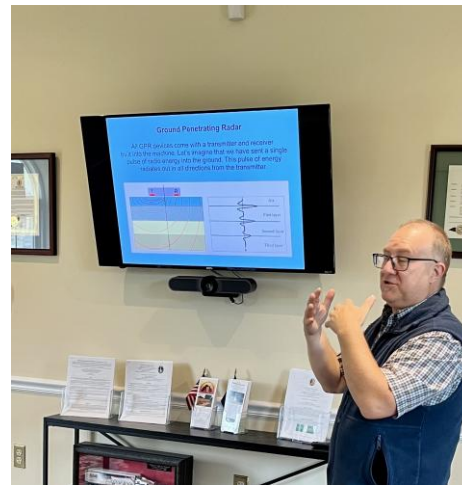


## Delmarva Amateur Radio Club Presentation on Ground Penetrating Radar

Members of the Delmarva Amateur Radio Club met at Parsons Cemetery for a presentation on ground penetrating radar and a demonstration on October 11, 2025. The speaker was Brent Zaprowski, Ph.D., Salisbury University Professor of Geology and Geosciences. There were 7 club members in attendance.

Below is a picture of Dr. Zaprowski (left) and club members at his lecture. The lecture was the same lecture that Dr. Zaprowski presents to his Geology students.



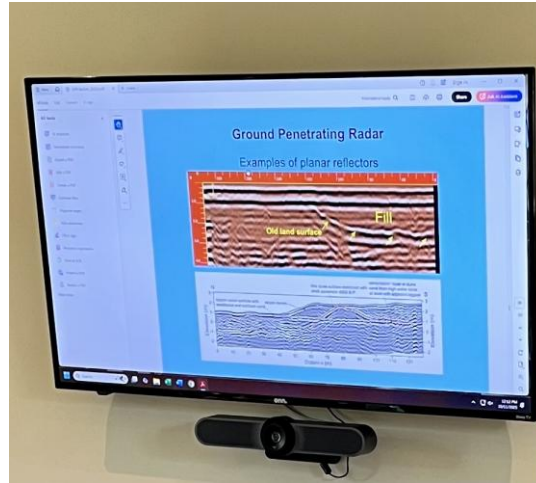
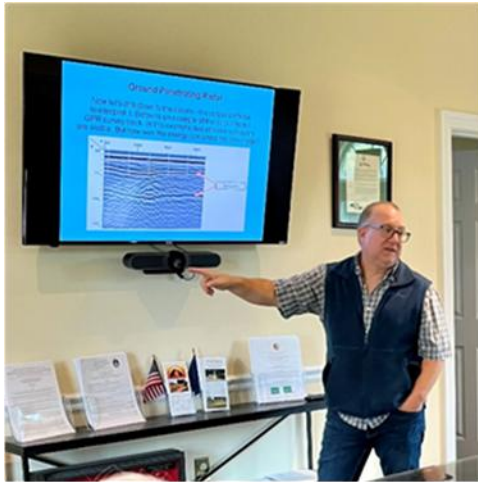
Dr. Zaprowski discussed how ground penetrating radar works. For the relatively shallow exploration done in cemeteries, a signal of approximately 200 MHz is used. For deeper exploration, higher frequencies up to a GHz or higher are used. The transmitter and receiver are combined into a transceiver that is attached to a cart. The transceiver is located low enough in the cart that it skims along the earth's surface. The output from the receiver is cabled to a computer mounted on the cart that has a display screen that shows the pattern of reflections vs. the distance traveled. There is a GPS on the cart to measure the distance traveled.



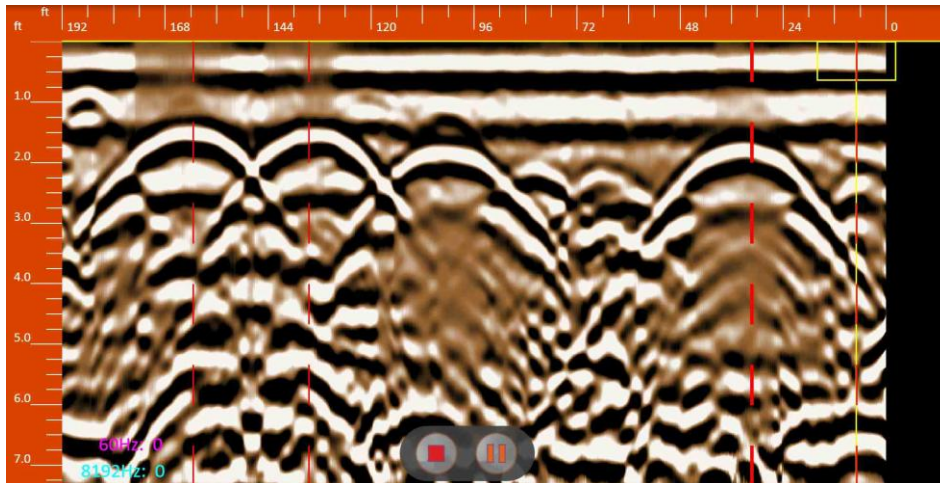
As the cart travels across the earth, the GPS sends the location of the travel to the computer which then combines the reflected signals and location to give a graphical display of the radar reflections vs. distance traveled.



The output from the GPR computer is uploaded to a computer for visual analysis. The darker blue picture on the screen in the picture on the left below is the image that the operator sees as the cart moves. The picture on the right below shows the detail that can be seen in the layers of soil by GPR.



The picture below is a fairly typical cemetery scan going across buried caskets. Each casket appears as a parabola. There is some art in interpreting these scans. All large objects give parabola-shaped responses. The width of the parabola correlates with the size and shape of the object. Concrete casket vaults can be distinguished from simple wooden boxes, tree roots, large metal objects, etc., by an experienced operator.



Using this too, Dr. Zaprowski has confirmed the locations of many burials and has found the locations of many unmarked graves. He relates the unmarked graves he discovers back to old cemetery records.

Ground penetrating radar has many uses, including locating utility pipes and cables, finding underground oil reserves, and locating other objects.