

### *Summary*

Dual induction, spontaneous potential (SP), gamma ray, and neutron-density logs will be placed through the confining and injection zones after the IWs are drilled to total depth (TD). A cement bond log will be placed from the top of the injection zone to surface after each section of casing is cemented in place. Ten sidewall samples will be acquired from the first well to be drilled for laboratory analysis.

#### **A. Open-Hole Logs**

The geophysical logs will be placed in the open hole immediately following completion of each section. The following geophysical logs will be placed in the open hole:

1. Natural gamma
2. Spontaneous potential
3. Dual induction
4. Neutron-density
5. Caliper (four-arm)
6. Electromagnetic induction

The geophysical logs will be placed from the bottom of the boreholes to the bottom of conductor casing. A set of backup tools should be on site, or accessible within a reasonable amount of time, to reduce downtime in case of tool failure and to minimize the amount of time that the hole stands open.

#### **B. Logging through conductor/surface casing:**

1. Before casing and cementing: dual induction, SP, gamma ray, neutron-density, caliper logs, etc.
2. After casing and cementing: cement bond, temperature, gamma ray, neutron logs, etc.

#### **C. Logging through long-string casing**

1. Before casing and cementing: dual induction, SP, gamma ray, neutron-density, caliper logs, etc.
2. Fracture locating logs
3. After casing and cementing: cement bond, temperature, gamma ray, neutron logs, etc.
4. Radioactive tracer, spinner, and video logs.