

# NYE County NWRPO - Technical Data Report

## Title/Description

RID No.	Transmitter	Org.	Receiver	Org.	Key word1
6833	Kryder	Nye County NWRPO	QARC	Nye	29P

Square-Array-Direct-Current Resistivity Measurements Conducted at Nye County near Borehole NC-EWDP-29P

Doc. Date 1/6/2006      General Doc. Type Report      Keyword2 EWDP V  
 Entry Date 2/2/2006      Detailed Doc. Type Data Packet      Keyword3 Square-Array

Data Originator Preparer John Hoffman

Title of Data Square-Array-Direct-Current Resistivity Measurements Conducted at Nye County near Borehole NC-EWDP-29P

Description of Data One hardcopy letter report entitled "Square-Array-Direct-Current Resistivity Measurements Conducted at Nye County near Borehole NC-EWDP-29P", which describes a direct-current square-array resistivity study conducted by the USGS on behalf and with the assistance of the NWRPO in the spring of 2005. The report also provides the USGS interpretation of the data that were collected during this study. Included with the report is one cd that contains electronic copies of the report in Microsoft Word (\*.doc) and Adobe Acrobat (\*.pdf) formats. Also included is the file entitled "NC-EWDP-29P\_Square Array Analysis.xls" which contains the original and processed data sets.

Data Collection Method From the report: "SAR [square-array resistivity] measurements are obtained in a manner similar to that for collinear arrays used in resistivity sounding measurements where current is applied to two current or transmitter electrodes (A and B; fig. 1) and the potential measurements are made at two potential or receiver electrodes (M and N). Data obtained from these measurements can be used to derive one-dimensional plots of the apparent resistivity distribution as a function of depth. However, unlike collinear arrays, the electrodes for the square array are placed at the corners of a square having sides of length *a*. In this manner the electrode spacing (*a*-spacing) becomes the length of the side of the square (*a*) and the location of the measurement point is assigned to the center of the square. The depth of investigation can generally be considered approximately equal to the length of the side of the square but varies with resistivity.

Using this geometry, three resistivity measurements are made; two perpendicular measurements and one diagonal measurement (fig. 1a).

After making these three measurements, the array is expanded symmetrically about the center, usually in increments of  $a\sqrt{2}$ , so that the soundings can be interpreted as a function of depth.

Once the largest square measurements are made, the square is collapsed, rotated 15°, and expanded again. For the work that is reported here, six complete expansions separated by 15° rotations were performed, thus yielding measurements of apparent resistivity along 12 directions."

Data Location(s) Near NC-EWDP-29P

Data Collection Period(s) Spring 2005

Data Source(s) USGS electrodes, wires, and transmitter/receiver unit.  
 Supporting Data: "NC-EWDP-29P\_Square Array Analysis.xls"

Data Censoring N/A

# NYE County NWRPO - Technical Data Report

Title/Description
Square-Array-Direct-Current Resistivity Measurements Conducted at Nye County near Borehole NC-EWDP-29P

RID No.	Transmitter	Org.	Receiver	Org.	Key word1
6833	Kryder	Nye County NWRPO	QARC	Nye	29P

1

<b>Data Processing</b>	Raw data were processed to plots of azimuthal resistivity and an equivalent Wenner array sounding curve by the USGS using Microsoft Excel.
<b>Data Limitations</b>	N/A
<b>Governing QA Docs.</b>	N/A
<b>Frequency of Transmittal</b>	As needed
<b>Direct Questions About Data To-</b>	Nye County QA Records Center