Metal IR Mapping

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What is metal IR mapping?

- A CIS graph tell you what's going on visually.
- A metal IR map will show you the why part via your current flow on the system both on and off.
- Make a metal IR map before you look at the graph.
- Then compare the two and you will determine where and why you are seeing low readings.

On/Off Surveys

- **<u>Impressed Current</u>**
- On Metal IR shows the influence and direction of your current flow of your circuit.
- Off Metal IR shows the galvanic reaction current flow of your circuit

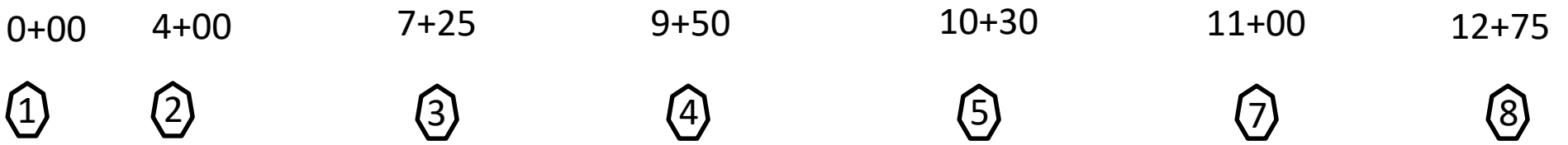
- **<u>Galvanic Current</u>**
- On Metal IR shows the influence and direction of your current flow of your circuit.
- Off Metal IR shows the galvanic reaction current flow of your circuit

For proper Off's we must assume no anodes are directly connected to the pipe

Simply start with a straight line

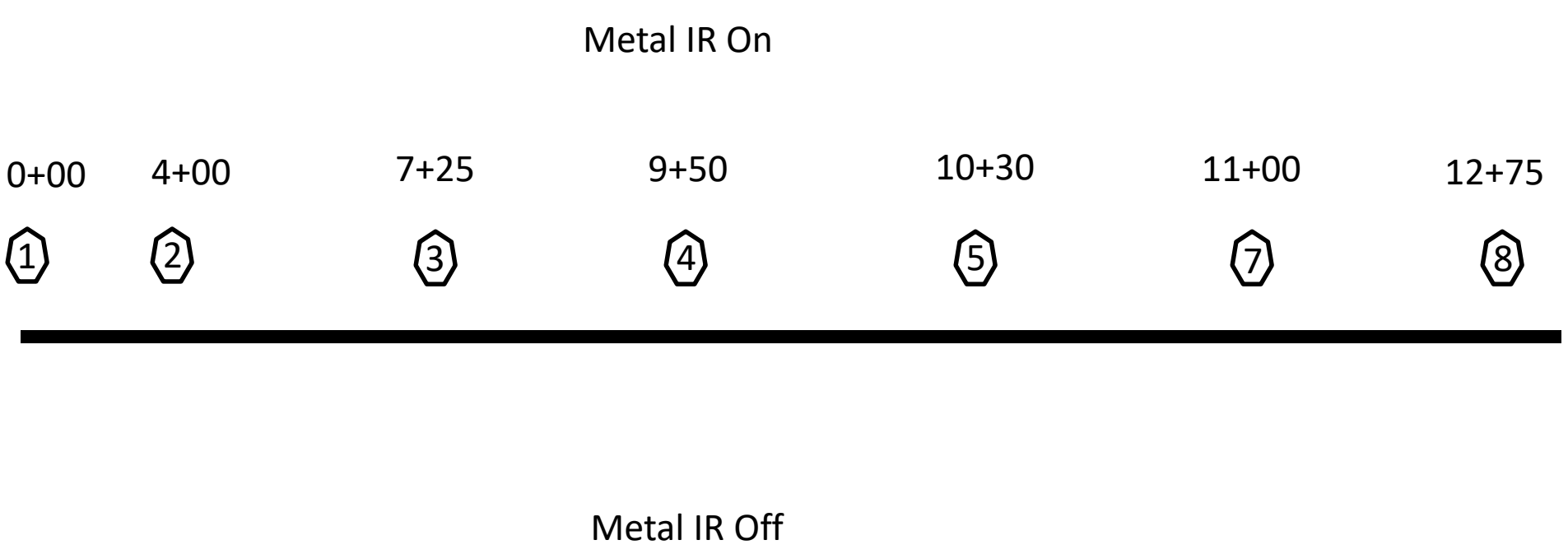
(And remember in a properly working DC circuit / current flows from positive to negative)

Input your test stations,
station #’s too if you like

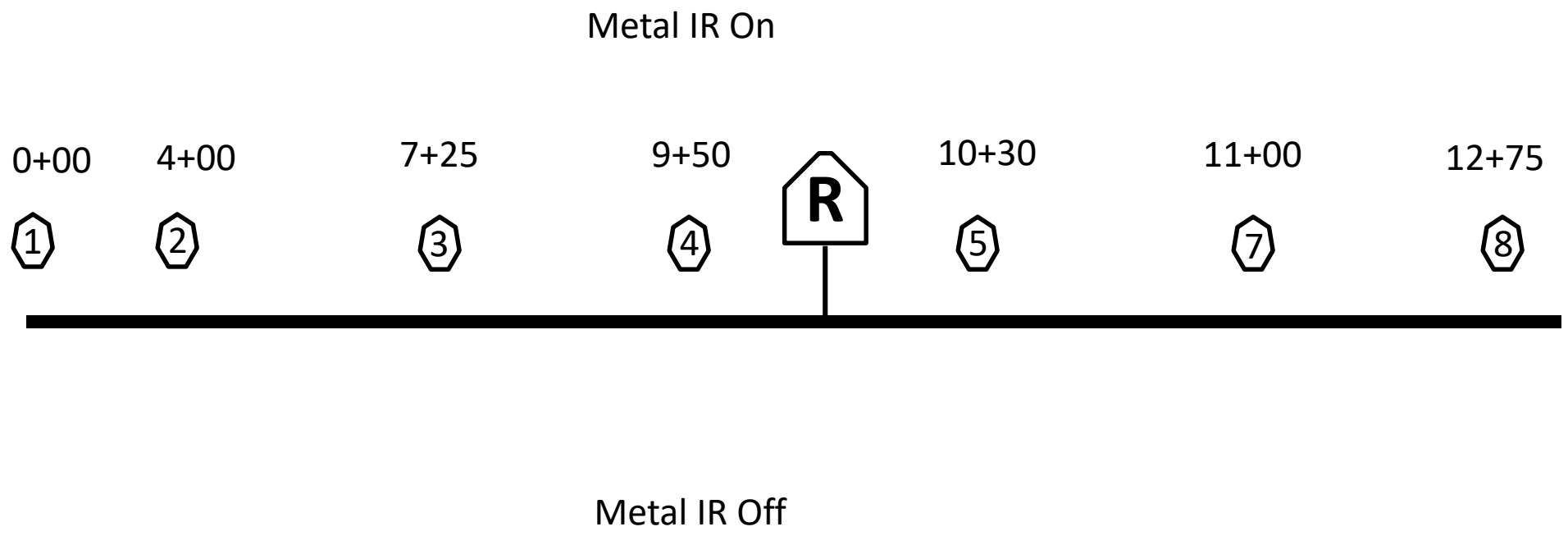


The direction of travel during CIS is from 0+00 to 12+75

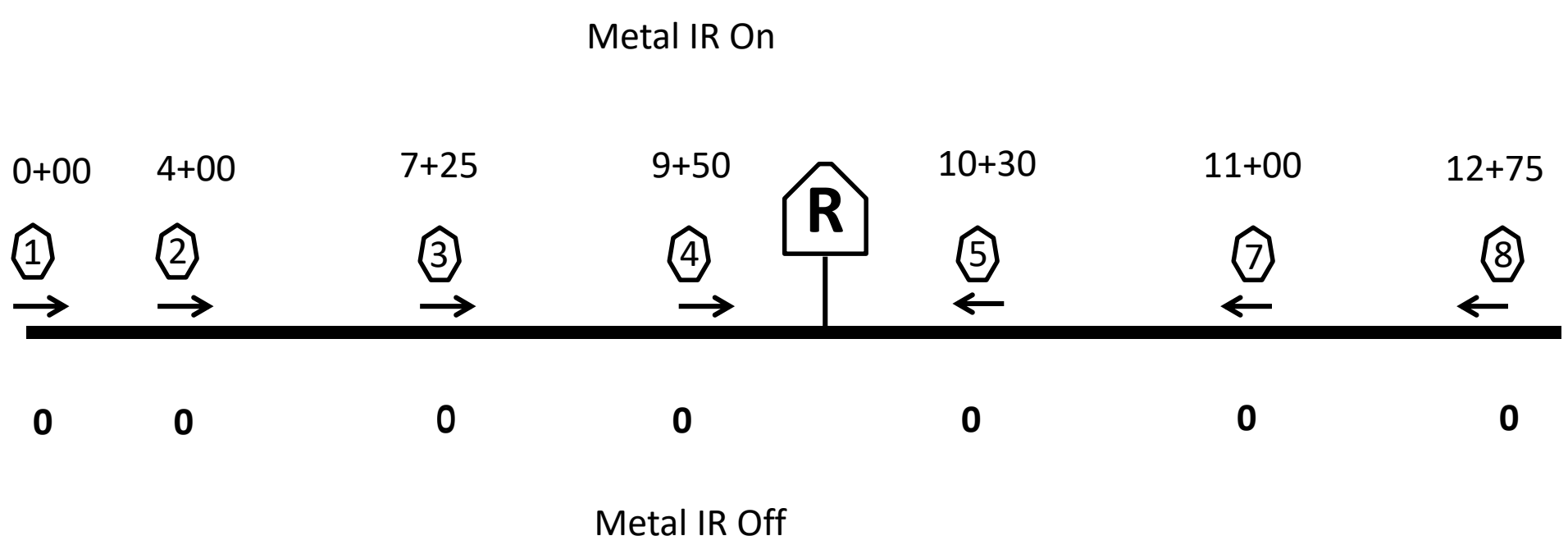
Indicate On IR line
Indicate Off IR line



What type of current source is next



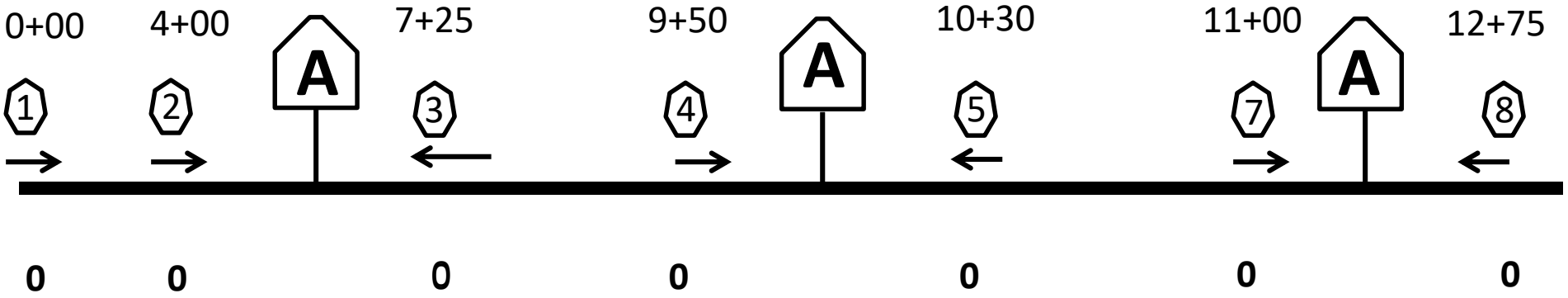
Now put in your +/- Reads from your metal IR On' & Off's (This shows a perfect world scenario - Rectified)



In the On the current is flowing to the negative return connection of the rectifier
In the off the pipe is perfectly coated as well as perfectly isolated, no galvanic flow

Now put in your +/- Reads from your metal IR On' & Off's (This shows a perfect world scenario - Mag Beds)

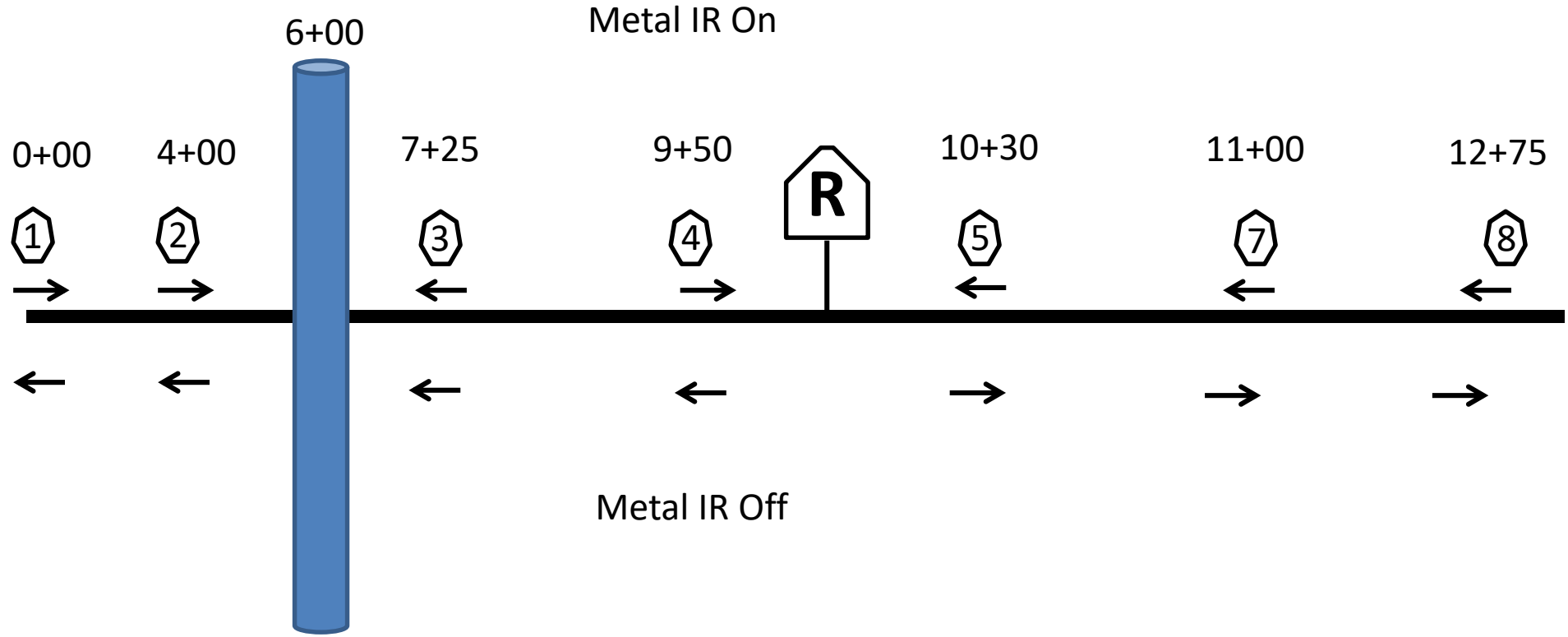
Metal IR On



Metal IR Off

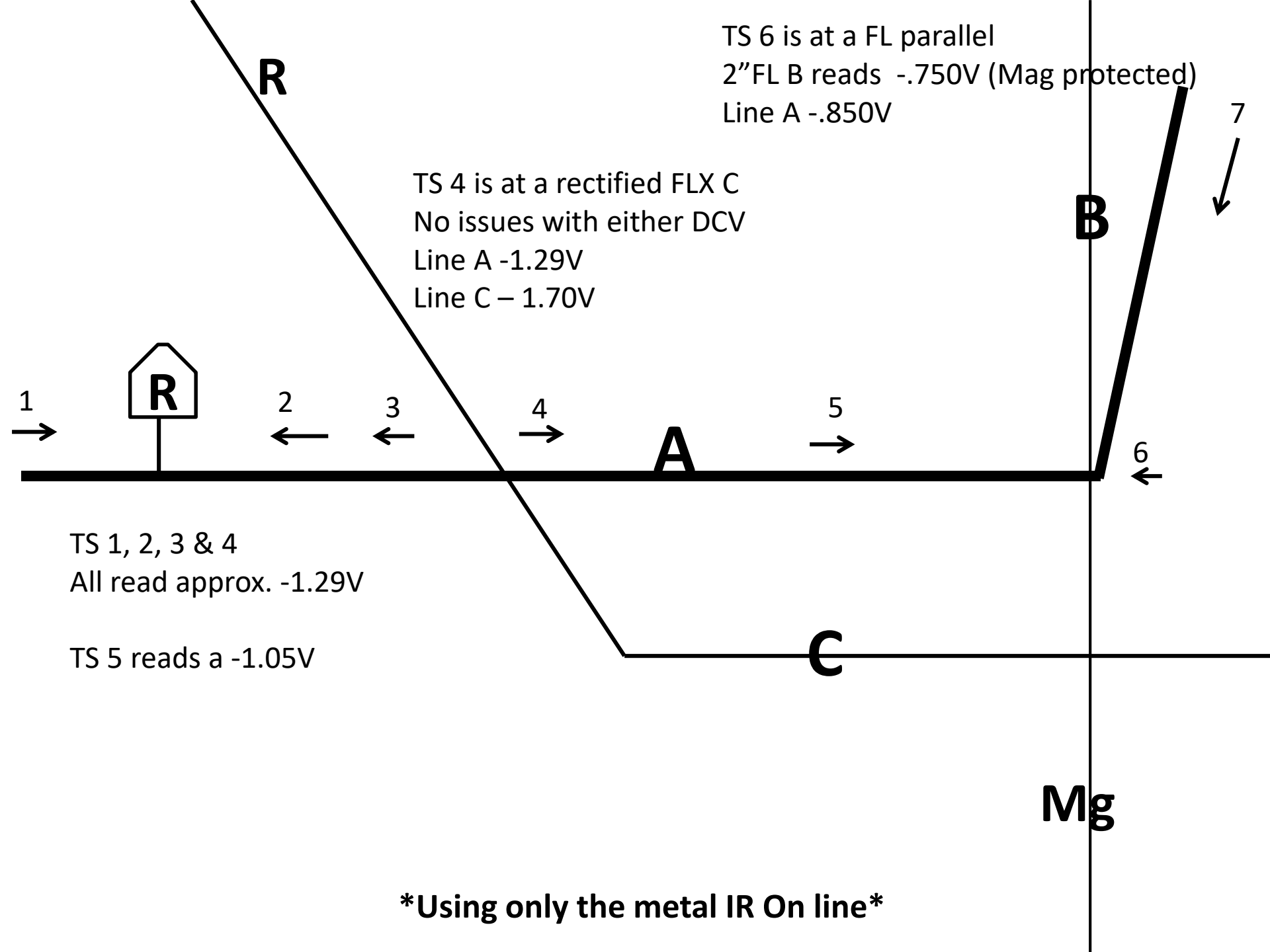
In the On the current is flowing to the negative return connection of the rectifier
In the off the pipe is perfectly coated as well as perfectly isolated, no galvanic flow

Now put in your +/- Reads from your metal IR On' & Off's (This shows a possible area to investigate - Rectified)

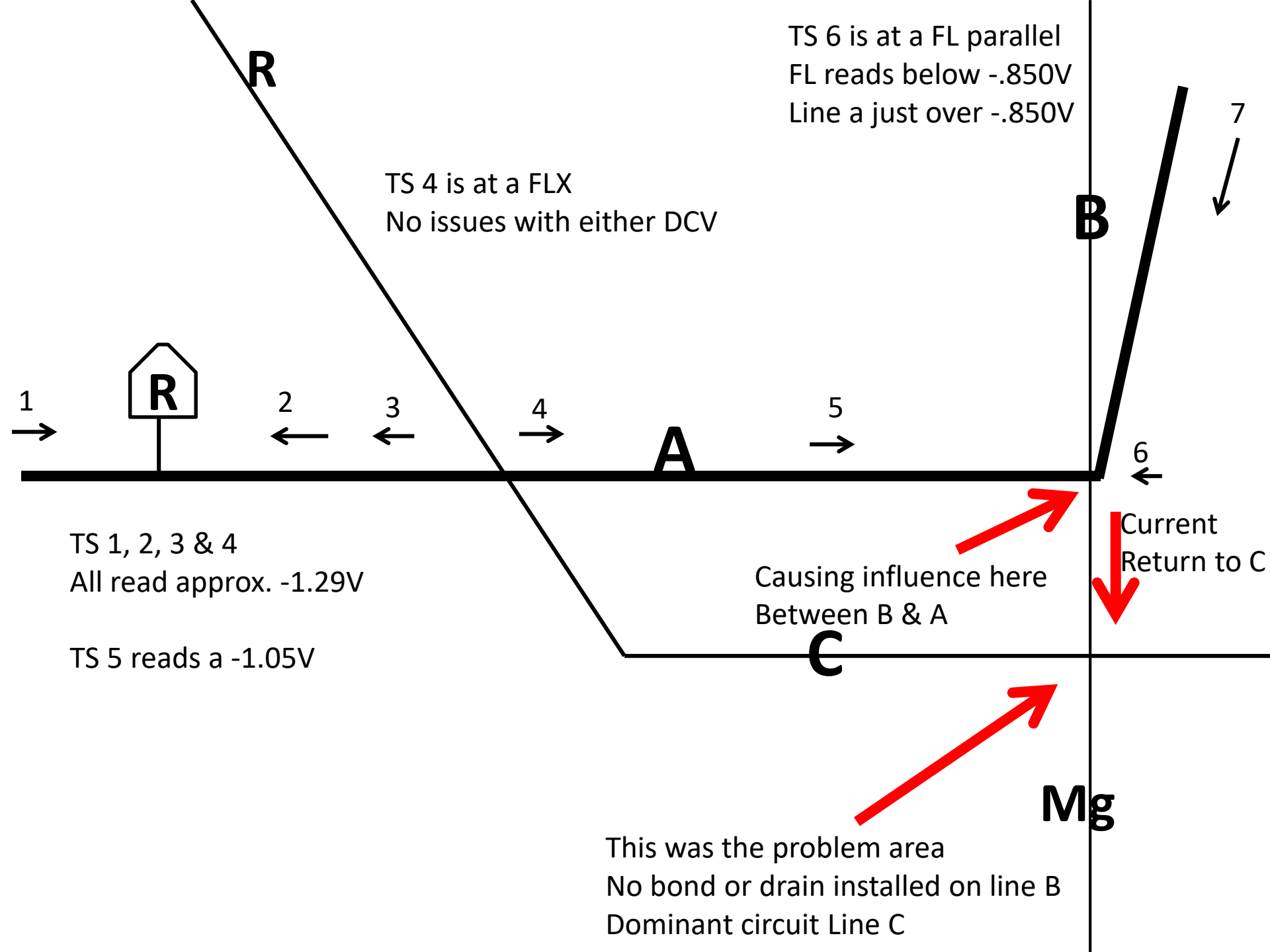


Survey graph comments show at 6+00
a foreign ROW crossing with no test station
A sign of possible interference from a more
Dominant circuit

0+00 & 12+75
May be indications of no or failed isolation
(Off Metal IR line shows galvanic reactions)



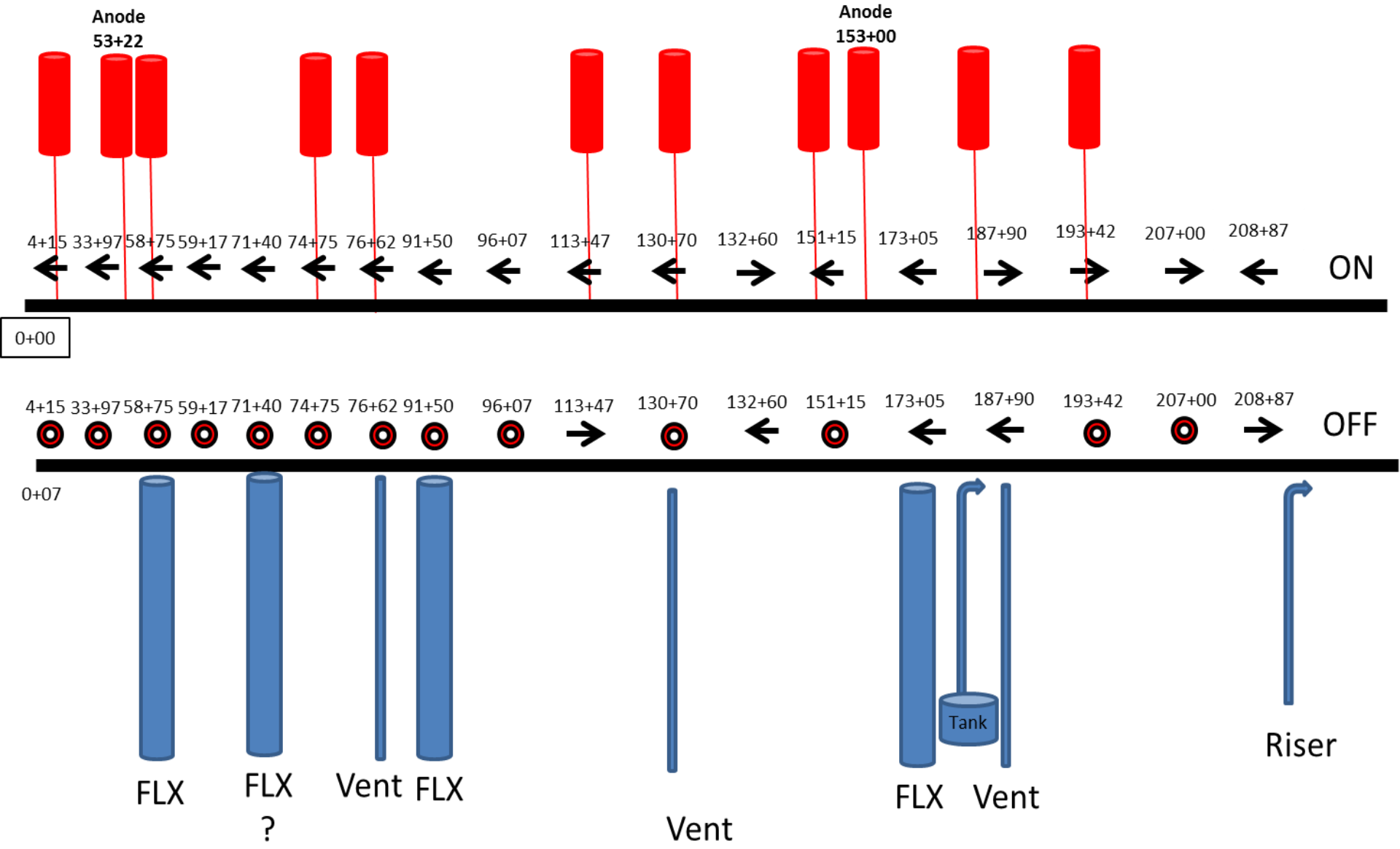
Using only the metal IR On line


R
TS 6 is at a FL parallel
FL reads below -.850V
Line a just over -.850V
7
TS 4 is at a FLX
No issues with either DCV
B
R
1
2
3
4
5
A
6
TS 1, 2, 3 & 4
All read approx. -1.29V
TS 5 reads a -1.05V
Causing influence here
Between B & A
Current
Return to C
C
Mg
This was the problem area
No bond or drain installed on line B
Dominant circuit Line C

Next slide is a completed example

- New construction
- Mag protected
- Isolated
- Well coated
- Many crossings and appurtanences
- Survey was from BOL to EOL stationing direction of travel.
- We will discuss and have Q&A time.

Completed Example



Things to remember

- Direction of travel by survey crew
- Your metal IR numbers will be + (→) or – (←)
- (Example) .015 is a + ⟶
- (Example) -.003 is a – ⟵
- This is why it's important to know the direction of travel.

Questions?