10. The influence will depend upon the size of the rectifier **24** and how much power it is sending into the soil as well as the local soil condition for current flow. The condition of the coating **14** and the corrosive nature of the soil around pipeline **10** are also factors.

[**0066**] Note that the cathodic protection circuits **20** need not be the same distance apart. In the example in **FIG. 6**, some are approximately 10 miles apart while others are 30 miles apart. Also, the voltage influence curves for each of the rectifiers **24** in the cathodic protection circuit **20** are not necessarily symmetrical.

[**0067**] Because each cathodic protection circuit **20** has a specific voltage influence curve along a length of pipeline **10** and because the voltage influence curves for cathodic protection circuits **20***a,b,c,d* overlap each other, it is possible to determine a position where a remote monitoring unit **62** incorporating a pipe-to-soil measurement unit **41**, could monitor more than one cathodic protection circuit **20**. By placing a remote monitoring unit **62** at a strategic position, it is therefore possible to "see" a cathodic protection circuit **20** switching off at the remote monitoring unit **62** placed remotely from the cathodic protection circuit **20**, because the pipe-to-soil potential at the remote monitoring unit **62** will become more positive as soon as the cathodic protection circuit **20** is switched off. The location of the remote monitoring unit **62** is then made at a location where the influences of the different influencing cathodic protection circuits **20** is distinct and discernable, such as differing by more than 10 milli-volts between influencing rectifiers. This can be seen from the placement of the remote monitoring units RMU **1** and RMU **2** shown in **FIG. 6** where there is a substantial difference in pipe-to-soil potential between the influencing rectifiers in CP_1, CP_2, CP_3, and CP_4 at the locations of the remote monitoring units RMU **1** and RMU **2**.

[**0068**] A significant (typically several hundred mV) change in pipe-to-soil potential at a particular location will require an investigation of the cause of such a change. For example, the pipe-to-soil potential at a particular test station **40** may historically have been about −1.235V. If a potential of −0.975V is measured during a particular round of monitoring, the change would probably cause the cathodic protection circuits **20** in the vicinity of test station **40** to be checked, looking for electrical shorts to foreign structures or suspecting severe coating damage in the vicinity of test station **40**. By placing an RMU at test station **40**, this change in pipe-to-soil potential is observed at a central location and the cause for this change may be predicted from the known influence of specific occurrences, such as a 25% voltage difference, without the need for a visit to any of the cathodic protection circuits **20** or to any of the test stations **40**.

[**0069**] Referring again to **FIG. 6**, in accordance with the present invention, by placing a remote monitoring unit at a strategic position, it is therefore possible to "see" a cathodic protection circuit **20** switching off at the remote monitoring unit remote from the cathodic protection circuit **20**, because the pipe-to-soil potential at the remote monitoring unit will become more positive as soon as the cathodic protection circuit **20** is switched off. The location of the remote monitoring unit is then made at a location where the influences of the different influencing cathodic protection circuits **20** us distinct and discernable as shown from the placement of the remote monitoring units RMU **1** and RMU **2** in **FIG. 6**, where there is a substantial difference in pipe-to-soil potential between the influencing rectifiers in CP_1, CP_2, CP_3, and CP_4 at the locations of the remote monitoring units RMU **1** and RMU **2**.

[**0070**] If the exact influence from each cathodic protection circuit **20** at a particular point is known and if the pipe-to-soil potential at that point is monitored on a regular basis (e.g. daily), it is possible to monitor the cathodic protection circuit **20** without placing the remote monitoring unit at the site of the cathodic protection circuit **20**. Because the exact influence from each cathodic protection circuit **20** is known, it is therefore possible to predict when a specific cathodic protection circuit **20** goes out of operation. This concept is illustrated schematically in **FIG. 6**.

[**0071**] Referring now to **FIG. 2** and **FIG. 6**, the following Table illustrates an example. If RMU**1** is positioned at milepost **30** and RMU**2** is positioned at milepost **92** and any of rectifiers **20***a,b,c,d* switch off, the pipe-to-soil potential values at RMU**1** and RMU**2** will change as shown in Table 1.

TABLE 1

Rectifier Switching Off	Change at RMU1 (mV)	Change at RMU2 (mV)
1	800	0
2	240	80
3	50	250
4	0	420

[**0072**] It is clear from the table that RMU**1** and RMU**2** are positioned in such a way that unique identifiable shifts in pipe-to-soil potential values occur at RMU**1** and RMU**2**. Therefore, the actual cathodic protection circuit **20** going out of operation can be predicted with a high degree of certainty.

[**0073**] The voltage influence curves in **FIG. 6** represent the effect of each of rectifiers **24***a,b,c,d* switching off. Sometimes, certain fault conditions cause a decrease in the current output of a rectifier **24** rather than it switching off completely. It should be appreciated that a similar curve can be generated for a decrease of say 25% in the current output of rectifiers **24***a,b,c,d* also. By generating influence curves for a 25% decrease in current output as well as for any of rectifiers **24** switching off completely, it will therefore be possible to "see" a 25% change in current output of any particular rectifier **24** as well as any particular rectifier **24** switching off completely.

[**0074**] In the same way as the influence of rectifiers **24***a,b,c,d* on the pipe-to-soil potential is determined and graphed, the influence of each of rectifiers **24***a,b,c,d* on the pipeline current can be measured at test stations **40** and the results can be graphed as current influence curves. A table similar to Table 1 can be prepared for the influence of each cathodic protection circuit **20** on the current passing through the pipeline at the location of each of the remote monitoring units RMU **1** and RMU **2** of **FIG. 6**. By incorporating a pipeline current measurement unit **50** instead of a pipe-to-soil measurement unit **42** into remote monitoring unit **62**, unique identifiable changes in pipeline current values when a rectifier goes out of service can be measured at RMU**1** and