

Session 5 – What follows next?

- NVQ Land Drilling – Lead Driller Qualification
- NVQ Questions & Answers
- Candidate Grant
- Summary

NVQ Land Drilling Qualification

- Lead Driller can obtain one or more of these endorsements
- Anchoring; Ground Investigation (Cable Percussion, Rotary, Dynamic Sampling); Drilling & Grouting; Geothermal Drilling; Landfill; Waterwell
- Need to obtain **Geothermal Drilling** endorsement for Closed Loop
- (**Waterwell** endorsement for Open Loop)

NVQ Land Drilling Qualification

- Geothermal Drilling & Waterwell Endorsements
- I've already got the NVQ. Do I need to do the whole NVQ again?
- NO. You only have to be reassessed for additional endorsements
- (NVQ is 7 units. Only 1 has to be reassessed)
- Therefore cost is much reduced

NVQ Land Drilling Qualification

- Geothermal Drilling & Waterwell Endorsements
- Are NVQ Assessors available?
- YES. The BDA has held a training course for Assessors (27th August)
- Contact your usual Assessor or ask BDA for Assessor details

NVQ Questions & Answers

- BDA has produced Questions/Answers for Geothermal Drilling
- 32 questions – Cable Percussion
- 45 questions – Rotary

NVQ Questions & Answers

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ADDITIONAL QUESTIONS AND ANSWERS LEAD DRILLER GEOTHERMAL DRILLING ROTARY (CONTINUED)

Methods of work (continued)

- Q5. If the ground loop designer is not present on site during test hole drilling, give ONE reason why he should be notified of the drilling technique?
- A. **Airflush drilling could introduce high temperature air to the borehole and will affect the thermal response test if the heat is not permitted sufficient time to dissipate. The designer must be informed of the drilling method in order to determine when the test can be started.**
- Q6. Why is it important to maintain good verticality of ground array boreholes?
- A. **To minimise the risk of boreholes intersecting each other. To allow the ease of installation of the loop and tremie pipes to complete the hole.**
- Q7. Why is accurate drilling log information important for a geothermal borehole?
- A. **Some thermal properties for the design are dependant on geology. If there is no thermal response test to be completed the designer must know if the geology is materially different to the expected geology.**
- Q8. Name FOUR things that need to be considered when adding weights to the loop?
- A. **Method of attachment of weights
Depth of hole and position of weights
Density of the drilling fluid
Water level in the borehole**
- Q9. What steps should be taken to check that the loop can be placed to the correct depth and the hole is free from obstructions prior to installation?
- A. **Flush the hole clean. Check that the depth can be reached by inserting a measuring tape, a set of rods or a tremie pipe to the required depth.**
- Q10. If the loop cannot be installed to design depth what actions should be taken?
- A. **Accurately report to the designer the reasons why the loop cannot be installed to design depth. Outline what measures would be needed to install the loop to design depth. Outline the geology encountered in the borehole.**
- Q11. What is the maximum depth of scratch that can be tolerated on a loop pipe wall?
- A. **Less than 10% of the wall thickness of the pipe.**

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ADDITIONAL QUESTIONS AND ANSWERS LEAD DRILLER GEOTHERMAL DRILLING ROTARY (CONTINUED)

Methods of work (continued)

- Q12. What measures should be employed to protect the loop from damage on site and during installation?
- A. **Store the loops appropriately on site with bands and end plugs and raised from ground level. Install the loop from a loop reeler. Provide protection for the loop on the casing leading edge to prevent damage. Install the loop into the casing or borehole using a well head roller if needed, i.e. not creating a sharp radius at the well head. Take care in removing casings etc. Visually inspect the loop before and during installation.**
- Q13. When flow testing an installed loop, what equipment is needed?
- A. **A circulating pump with filter and reservoir / tank, a flow measuring device and flow and return pressure gauges.**
- Q14. In how many directions should an installed loop be tested?
- A. **The loop should be tested in two directions, forward and reverse.**
- Q15. Following the installation and grouting of the loop, when should a pressure test be carried out?
- A. **After the flow test.**
- Q16. When pressure testing, where should the pressure test gauge be positioned?
- A. **On the outflow of the loop to ensure the hydraulic test is applied to both legs of the loop.**
- Q17. Which pressure test is acceptable for a ground loop?
- A. **BS EN 805 is the standard test.**
- Q18. What water quality should be used when filling a loop before or during installation?
- A. **Clean mains / potable water only.**
- Q19. (a) What additive should be used when leaving a loop for a long period of time or once completed and (b) why?
- A. **(a) A suitable biocide. (b) To ensure that the testing equipment used on different sites / loops does not create cross contamination and that the loop is left in a sanitary condition once completed.**
- Q20. What minimum measures should be taken to protect the loop from debris once the loop is installed, flow and pressure tested?
- A. **The loop ends should be securely capped, fused or plugged.**

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NVQ Questions & Answers

Q3. Why is it important to install the boreholes as outlined in the design?

A. The GSHP system performance is reliant on the design

NVQ Questions & Answers

Q6. Why is it important to maintain good verticality of ground array boreholes?

A. To minimise the risk of boreholes intersecting each other

To allow the ease of installation of the loop and tremie pipes to complete the hole

NVQ Questions & Answers

Q12. What measures should be employed to protect the loop from damage on site and during installation?

A. Store the loops appropriately on site with bands and end plugs and raised from ground level

Install the loop from a loop reeler

Provide protection for the loop on the casing leading edge to prevent damage

Install the loop into the casing or borehole using a well head roller if needed, i.e. not creating a sharp radius at the well head.

Take care in removing casings etc

Visually inspect the loop before and during installation

Candidate Grant



- BDA has £10,000 grant support from CITB
- To provide partial financial support for successful NVQ Geothermal Drilling endorsement award
- Originally envisaged - £100 per candidate i.e. 100 candidates
- NOW £200 PER CANDIDATE FOR FIRST 50 CANDIDATES
- ONCE IT'S GONE IT'S GONE !!

Candidate Grant



PROCEDURE TO OBTAIN

- Contact NVQ Assessor
- In scope companies initially
- BDA will provisionally allocate grant to first 50 candidate applications
- Allocation will be removed end October if candidate does not complete
- Grant money will be paid to Assessor's company if following conditions are met

Candidate Grant



PAYMENT CONDITIONS

- Candidate has been prior approved by BDA
- Assessor's company provides proof that its normal assessment price has been reduced by £200 (and that Employer is aware that subsidy originates from CITB/BDA)
- Proof from Assessor's company that candidate has been assessed and that application for award has been made.

Summary

- Intensive Course with much to impart
- Part of overall Project
- Geothermal Drilling training courses - Sept 22 (Derby), Oct 6 (Reading), Oct 28 (North /Scotland
- E-Learning
- New module for BDA Apprenticeship Scheme
- BDA Audit to incorporate

Summary

- GETTING GEOTHERMAL DRILLING RIGHT HAS TO BE A PRIME OBJECTIVE
- IF COMPETENCIES NOT ESTABLISHED NOW THEN OPPORTUNITY IS LOST
- THERE'LL BE MANY NEW PEOPLE AND COMPANIES DOING GEOTHERMAL DRILLING
- THEY SHOULD ENTER THE MARKET AND FIND THE ENTRY REQUIREMENTS & SUPPORT ALREADY EXISTING

Land Drilling Geothermal Drilling Course

