



Common Survey Issues with the Hexcorder

Problems with your readings during survey:

1. Remember to remove the plastic cap from the end of the half cells.
2. **Contaminated** half cells. The half cells should be checked daily, prior to survey, against a standard, the maximum recommended potential difference is +/- 5 millivolts. Check that there is saturated copper-sulphate solution filling the half cell.
3. **Broken wire** in cables from the Hexcorder to the half cell extension pole or to the wire dispenser. Use a DVM to check for continuity through the cables.
4. **Poor electrical connection to pipe** To ensure a good electrical connection to the pipe lead use a copper alligator clip, not steel. Remove any coating on the survey wire with a piece of sand paper to ensure a good connection with the copper clip.
5. Remember to re-program after erasing the memory by going through the entire setup procedure.

Problems with your data:

6. Export the data as an ASCII file. We recommend using HyperTerminal and its 'capture text' function.
7. Remember to close your capture file at end of data download session.
8. Taking readings under **very dry conditions** without wetting down the surface of the ground. The Hexcorder has an internal impedance of either 10 or 250 meg ohms. Under very dry conditions the readings measured and recorded will be in error unless steps are taken to reduce the half cell contact resistance by wetting the ground. For instance, if the half cell to soil contact resistance is 100 meg ohms and the Hexcorder is on high impedance input of 250 meg ohms a voltage divider exists where the total resistance is $250+100=350$ meg Ohms. The Hexcorder will read $250/350$ * potential of the pipeline or 5/7ths of the actual pipe-to-soil potential. This will vary with each reading as the contact resistance will not be uniform resulting in data scatter.
9. Taking **readings to quickly**. The Hexcorder has a programmed duty cycle that you established when you performed a setup. If for instance you program a cycle of 1000 milliseconds off and a 4 second cycle, the Hexcorder can only update the reading and



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display every 4 seconds. If you try to take a reading within four seconds of the previous reading the Hexcorder will store the previous reading. This can be easily seen when you download the data. If you have two or more readings showing the same chainage, voltage and GPS data, you are taking readings too quickly and not allowing the Hexcorder to complete its reading cycle.

10. Taking **readings automatically** by distance or time. Readings taken automatically by distance should only be used when surveying in water where there is continuous half cell contact with the electrolyte. Do not use for land based surveys since you cannot tell when the Hexcorder is going to take or store a reading thus you may not have contact between the half cell and the soil or you may have a high resistance contact resulting in an erroneous reading. Taking readings by time should only be used as a stationary data logger function for dynamic stray current or telluric interference studies.
11. **Not** using at least a 100 millisecond delay in the off and on potential readings can result in erroneous readings due to inductance spike in the circuit due to interrupting the rectifier. The potential of the pipeline needs a brief time to stabilize after the interruption.