

Trenchless Technology Operator Qualification Programme

Trade Skill Evaluation at Competency level – 2

**COMPETENCE:
BASIC COMPETENCE**TTOQP 1
GDI 1.2SUBSURFACE SURVEY
GEOPHYSICAL DATA INTERPRETER**Background**

Geophysical investigation deals with the techniques that are relevant to ground investigations to determine structural nature of the subsurface for engineering projects. It involves techniques for the measurements of various physical properties of subsurface like conductivity, hardness, presence of anomalies, dielectric properties, moisture content, density, interfaces etc to determine the properties of the earth and subsurface structures.

Geophysical data processing and interpretation is a specialized subject, and must be carried out by a geophysicist or a professional having acquired requisite qualification in geophysics. Present document, the Geophysical Data Interpreter Qualification Criteria (GDIQC), identifies a set of standards for a qualified professional performing the geophysical data interpretation for subsurface work. These sets of vocational qualification standards define the minimum technical qualifications one needs to possess for doing geophysical investigations successfully.

PRIOR ACHIEVEMENT EVIDENCE

Persons undergoing this certification should have a Degree in Science/ Engineering having Geology or Physics as one of the subjects or graduate having other specialized qualifications related to geology/ geophysics. In addition to the above qualification the Geophysical Data Interpreter should have Diploma/ PG Diploma in geophysics.

PERFORMANCE STANDARD

Qualified candidate should be able to display competence in the following sections of geophysical investigation:

- Ability to consider the most important basics of jobsite preparation when planning the complete project.
- Awareness of general safety precautions.
- Awareness of electrical safety precautions and ability to use them at site.
- Ability to understand maps, plans and reports on existing networks.
- Ability to understand Regional geology and hydrogeology of the area
- Aware of the use of scientific/geophysical equipment.
- Ability to use of Computer software in geophysical data interpretations
- Ability for Field Data Acquisition and Basic Field Data Interpretations
- Ability for Maps Creation and Report Writing
- Ability to anticipate problems in equipment.
- Ability to carry out common maintenance and problem solving measurements independently.

MINIMUM PERFORMANCE STANDARDS

While performing the subsurface geophysical investigation the Geophysical Data Interpreter need to display the following minimum qualifications:

1. Safety during work

- i. General precautions necessary for safety of the operators;
- ii. General precautions necessary for safety of equipment;
- iii. Necessary Aids for safety are used without fail;

2. Read working drawings / Sketches and proceed with work

- i. Given a set of drawings / sketch requirement of the equipment and related tooling worked out and the scope of work understood;
- ii. The work is executed as per drawings / sketches;

3. Knowledge and use of equipment and tooling

- i. Proper identification of equipment/tools.
- ii. Proper storage of equipment and tooling;
- iii. Proper use of tools.

4. Knowledge of machine operating procedure and sequence

- i. Equipment is properly connected to desired power points and all related accessories are connected properly.
- ii. Voltage, frequency, current potential, and polarity are checked.
- iii. Instrument is properly calibrated to get accurate reading.

5. Knowledge about defects, their remedy and acceptance limit

- i. Identified the defects of equipment.
- ii. Remedy to the defects is known.
- iii. Acceptance limit as per standard code is known.

PERFORMANCE EVIDENCE

1. Helmet, Hand Shields, Safety Goggles, Gloves etc. are used.
2. Operator's health is fit before he goes to job.
3. The geophysical operator identified the proper tools for work.
4. The geophysical operator knows the use of specific tool.
5. The work is done as per demand of drawings.
6. Operator knows how to make equipment/ instrument ready for use.
7. Proper earthing is provided.
8. Proper polarity is confirmed.
9. Loose connections are checked.
10. All the defects in different type of equipment/ instrument are clearly identified.
11. Possible remedy to the defects identified is given.
12. Variation allowed as per codes are very well known.

SUPPLEMENTARY (KNOWLEDGE) EVIDENCE

In addition to the prior achievement evidence a trainee needs to display the following supplementary knowledge evidence for the course completion and being permitted to do the geophysical investigations independently:

1. Reading and writing in vernacular language.
2. Ability to conduct area and volume calculations.
3. Understanding about subsurface investigation requirements.
4. Understanding about different types subsurface investigation techniques
5. Possession of knowledge of various basic construction norms;
6. Possession of knowledge of basic electrical hazard prevention methods;
7. Awareness about basic operator's manual for geophysical investigation equipment required for the job.