

Appendix-B
Geophysical Survey Trip Report
Centredale Manor (Woonasquatucket River) Site
North Providence, Rhode Island

ATTACHMENT C

**GEOPHYSICAL SURVEY TRIP REPORT
CENTREDALE MANOR SITE
PROVIDENCE, RI
MARCH 1999**

DATE: March 11, 1999

TO: Joann Comacho, U.S. EPA/ERTC Work Assignment Manager

FROM: Noel Rogers, REAC Principal Geophysicist

SUBJECT: Geophysical Survey at the Centredale Manor Site (W.A. #3-428)

INTRODUCTION

On 15 February 1999 a geophysical survey was performed by the Response Engineering and Analytical Contractor (REAC) for the Environmental Response Team Center (ERTC) at the Centredale Manor Site. The site was formerly a drum reclamation facility prior to the construction of the Centredale Manor convalescent towers. The purpose of this investigation was to locate possible buried waste containers (e.g., 55-gallon drums) or a waste container reclamation area.

OBJECTIVE

Two geophysical methods, time-domain electromagnetic (TEM) and frequency-domain electromagnetics (FEM), were employed at the Centredale Manor Site. The Geonics, LTD. EM-61 and EM-31 were the TDEM and FEM systems deployed at the site. The instruments were towed or carried down each geophysical transect and data were collected a minimum of every five feet along each geophysical transect.

OBSERVATIONS AND ACTIVITIES

Geophysical grids were established on the north, central and southern portions of the site (Figure 2). The north grid is located adjacent to Smith Road and east of the North Centredale Tower. The central grid is located west of the South Centredale Tower in a low-lying wetland area adjacent to the Woonasquatucket River. One east-west and two north-south transects were collected in the south parking lot. A complete geophysical grid was not established in the parking lots due to the magnetic interference caused by parked automobiles. The southern grid is located in the floodplain of the Woonasquatucket River south of the South Centredale Tower. Due to excessively thick underbrush south of the South Parking Lot, South Centredale Tower, and in the low-lying marsh area near the South Grid no geophysical data were collected in those areas.

Located in Appendices A through D are all plots of the geophysical data collected at the Centredale Manor Site. In this report "targets" are considered to be possible buried waste containers and the descriptions of other anomalies is simply interpretive and is not to be taken literally. Figure 2 depicts the locations of all of the geophysical transects. The exact geodetic locations of anomalies have not been transferred to Figure 1 from global position system measurements collected at the site. Therefore, Figure 1 does not identify the location of any anomalies along the geophysical transects. The tables that describe the location and descriptions of each interpreted anomaly only include those anomalies that were not related to surface debris or pipes apparent from the surface. Also, on some of the geophysical transects that were adjacent to roads and/or edges of parking lots it was assumed that powerlines or pipes were buried in these areas when anomalies were present in those areas.

North Grid

There are numerous geophysical anomalies in the north grid that includes pipe, drum, and debris types of signatures (Table 1). The anomaly located at grid location 0E-20E, 185S-230S has both pipe and debris type anomalies and has the highest likelihood of buried containers and debris in the north grid. There are other anomalies, anomaly number 2 and 3, which may be either a pipe or single target. There are several probable pipes in throughout this area.

TABLE 1
GEOPHYSICAL RESULTS
NORTH GRID

Anomaly Number	EASTING	NORTHING	DESCRIPTION
1	0E-20E	185S-230S	Possible Pipes And Debris At Depths Up To 5 Feet
2	20E	170S	Possible Pipe or Target
3	20E	220E	Possible Pipe or Target
4	20E	250S	Possible Pipe
5	30E	230S	Probable Pipe Near 3 Feet Deep
6	30E	145S	Probable Pipe Near 3 Feet Deep
7	30E	180S	Probable Pipe Near 3 Feet Deep
8	40E	185S	Probable Pipe Near 3 Feet Deep
9	40E	145S	Probable Pipe Near 3 Feet Deep
10	40E	370S	Possible Pipe Single Target Debris Up To 5 Feet Deep
11	50E	175S	Probable Pipe Near 3 Feet Deep

Central Grid

There are several geophysical anomalies located in the Central Grid that vary from buried powerlines, pipes, buried debris, and possible trenches (Table 2). The northern end of this area is adjacent to the central parking lot and the possibility for buried powerlines and pipes is high as seen along all lines from 20W-130W, 550S-560S (Appendix A). Of particular interest in this area are the possible trenches/disposal areas located on lines 80W-100W (items 9 and 10 in Table 2). These interpreted trenches/disposal areas appear to have metallic objects in them at depths greater than 3.5 feet.

TABLE 2
GEOPHYSICAL RESULTS
CENTRAL GRID

ANOMALY NUMBER	EASTING	NORTHING	DESCRIPTION
12	20W-130W	550S-560S	Buried Powerlines/Pipes
13	20W-50W	610S-625S	Pipe
14	20W-130W	630S-680S	Buried Powerlines/Pipes/Targets/Debris
15	20W-30W	690S	Pipe
16	20W-30W	790S-810S	Buried Powerlines/Pipes
17	30W-50W	709S-715S	Pipe/Target
18	40W-80W	835S-865S	Pipe/Target
19	70W	570S	Pipe
20	80W- 1000W	575S-730S	Possible Trench/Disposal Area
21	90W-100W	655S-690S	Possible Trench/Disposal Area

South Parking Lot and East of South Centredale Manor Tower

Anomalies interpreted from the geophysical data for this area are located in Table 3. There are numerous items located mostly on the southern end of the South Parking Lot. Several of these items can be interpreted as single targets or a pipe. Along most of line 1200S there are numerous items that could be interpreted as targets or pipes. There is a possible buried tank and/or disposal area located just in the wooded area immediately south of the South Parking Lot (anomaly number 33 through 35).

Unfortunately, due to the presence of automobiles in the South Parking Lot a geophysical grid was impossible to establish and limited geophysical transects were collected. A detailed utility survey would reveal any other possible buried pipes or powerlines along these transect.

Data collected along the east side of the South Centredale Manor Tower revealed pipes and a few possible targets (anomaly numbers 39 through 42). There were no known pipes at the locations of anomalies 39, 41, and 42 and could be either targets or buried pipes. Only one transect was collected in this area due to the close proximity of the building to this line. A detailed utility survey would reveal any other possible buried pipes other than the one observed at station 835S on this transect.

TABLE 3
GEOPHYSICAL RESULTS
SOUTH PARKING LOT

ANOMALY NUMBER	EASTING	NORTHING	DESCRIPTION
22	0W	1035S	Pipe/Target
23	0W	1065S	Pipe/Target
24	0W	1090S	Pipe/Target
25	0W	1190S	Pipe/Power
26	25W	630S	Power/Pipe
27	25W	830S	Pipe/Power
28	25W	900S-1000S	Pipes/Debris

29	25W	1000S	Pipe
30	25W	1115S	River/Pipe
31	100W-110W	1170S-1250S	Power/Pipe/Debris
32	110W	1105S-1190S	Debris/Pipes
33	100W-110W	1200S-1310S	Disposal Area/Possible Tank
34	100W	1130S-1160S	Debris/Pipe
35	110W	1235S	Target/Pipe
36	1200S	0S-70S	Pipes/Power/Debris
37	1200S	85S	Pipe/Target
38	1200S	105S	Pipe/Target
39	110E	650-728	Pipes/Debris
40	110E	835	Pipe
41	110E	835-908	Pipes/Debris
42	110E	988-1018	Pipes/Debris

South Grid

The lines in the southern grid were separated 25 feet apart and data were collected only with the EM-31 due to accessibility problems. There were several partial and corroded drums as well other on the surface in the vicinity of the South Grid. Only two anomalies (anomaly numbers 43 and 44) that may represent possible buried targets were detected in the South Grid.

ANOMALY NUMBER	EASTING	NORTHING	DESCRIPTION
43	75E	75E-275S	Potential Target
44	100E	100E-178S	Potential Target

CONCLUSIONS

A total of 44 anomalies were interpreted from the geophysical data collected at the Centredale Manor Site. Of particular interest are possible disposal area in the North Grid (anomaly number 1), the possible trenches located Central Grid (anomalies 20 and 21) and the possible buried tank/disposal area south of the South Parking Lot (anomalies 33 and 36). There are numerous other single targets, debris, pipes, and buried powerlines through out the entire site as evidenced from the geophysical data collected. Extreme caution should be used and a detailed utility survey should be performed prior to any excavation or drilling activities.

RECOMMENDATIONS

As-built drawings for the entire Centredale Manor (North and South Towers) and a detailed utility survey should be performed prior to any excavation activities, drilling activities or subsequent geophysical surveys. A subsequent geophysical survey should be completed in the area designated the South Parking Lot. All automobiles must be removed from the parking areas and a detailed utility survey must be performed before another geophysical survey is to be performed.

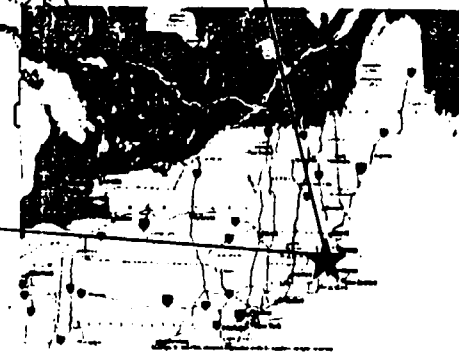
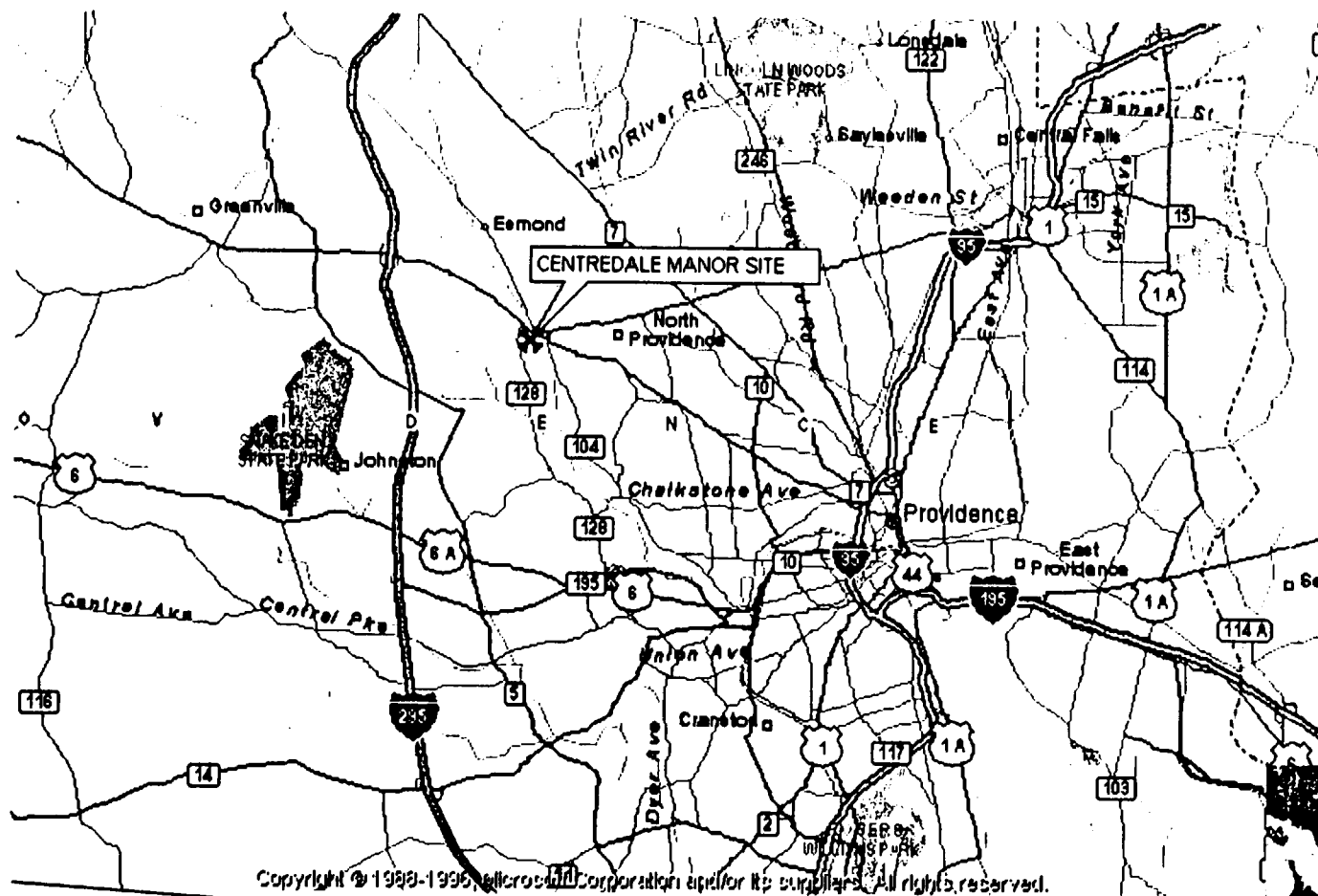


FIGURE I
SITE LOCATION MAP
CENTREDALE MANOR SITE
PROVIDENCE, RI
MARCH, 1999

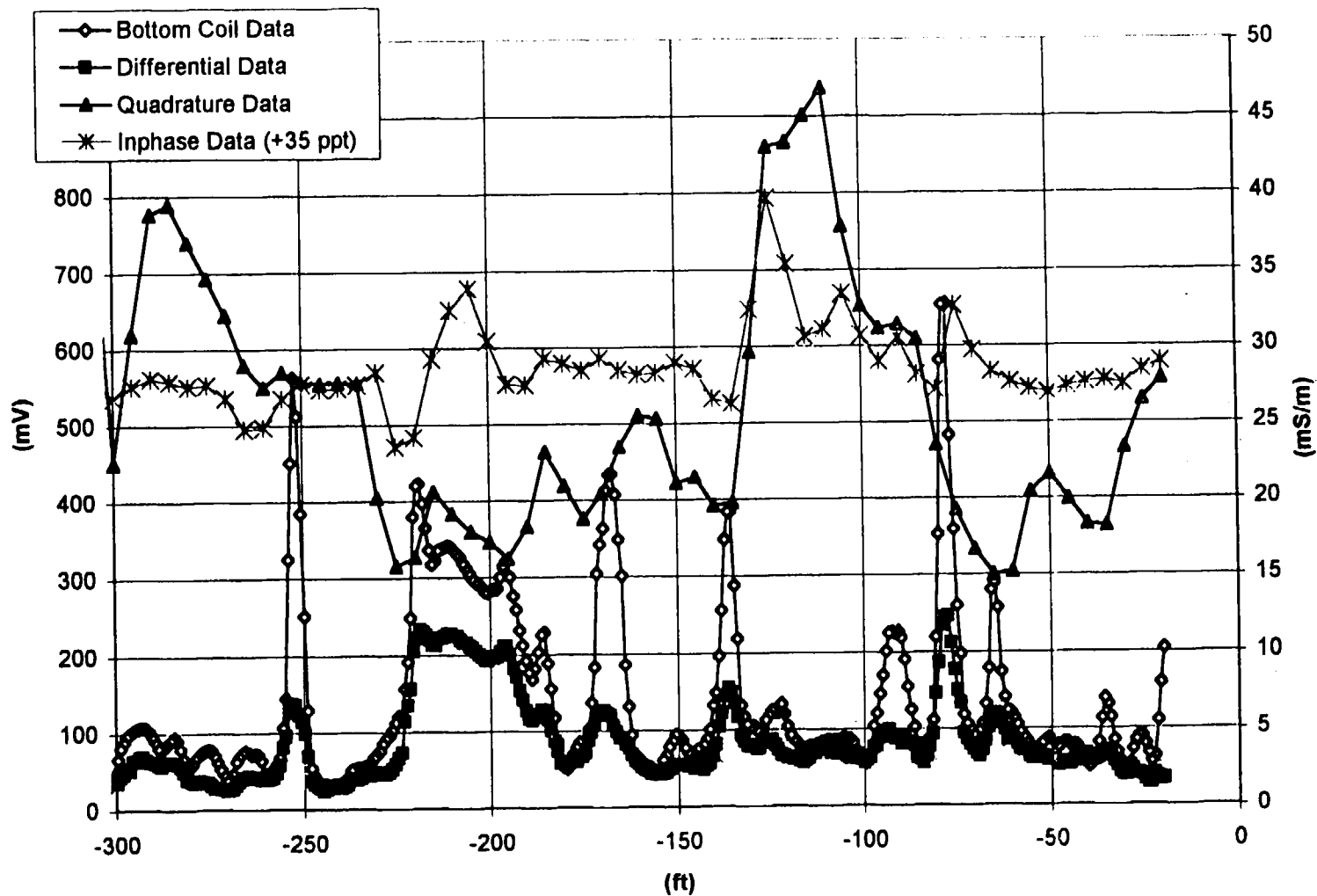
U.S. EPA ENVIRONMENTAL RESPONSE TEAM CENTER
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-C4-0022
03347-143-001-3428-01

**APPENDIX A
GEOPHYSICAL DATA PLOTS
NORTH GRID
CENTREDALE MANOR SITE
NORTH PROVIDENCE, RI
MARCH 1999**

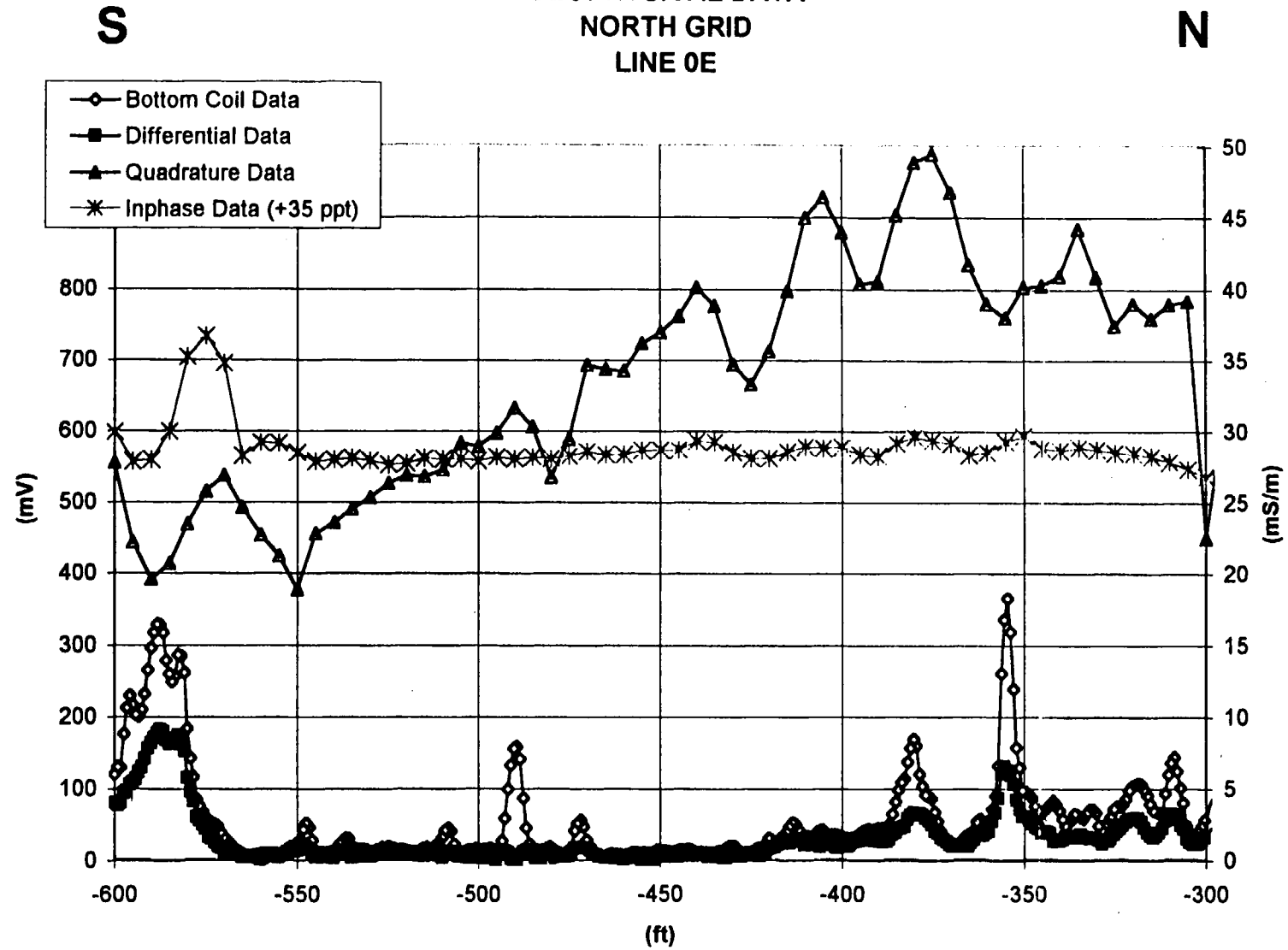
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GEOPHYSICAL DATA
NORTH GRID
LINE 0E

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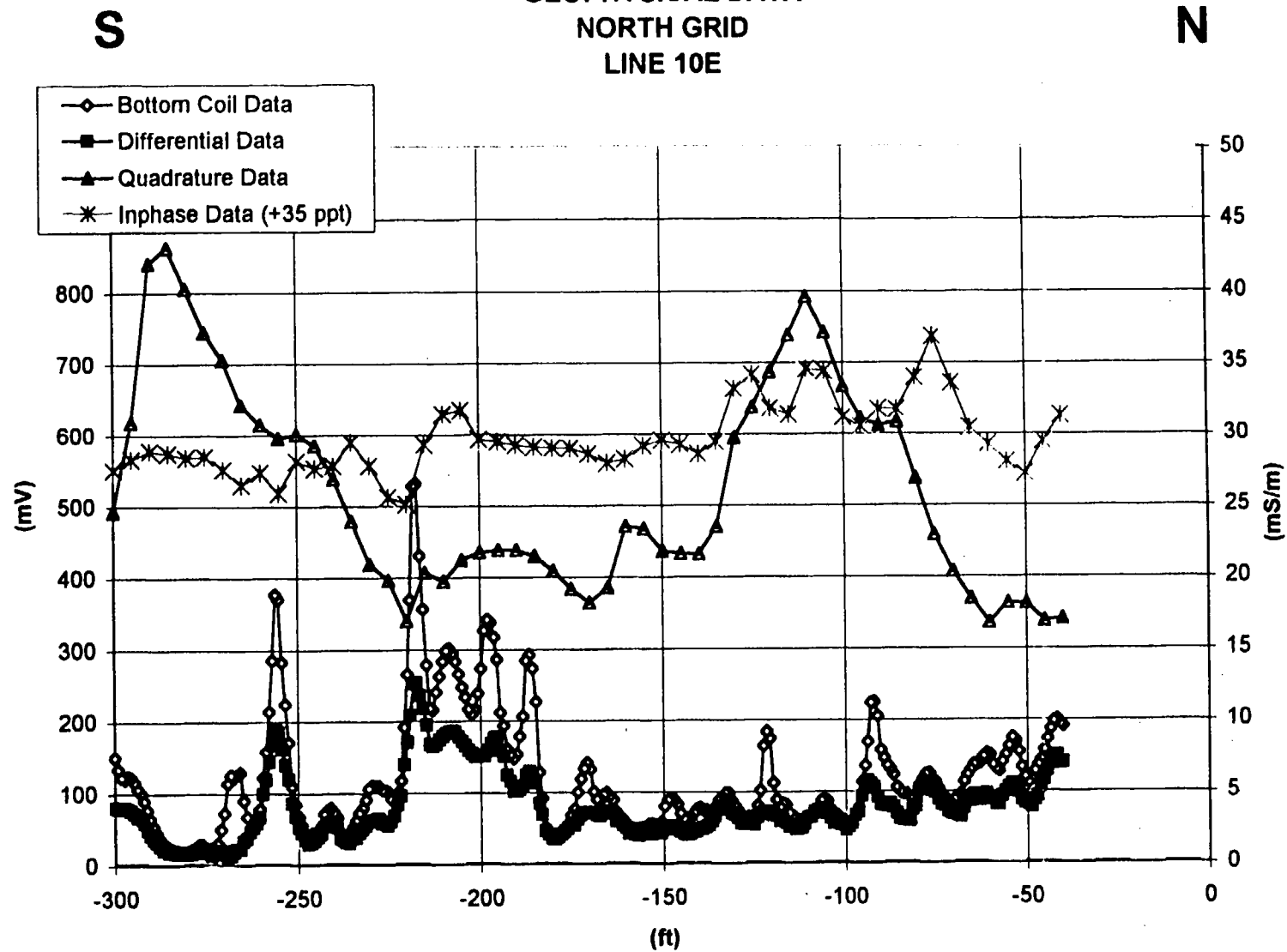
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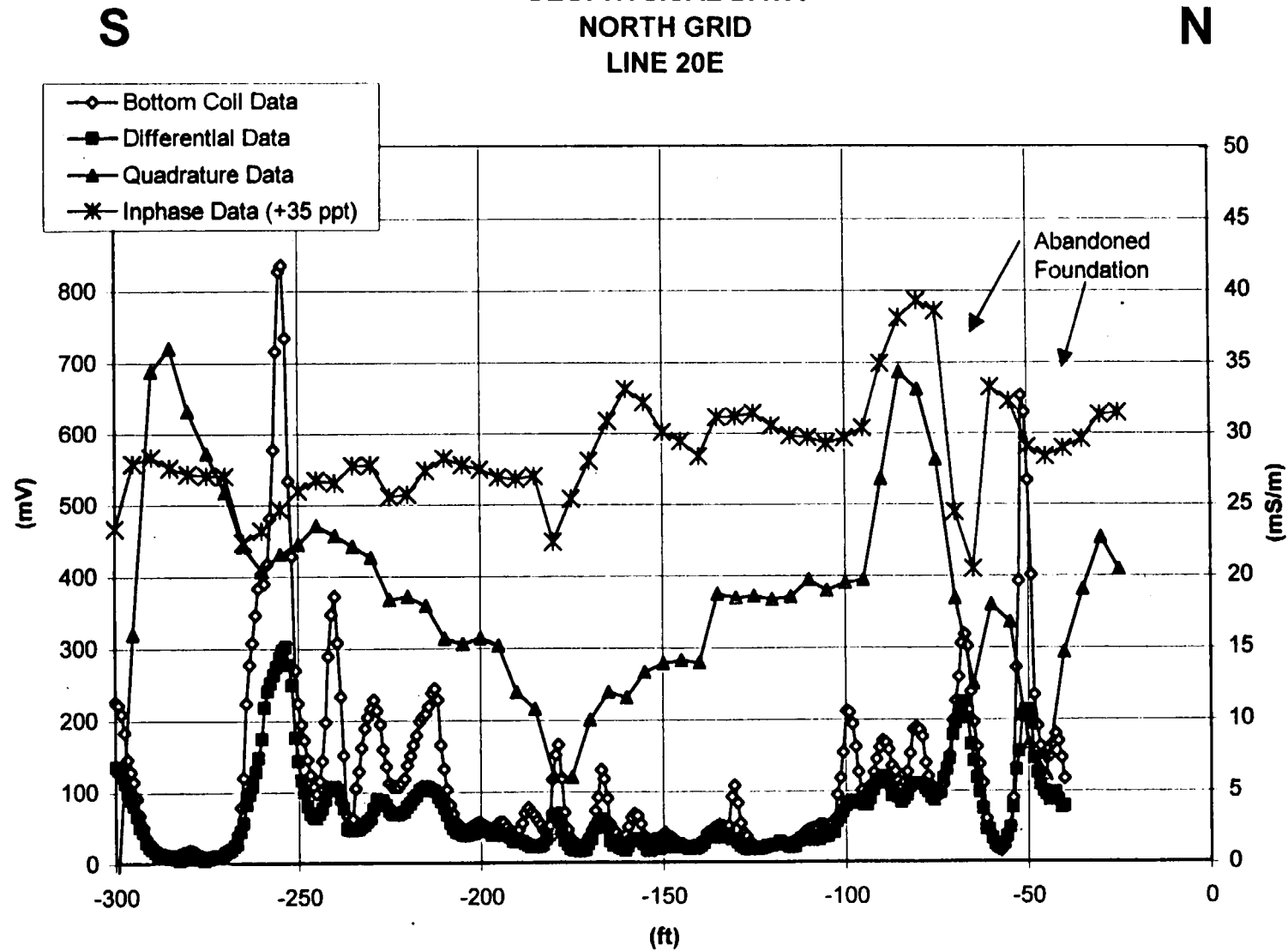
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CENTREDALE MANOR
GEOPHYSICAL DATA
NORTH GRID
LINE 10E



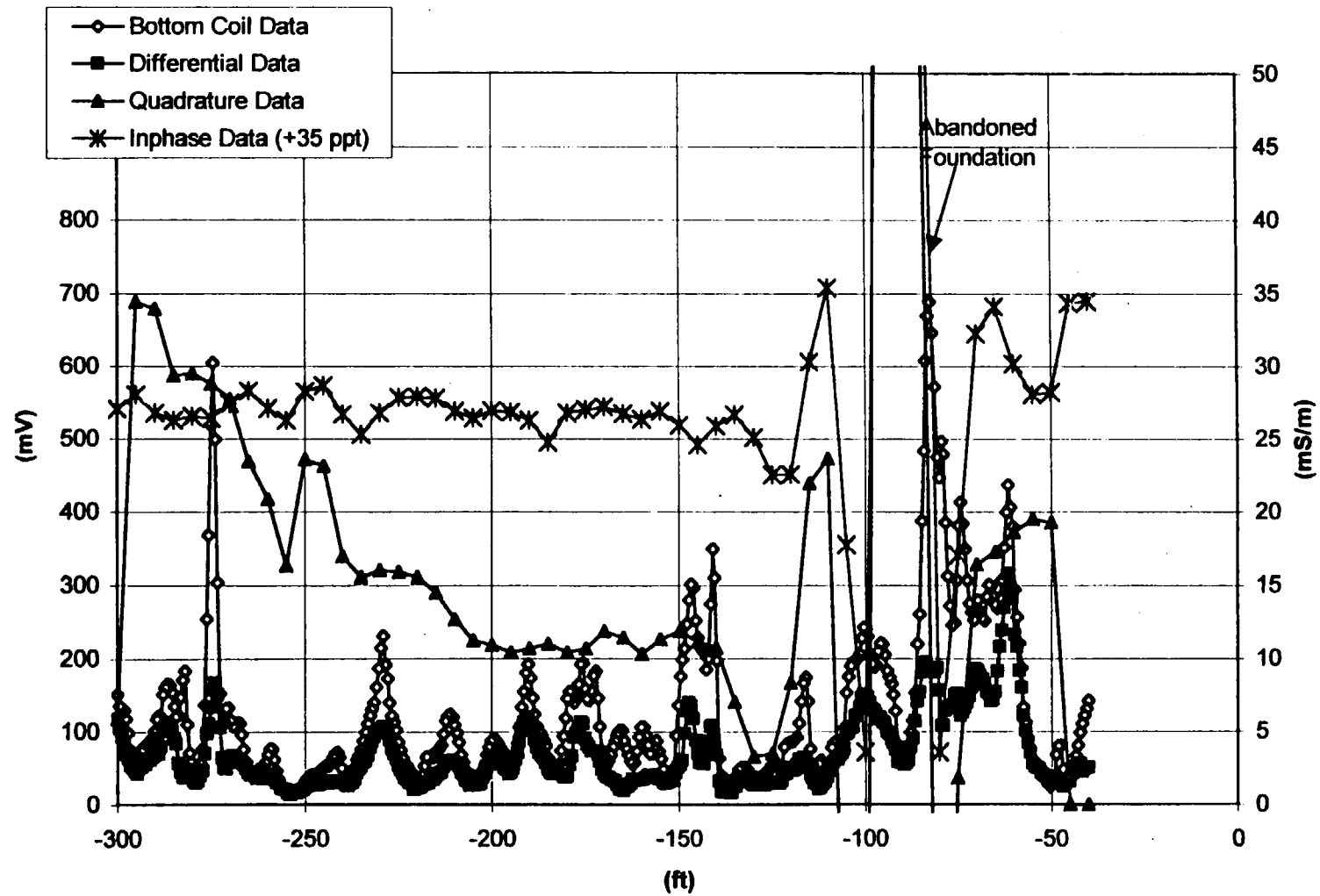
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LINE 20E



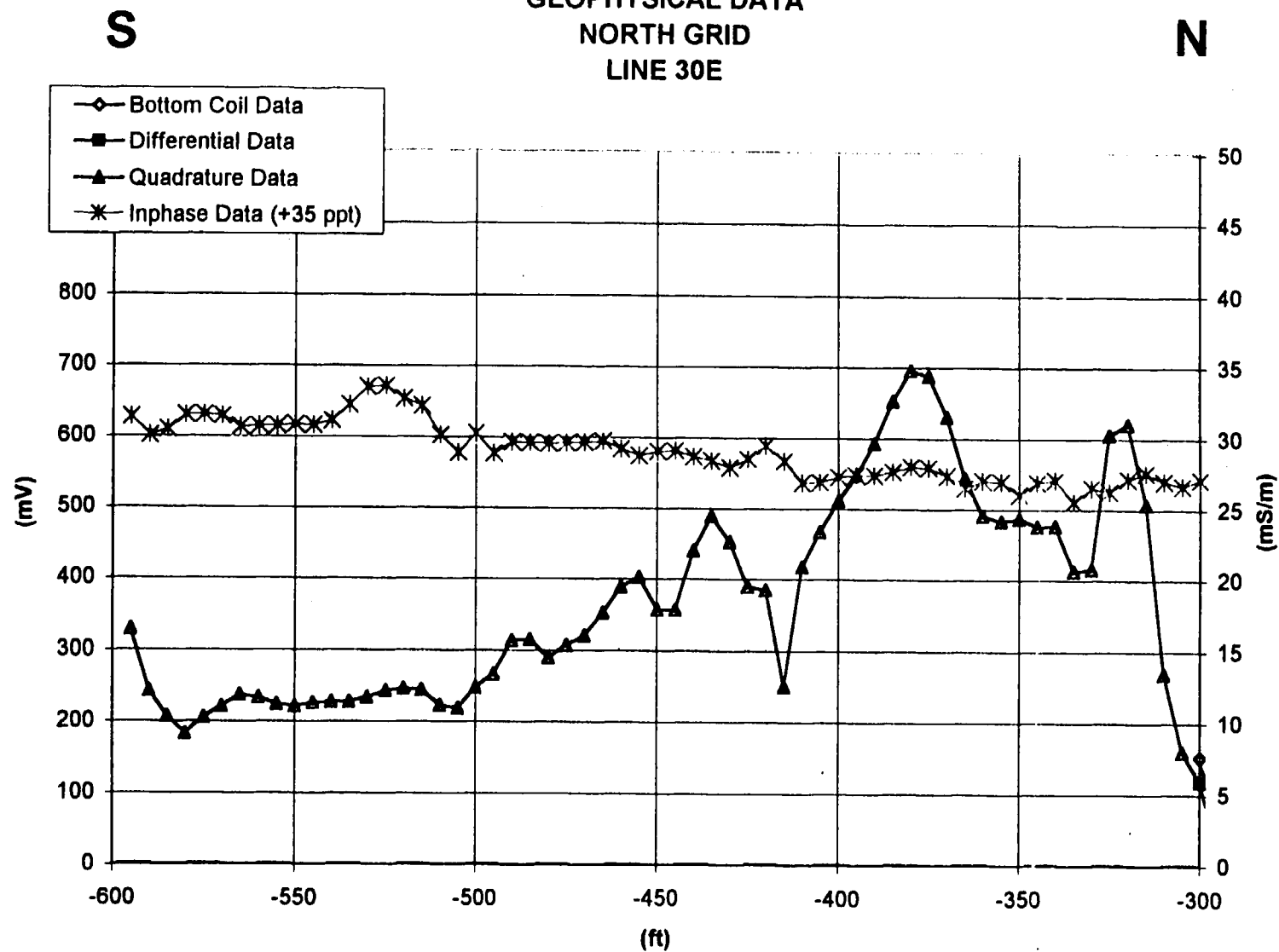
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NORTH GRID
LINE 30E

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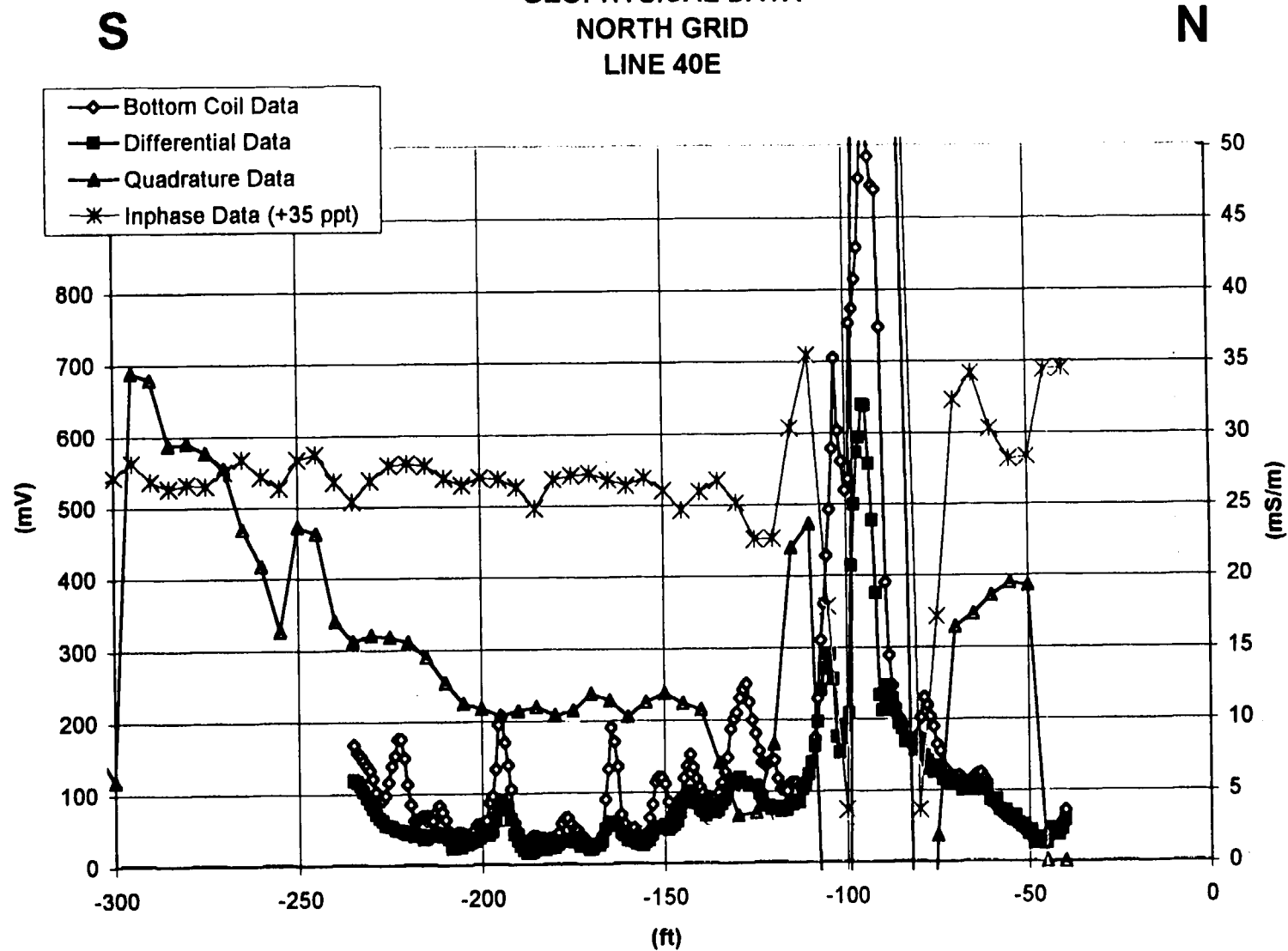
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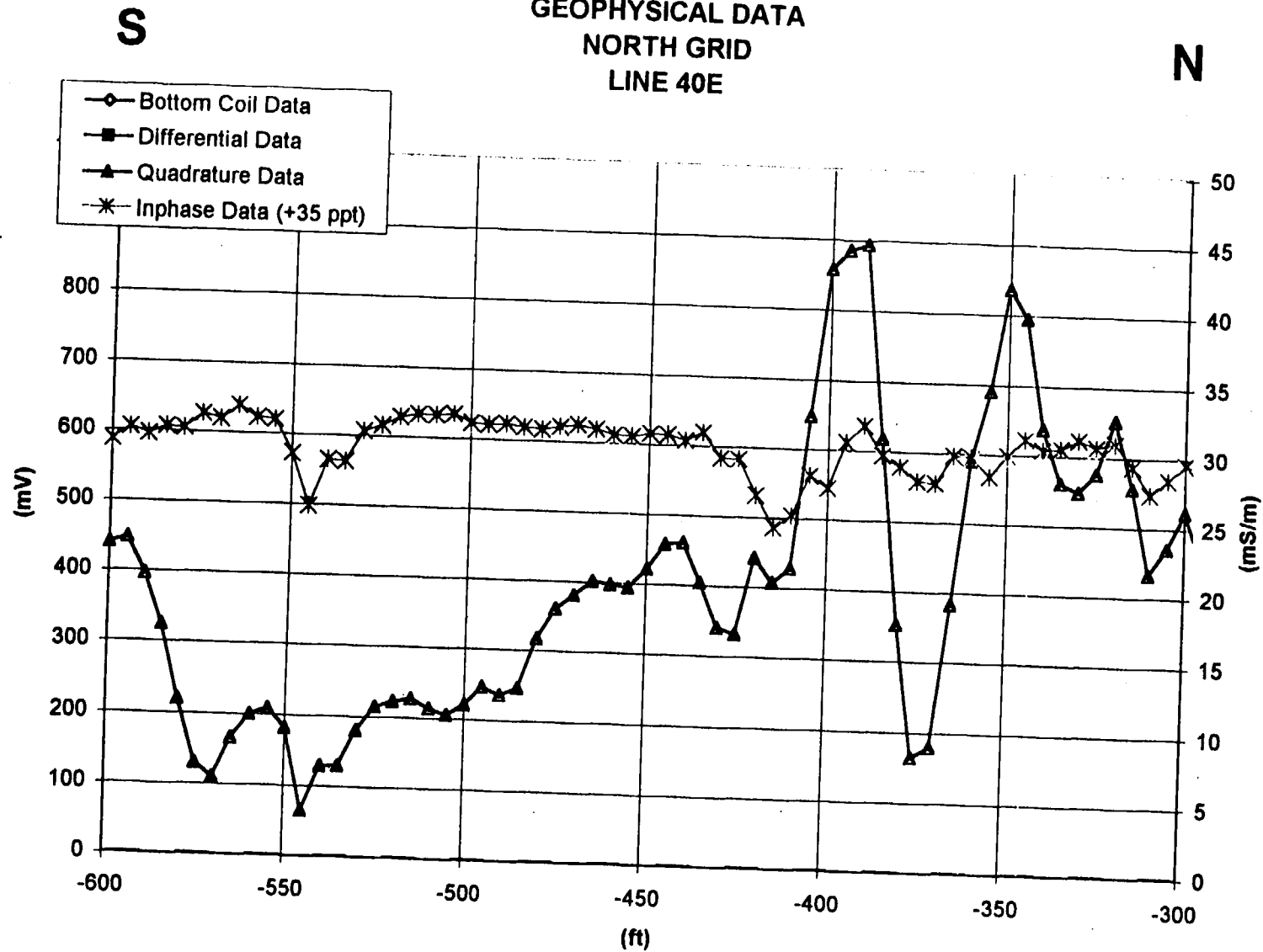
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NORTH GRID
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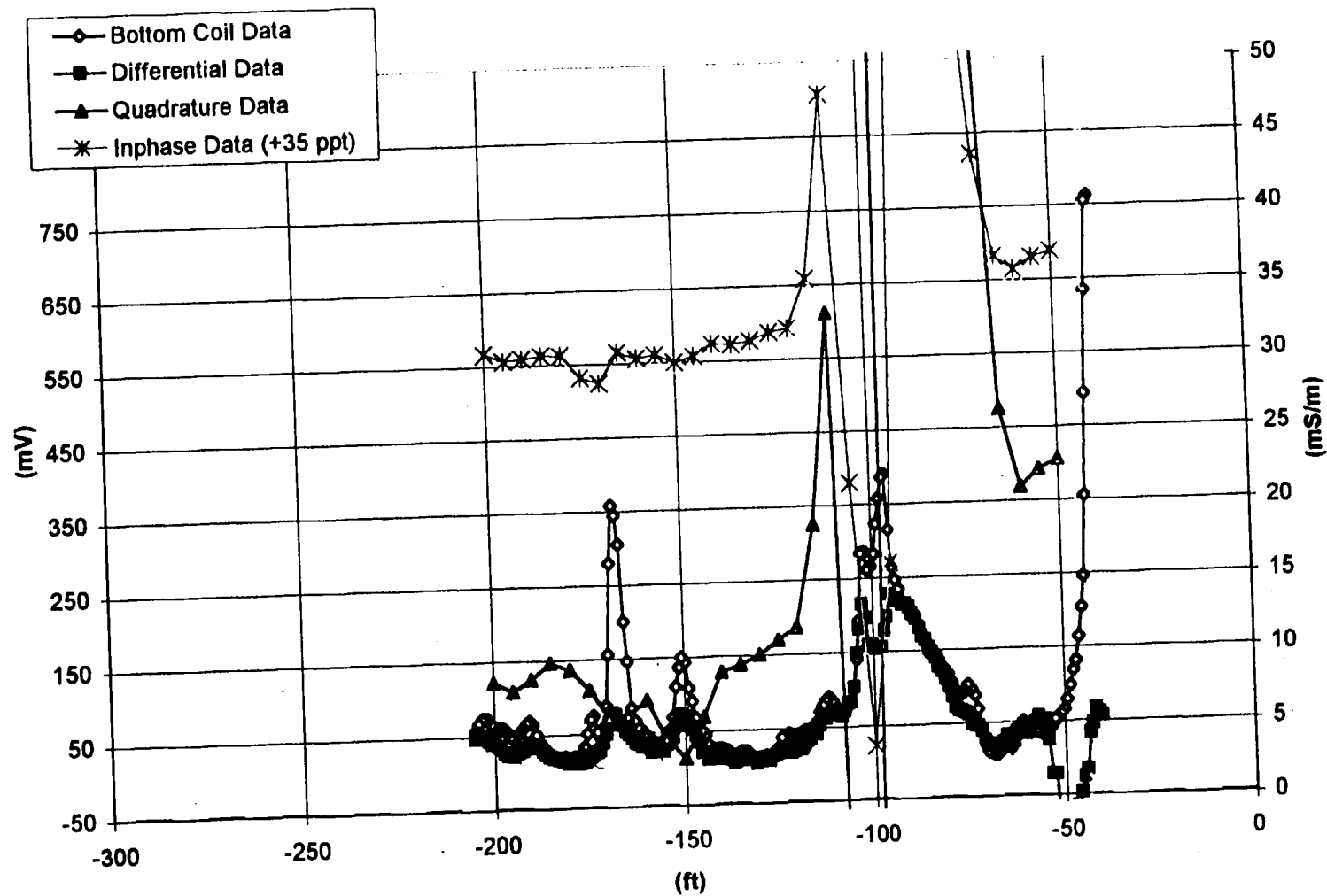
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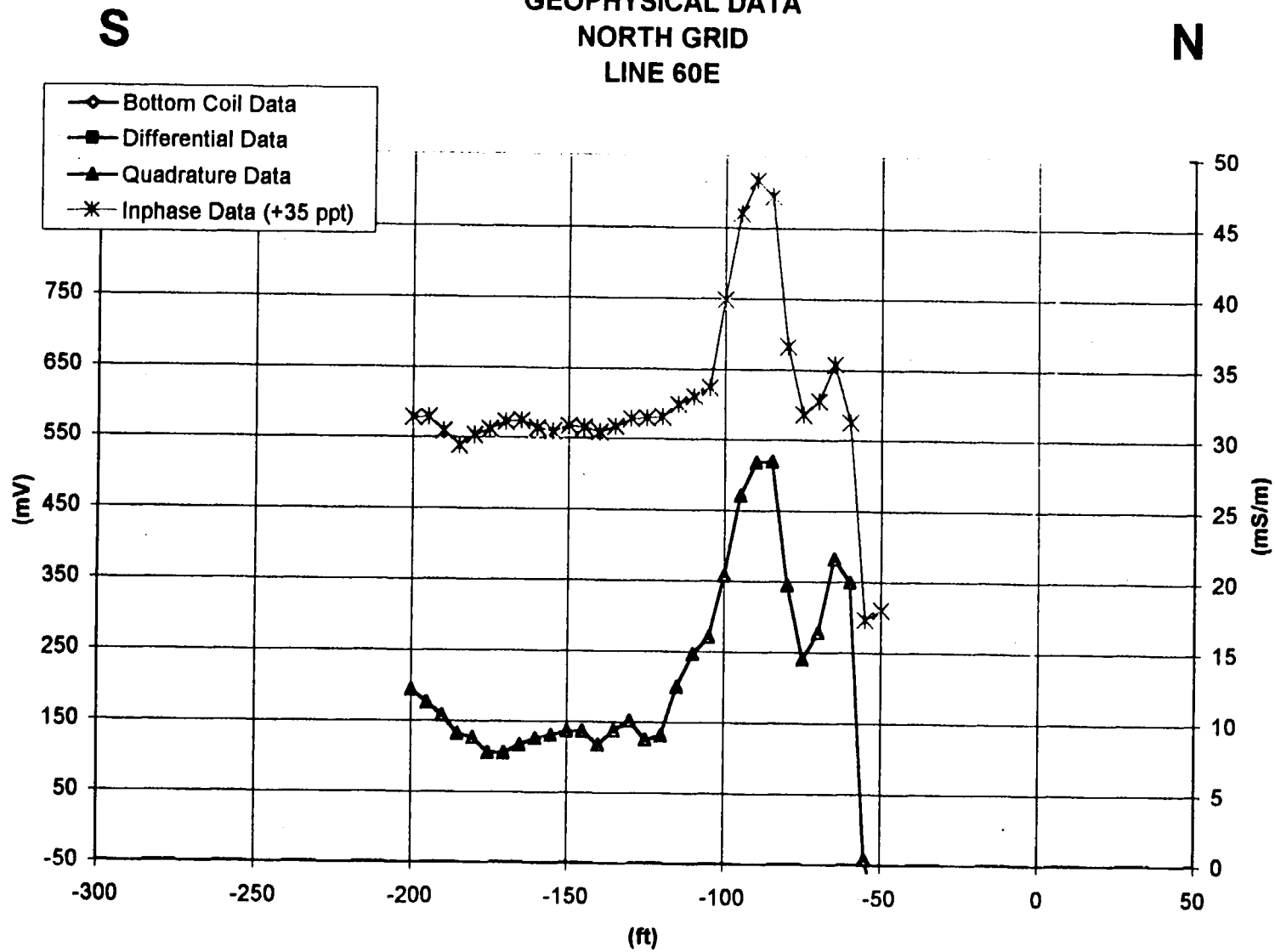
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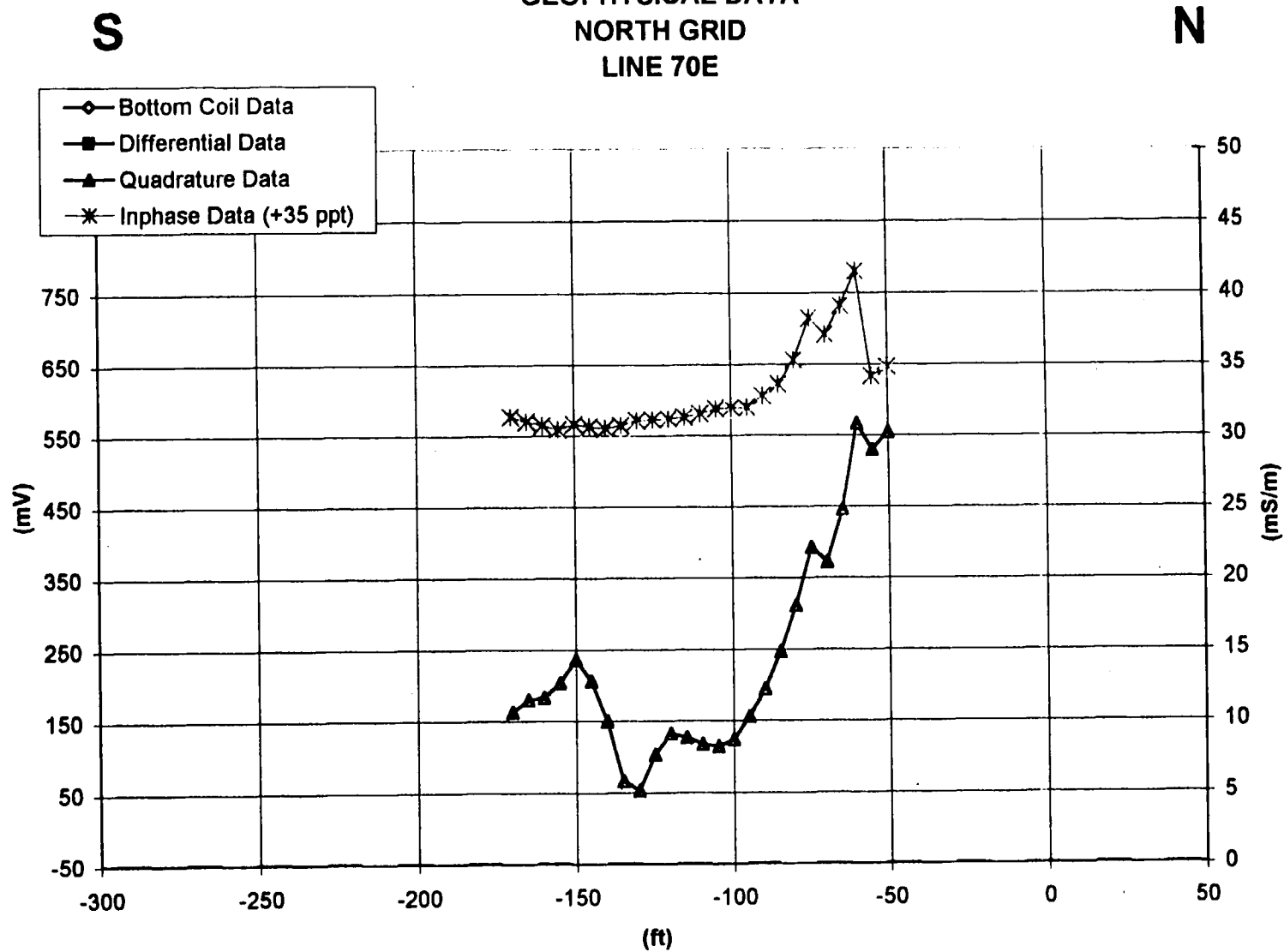
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NORTH GRID
LINE 50E



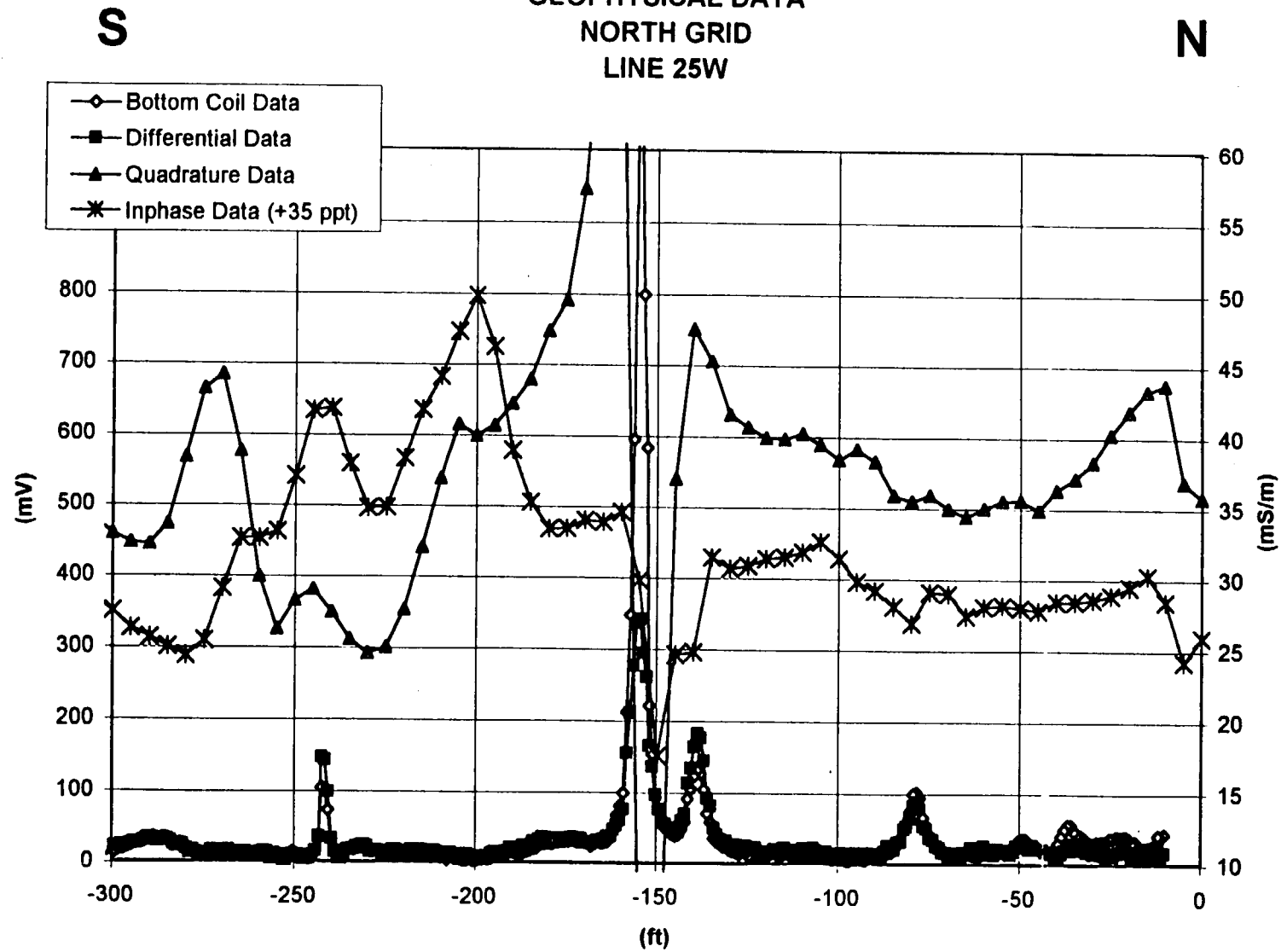
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GEOPHYSICAL DATA
NORTH GRID
LINE 60E



CENTREDALE MANOR
GEOPHYSICAL DATA
NORTH GRID
LINE 70E



CENTREDALE MANOR
GEOPHYSICAL DATA
NORTH GRID
LINE 25W



CENTREDALE MANOR
GEOPHYSICAL DATA
NORTH GRID
LINE 25W

