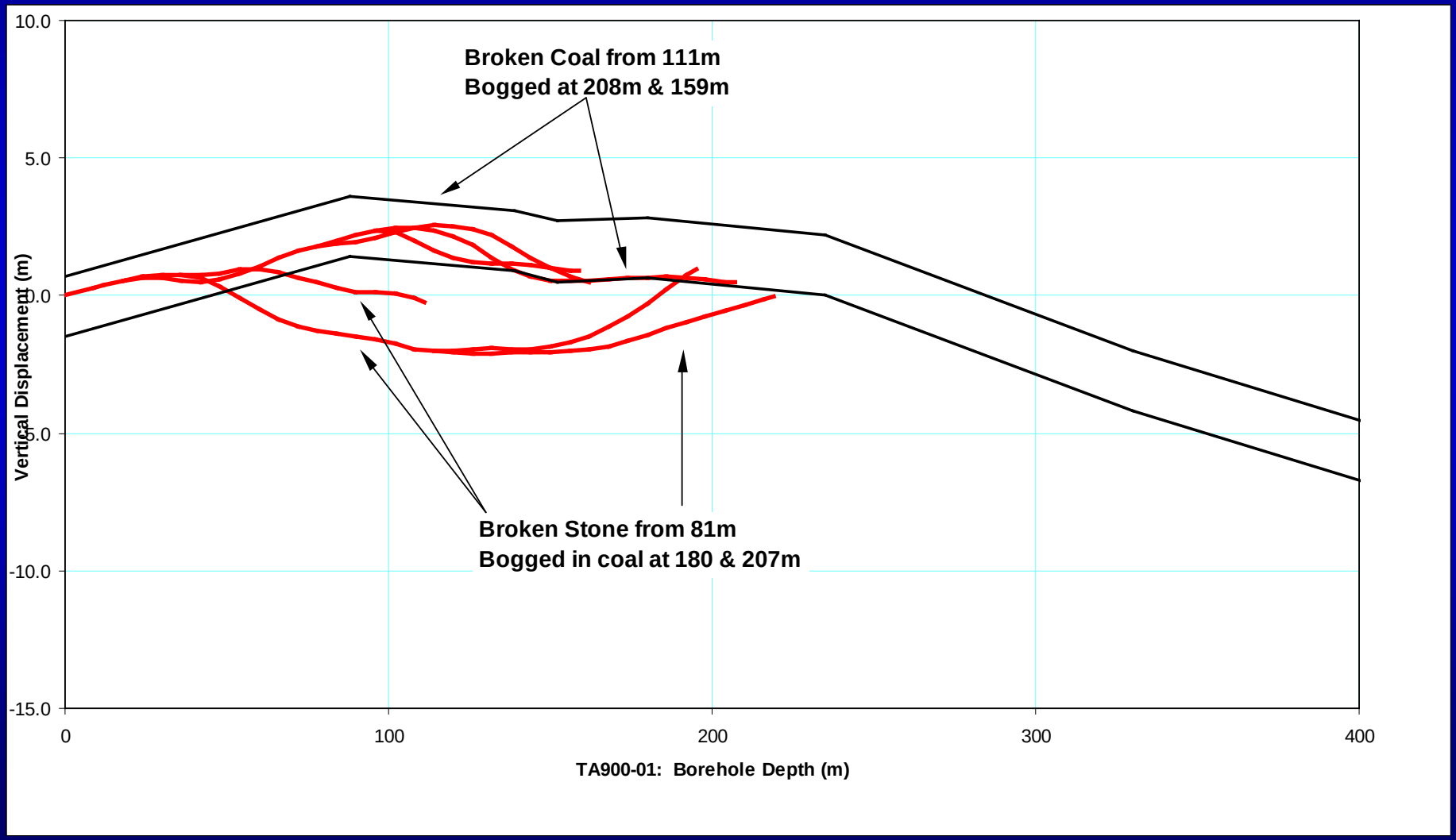


- Angled away from the previous workings
- Limited access from which to drill for gas drainage
- Negotiate through known dyke structure and geologically disturbed zone
- Negotiate between previously drilled boreholes

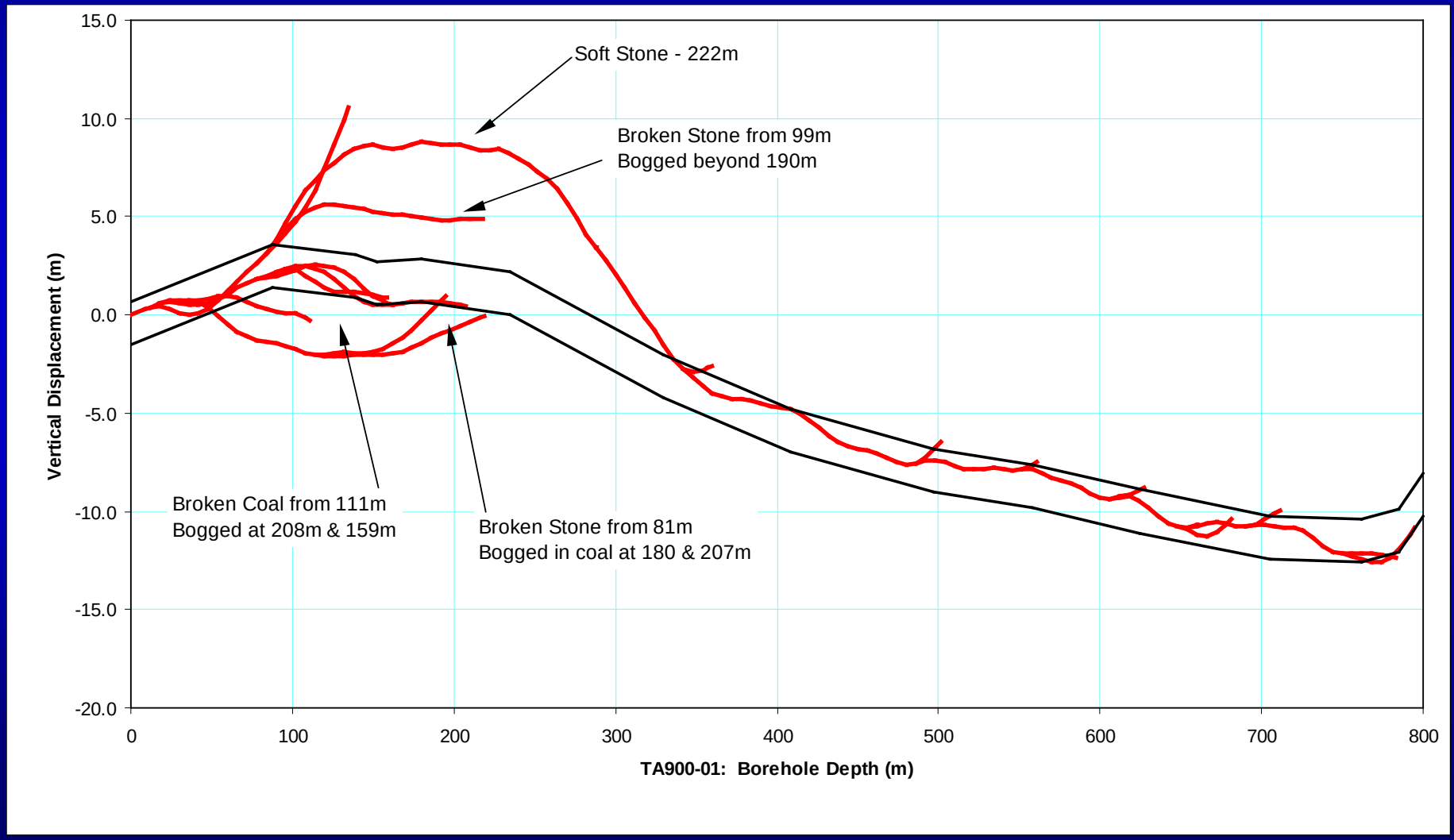
900 Panel Gas Drainage Boreholes



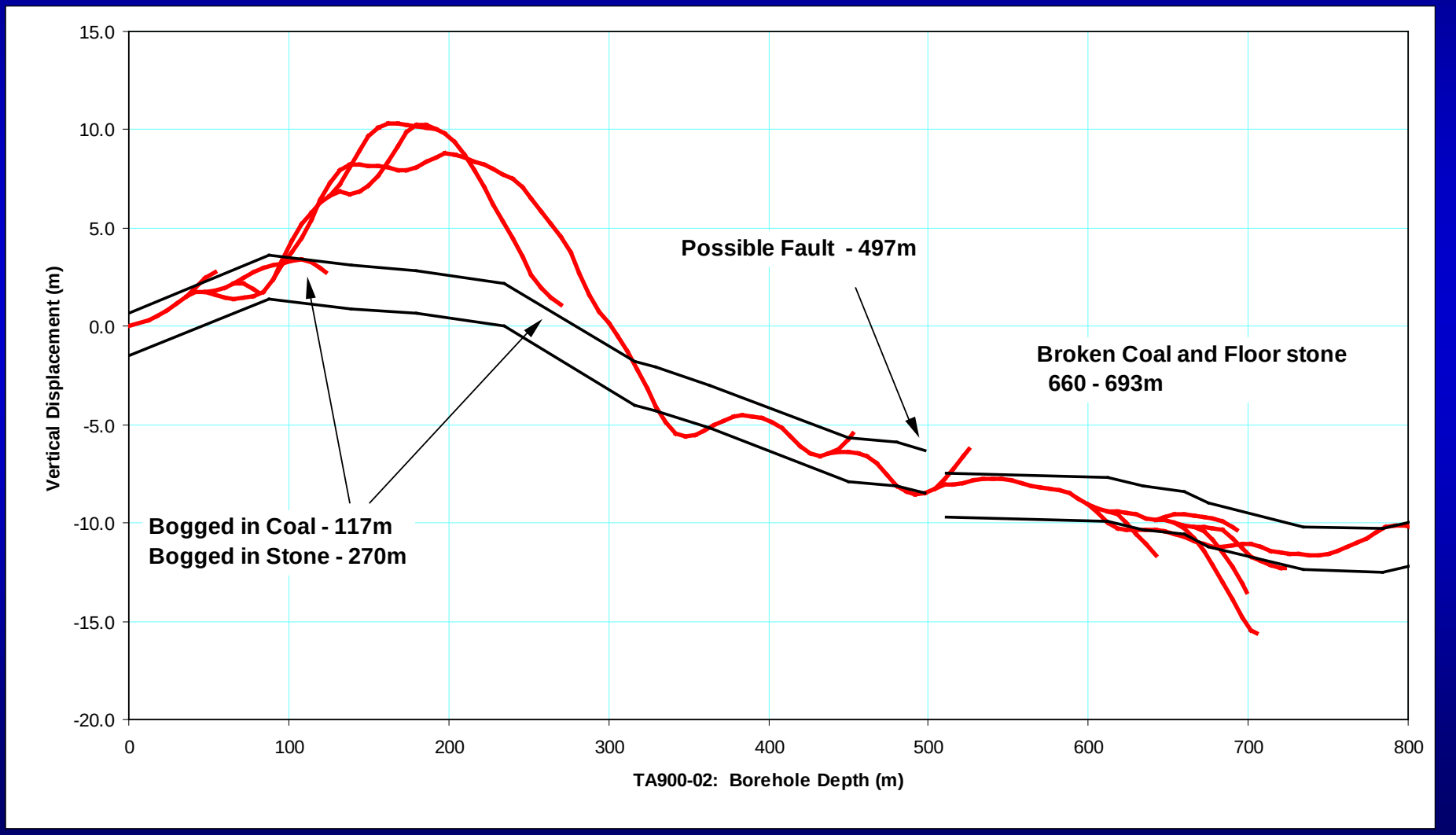
Initial Drilling from 2c/t, B Heading



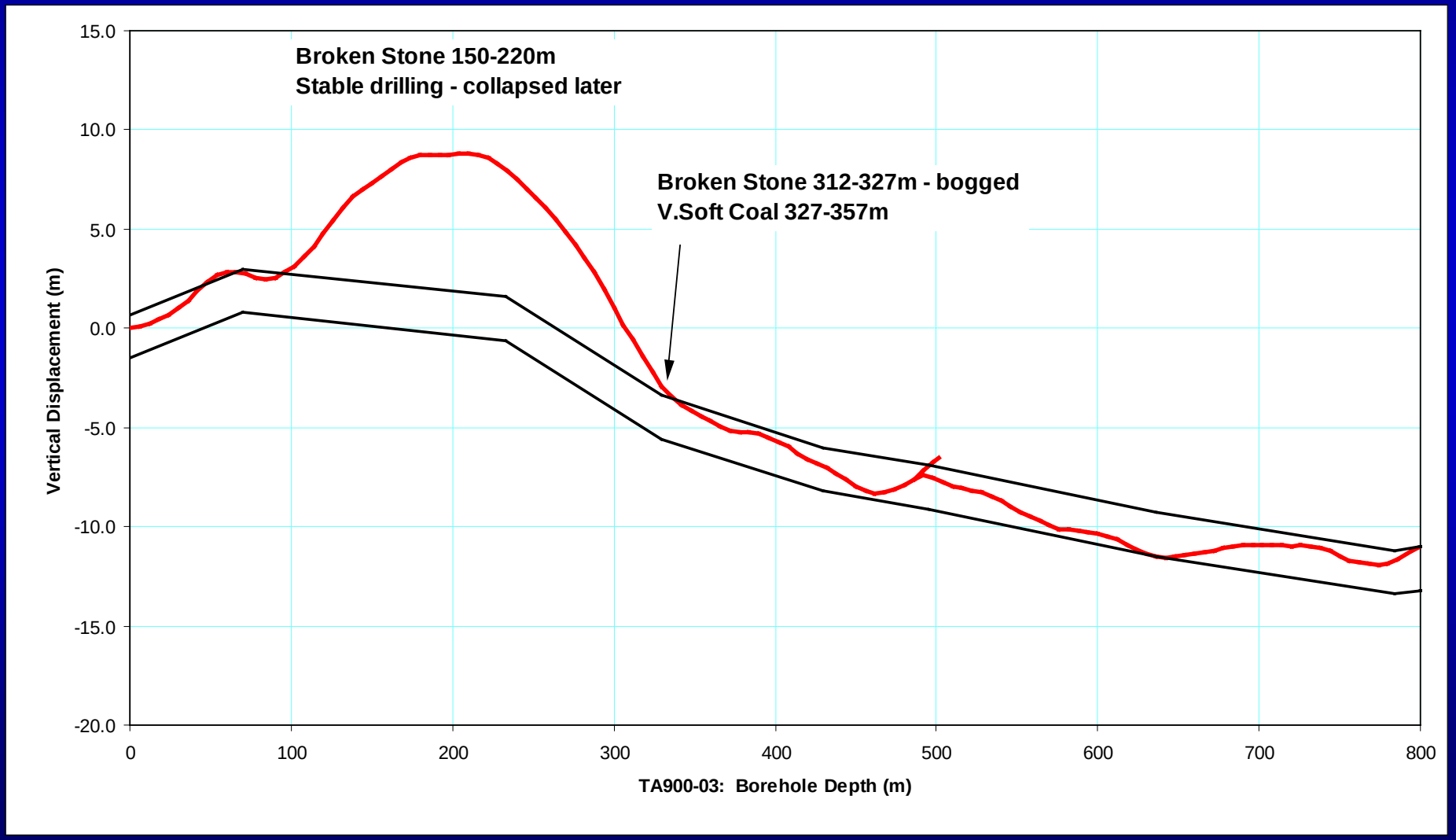
Revised drilling in strata above seam



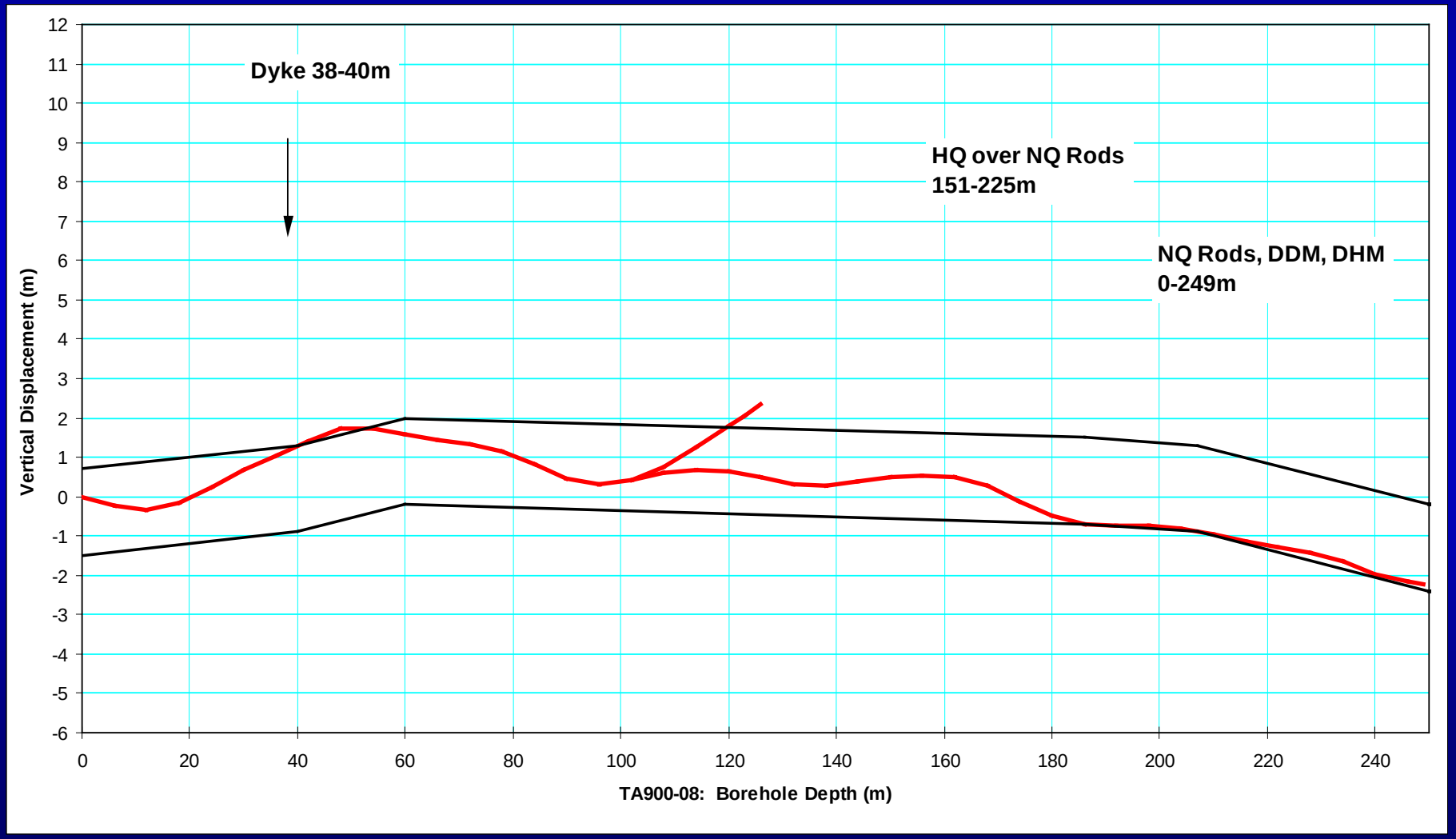
2nd Borehole 2c/t, 900 Panel



Improved Drilling Sequence
3rd Borehole



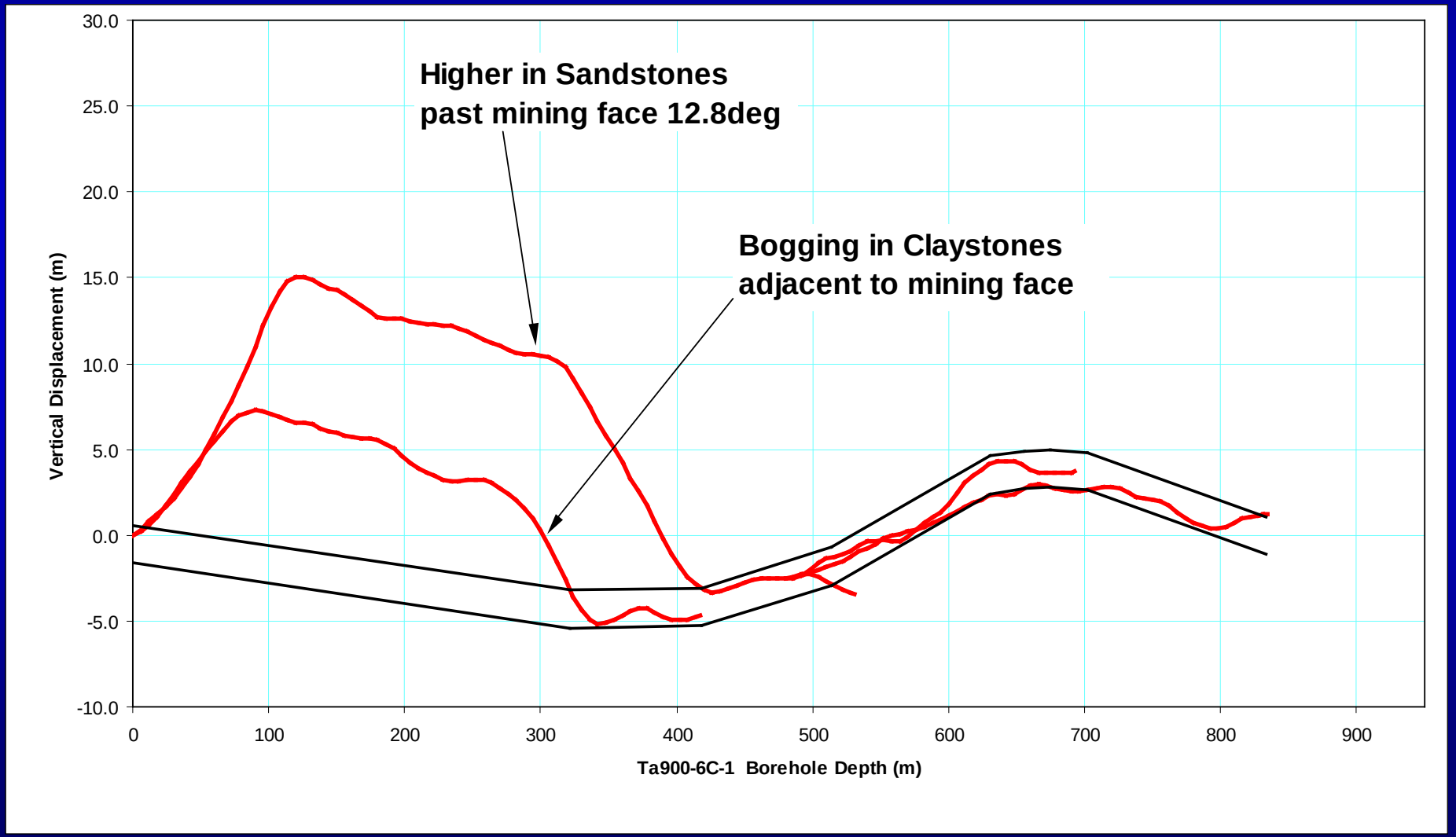
Bogged Rods – Borehole 8



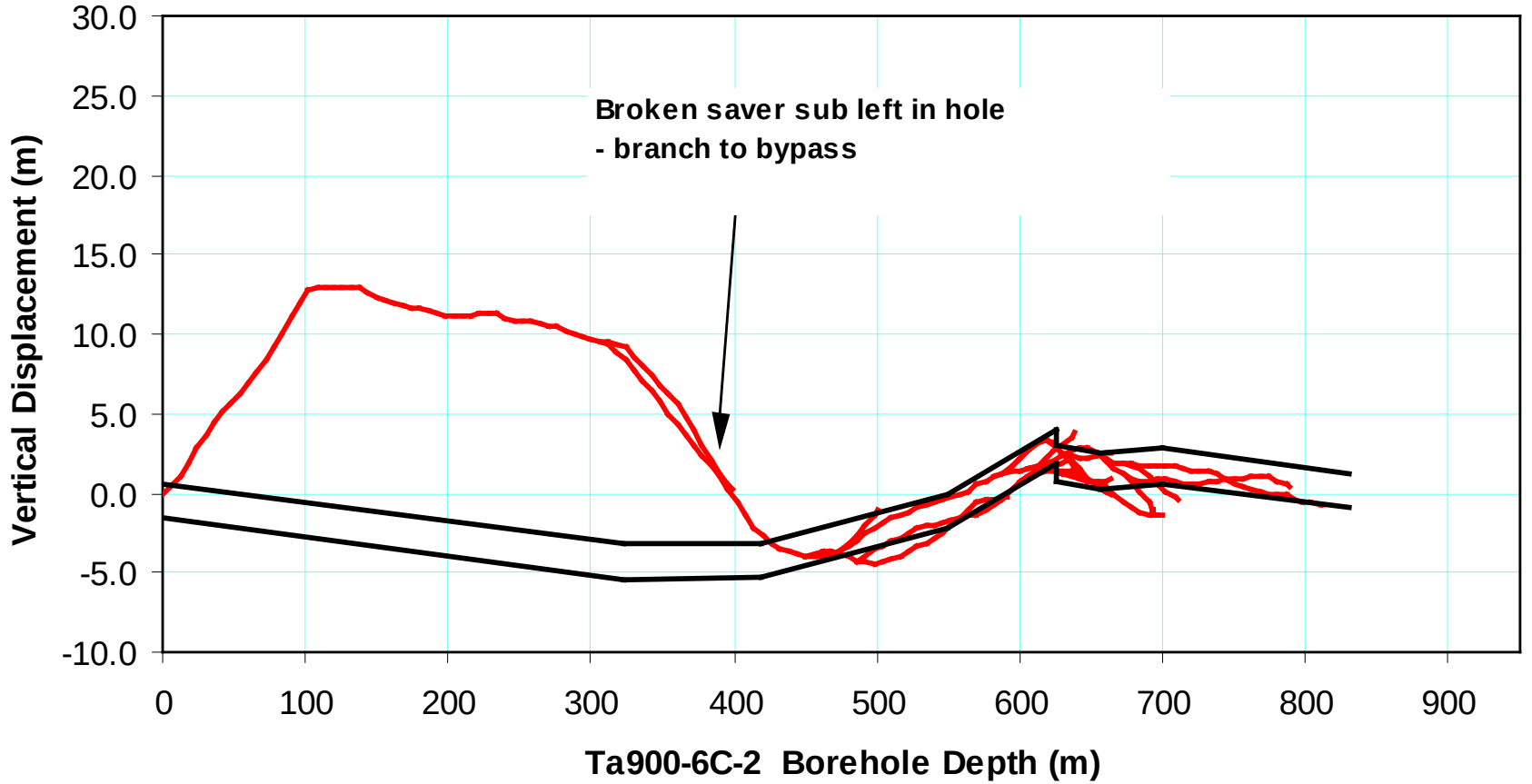
Over Roadway Drilling from 6c/t, C Heading

- **Late in getting in to the site due to more pressing issues at the mine**
  - **Recovery operations of equipment in 802 panel**
- **Mining had advanced past 7c/t**
- **Boreholes had to flank A, B and C Headings**
- **Holes not to be intersected early by mining**
- **Design to clear 9c/t and re-enter seam beyond 10 c/t**
- **High enough above seam to avoid roof bolts**
- **Boreholes have to traverse cut-throughs and adjacent roadways**

Drilling over current and future roadways – Hole 1



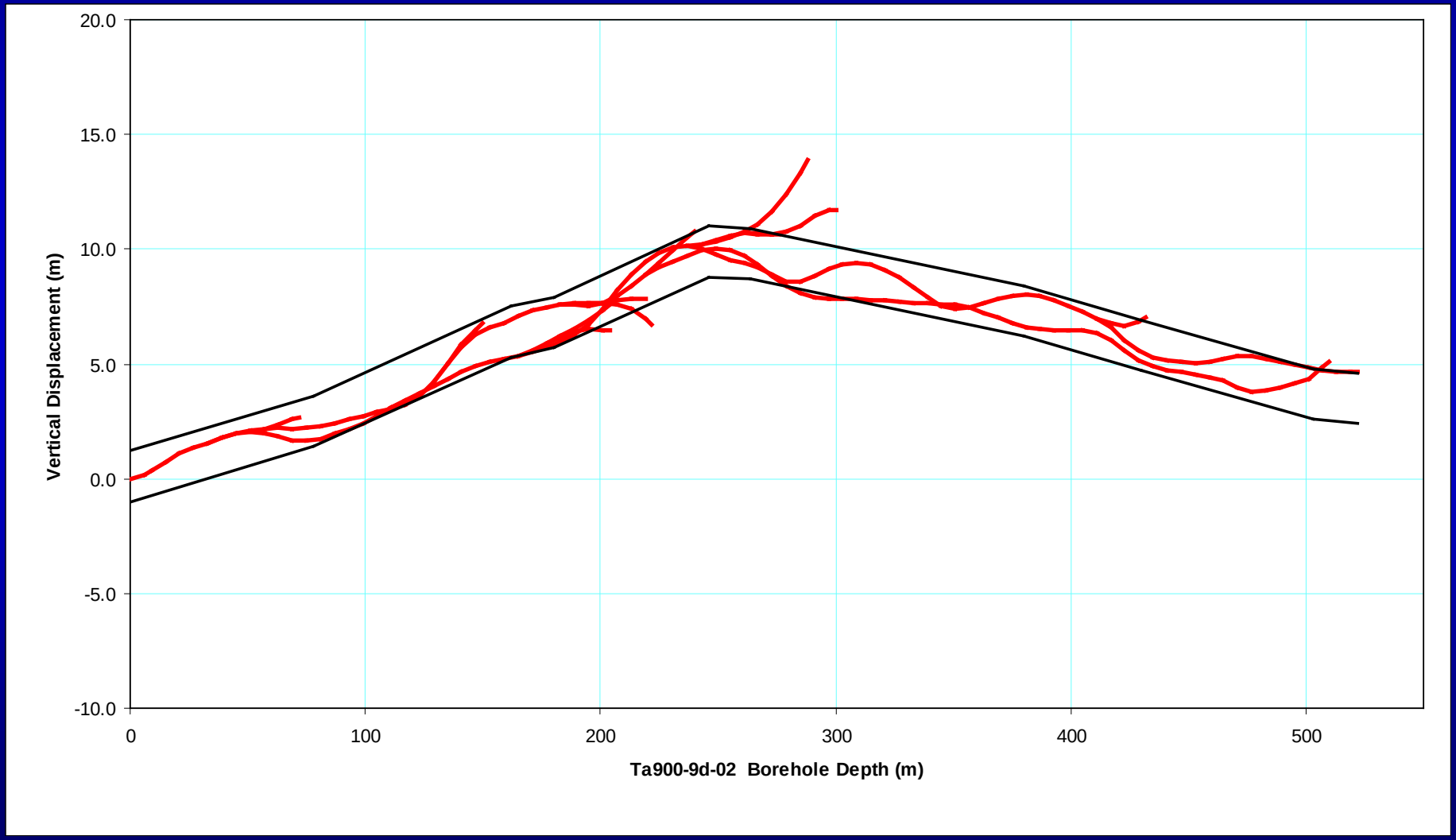
Drilling over current and future roadways – Hole 2



Inseam Drilling from 9c/t, D Heading

- **Did not have to traverse roadways**
- **Negotiate a known fault zone associated with roll over of the seam**
- **Profile defined by previous adjacent drilling**

Inseam Drilling from 9c/t, D Heading



Summary

- **Drilling through adverse environment involved numerous trips in and out of hole to clear blockages or replace equipment**
- **Damaged transmitter cable in DDM-MECCA regularly had to be pulled out and replaced**
- **DHM sheared shaft on 3 occasions, bits required replacing regularly**
- **2 DDM-MECCA instruments were bogged and 'parked' for a long period before recovery by mining**
  - **Shotfiring damaged sensors in DDM-MECCA's at $18,000 repair cost per sensor**
- **Average drilling rate of only 35m/shift from 2c/t and 56m/shift from 6c/t.**
- **Drilling rate of 127m/shift from 9c/t.**

Questions

Ken Mills, SCT – What were your options for stabilizing the hole?
Frank – We would typically ream out the hole. We used polymer muds. In china, we used a bentonite mixture. In Queensland, we used a bentonite mud mix to drill through a shear zone, but this was very expensive as the mud is lost and not recycled.

Mark Blanche, GeoGas – Does the bentonite create a skin effect?
Frank – Some people think the drainage is affected, but the gas pressure should usually be sufficient to allow the gas to cross the bentonite skin. It could be a problem at low gas pressure or flow.