

AQUA-TRONICS, INC.

Underground Primary Cable Fault

Locating

(High Voltage Cables)

Safety

- Included safety rules that may not be part of your system.
- Did not include safety rules that are part of your system.
- Follow your Utility Safety guidelines and procedures regardless of what is taught here.

Preparation

- “Who would put the locator away broken?”
- “The #\$/%^&&* battery is dead!”
- “Where is the map showing this place?”
- “I think there are some pieces missing to this thing.”
- “How come I located the pipe and not the cable.”
- “I don’t understand!”

Step #1, #2, & #3

- Trace the Cable

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- Trace the Cable

General Fault Location

- Thumper
 - Voltage level
- TDR
- Ballistic Impulse Detection
- Acoustic Detection & Pinpoint

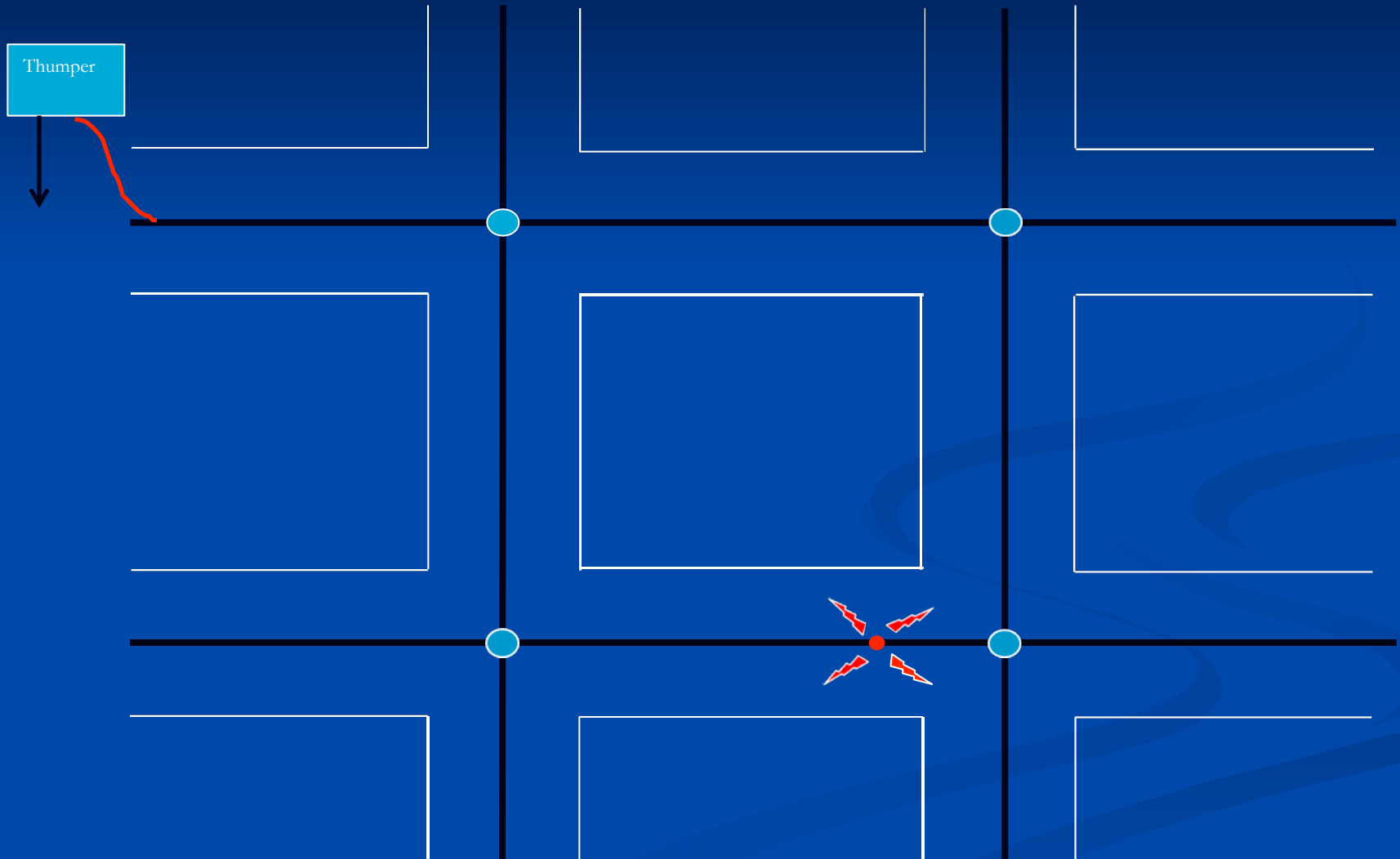
Ballistic Impulse Detection

- Setting the Ballistic Impulse Sensitivity Control
 - Move 20-25 ft away from Thumper and 5-10 ft off to one side of the cable path. Set BID sensitivity control for a 50-75% meter deflection.
 - Walk the cable route maintaining the same distance from the cable path
 - An abrupt signal loss indicates vicinity of fault

Setting Ballistic Impulse Level

- Never set up a ballistic impulse sensitivity or search directly over the cable path. BID antenna is positioned in the NULL mode
- If the ballistic impulse returns a short distance past the pre-located fault, continue down the cable route. When the real fault has been passed, the ballistic impulse will not return to its original level

Network or Y Splice



Acoustic Principles

- Sound in Air
- Surface Reflection
- Speed of Sound in differing materials
- Asphalt & Concrete
- Buried Duct & Pipe
- Water filled Duct
- Submarine Cables

Setting Acoustic Sensitivity

- Overall unit sensitivity control
- Until actual “thump” is heard, Acoustic Sens. Control can be set to ‘maximum’
- Lower Acoustic sensitivity settings reduce background noise as well as “thump”
- As you get closer to the fault, “thump” will get louder

S.D.A.D.

- **SET ACCOUSTIC SENSITIVITY CONTROL TO 2.5 to 3.5....DO NOT CHANGE!**

1 Microphone

- From pre-located fault position, move up or down the cable route until “thump” is heard
- When acoustic sensitivity control has been reduced to 5 or less, and “thump” can be heard, 2nd microphone can be used
- “thump” heard should correspond to ballistic impulse detection
- Background Noise
 - Techniques for reducing background noise

Logic Trip Sensitivity

- Direction-To-Fault sensitivity
- Use only the minimum amount to see direction to fault
- Logic Trip sensitivity is dependent on Acoustic Sensitivity
- If Logic Trip is too high, false direction indication can occur

S.D.A.D.

- SET LOGIC TRIP SENSITIVITY CONTROL TO 2.5 to 3.5....DO NOT CHANGE!

2 Microphones

- Headphones set to stereo
- Both A & B channels turned on
- For best results, minimum 24” separation, or more between microphones
- Over asphalt & concrete, minimum 30” separation

S.D.A.D.

- PLUG RED MICROPHONE INTO CHANNEL ‘B’ INPUT AND GREEN MICROPHONE INTO CHANNEL ‘A’ INPUT. TURN BOTH CHANNELS ‘ON’ USING THE RED/GREEN PUSH BUTTON SWITCHES

S.D.A.D.

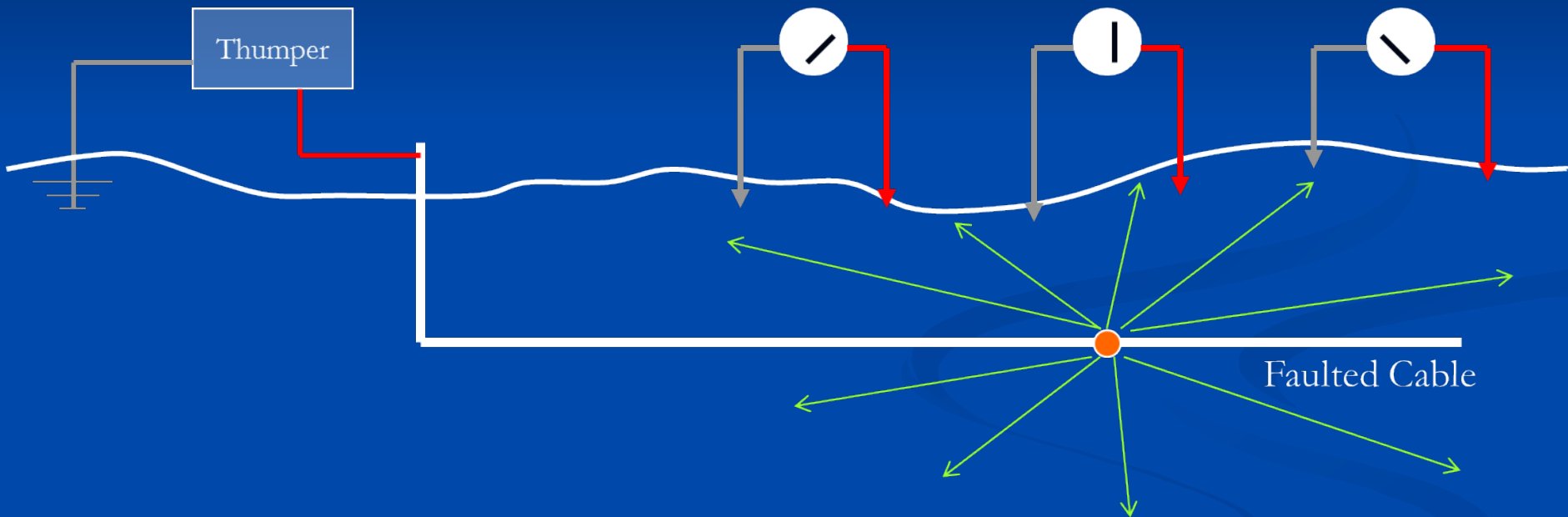
- Headphones can be used to aid in hearing the fault. Once the fault is heard, and direction LED's indicate fault, headphones can be removed.
- PRESS THE 'MODE' SWITCH TO "TIME=-----MSEC" MODE
- Move toward the fault as indicated by the direction to fault LED's. Time displayed is from ballistic impulse to first microphone to receive acoustic info. This time will decrease as the microphones get closer to the fault.
- Proceed till both direction LED's light indicating the microphones are equal distance from the fault.

Direction to Fault

- Move in direction indicated by direction-to-fault meter
- Trailing microphone takes place of lead microphone to avoid 'leap-frogging' over fault
- Continue along cable route until reversal of direction is indicated

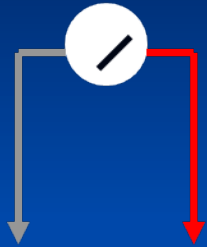
Direction to Fault

S.D.A.D. Readings

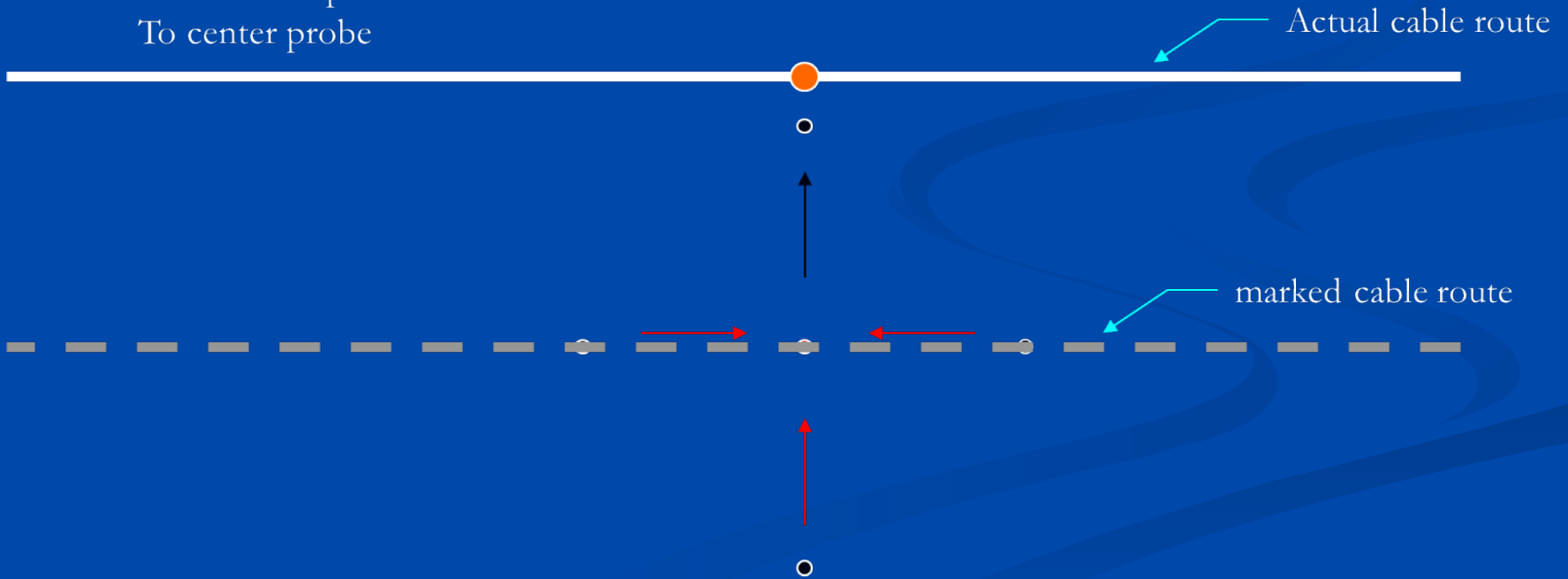


“Zeroing In”

90 degree pinpoint

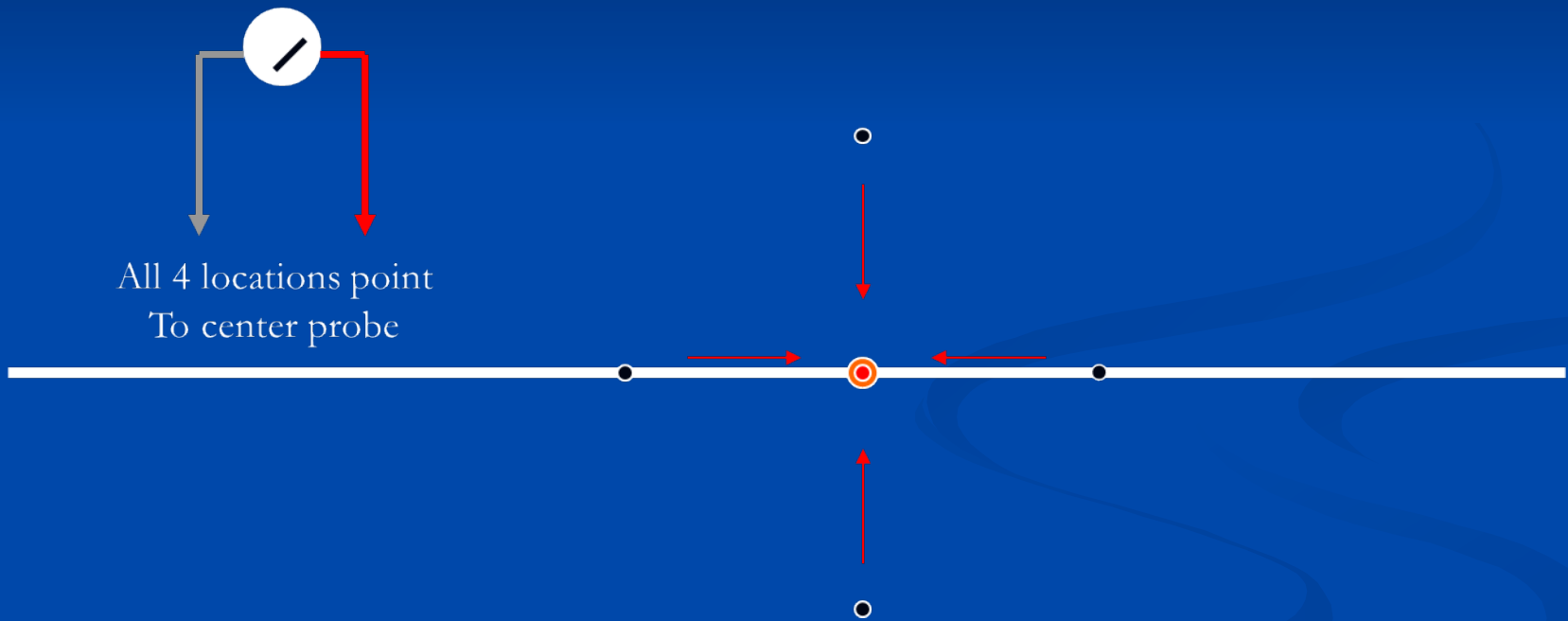


All 4 locations point
To center probe

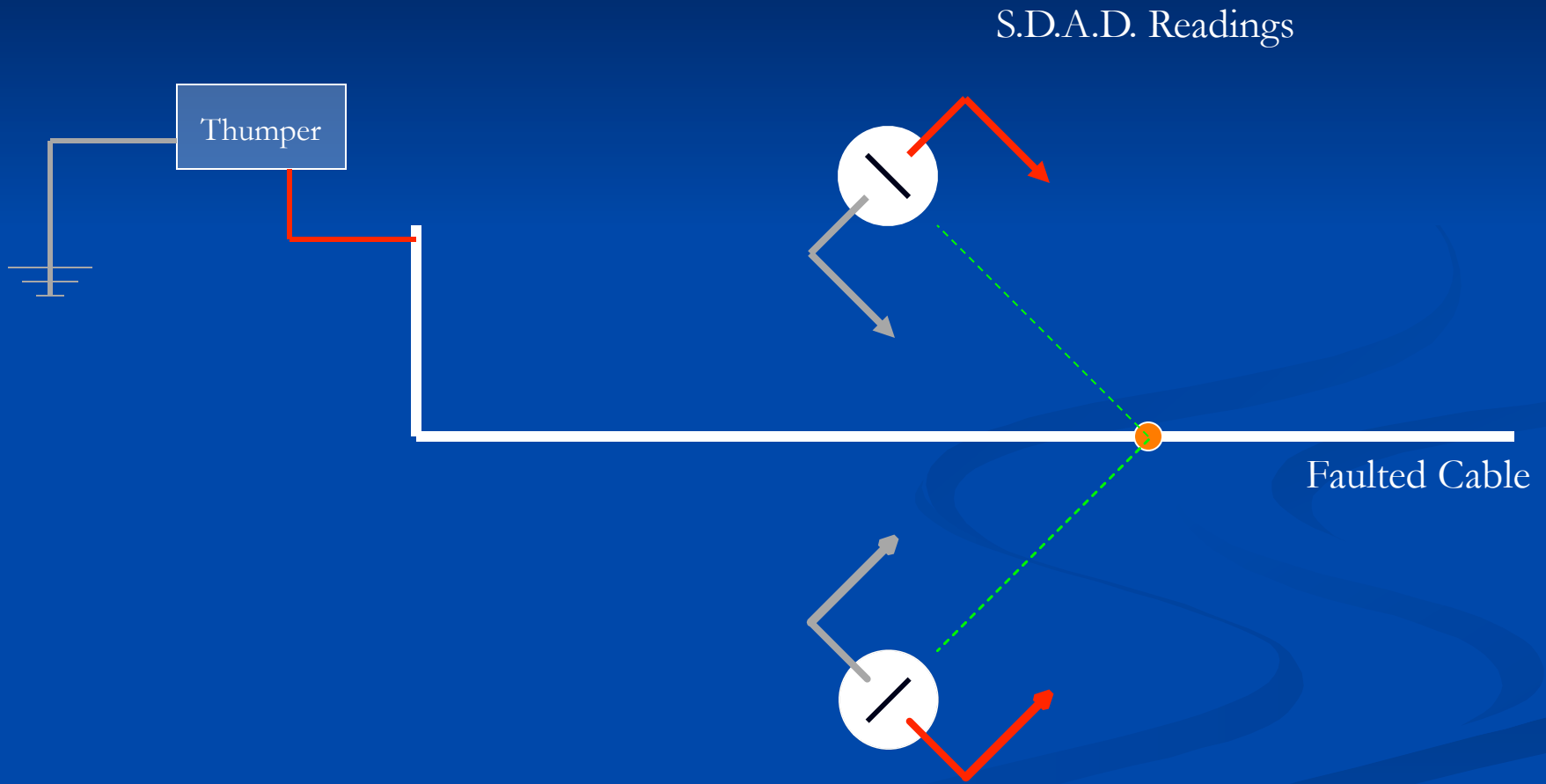


“Zeroing In”

90 degree pinpoint



Wagon Wheel Method



S.D.A.D. Depth of Fault

- Place one microphone directly over located fault and second microphone 28.5” away in any direction
- Press the ‘MODE’ switch “DEPTH = -ft----in” mode
- Depth of fault will be displayed after next thump and is from the tip of the microphone spike and not ground level
- NOTE: THE LENGTH OF THE MICROPHONE FROM TIP OF SPIKE TO TOP OF HANDLE CAN BE USED FOR 28.5” REFERENCE

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www.aquatronics.com