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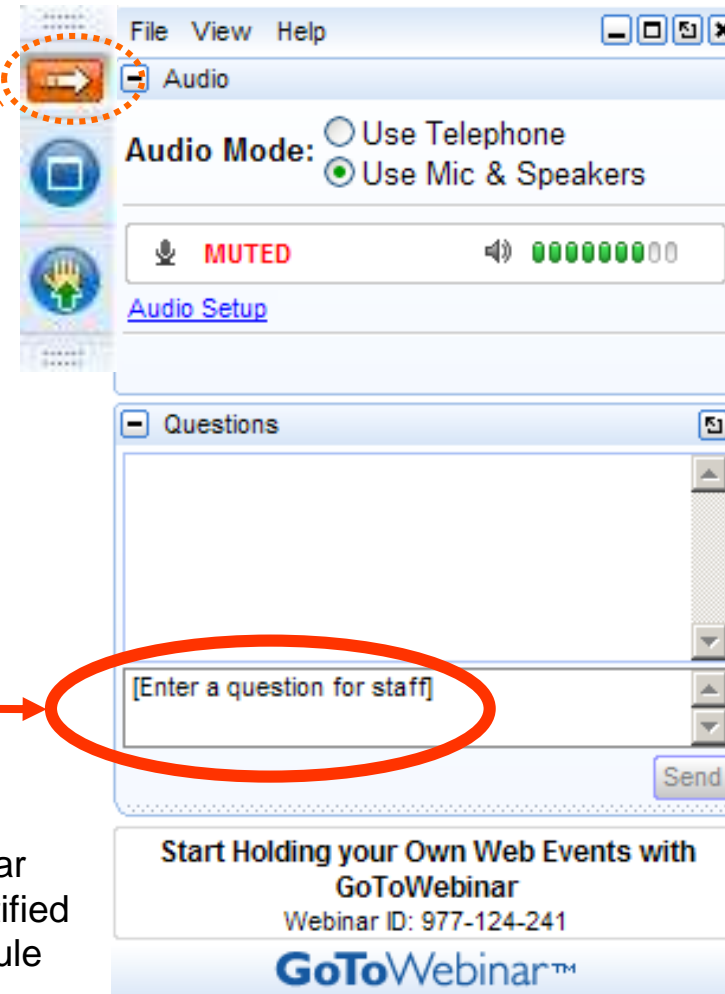
Customer Service Tech.
Nautel

Grounding and Lightning Protection

Your questions please?

(if you don't see the control panel, click on the orange arrow icon to expand it)

Please enter your questions in the text box of the webinar control panel (remember to press send)



The screenshot shows a GoToWebinar control panel with two main sections: 'Audio' and 'Questions'. The 'Audio' section includes a menu icon (an orange arrow pointing right, circled in orange), 'Audio Mode' options for 'Use Telephone' and 'Use Mic & Speakers', a 'MUTED' status indicator, and a volume level bar. Below the audio settings is a 'Questions' section with a large text input area and a 'Send' button. The text input area contains the placeholder text '[Enter a question for staff]' and is circled in red. At the bottom of the control panel, there is a promotional banner for GoToWebinar with the text 'Start Holding your Own Web Events with GoToWebinar' and 'Webinar ID: 977-124-241'.



Remember: The completion of a Nautel webinar qualifies for $\frac{1}{2}$ SBE re-certification credit, identified under Category I of the Re-certification Schedule for SBE Certifications.

Agenda

- Short discussion with panelists
- Round table discussion with attendees
 - We can unmute for audio, but can also handle typed input
 - We want your thoughts, ideas, comments or questions!
 - What you've done, what you'd like to do, questions on how to do something.



Ideas for things to discuss

- **Grounding**

- Short and straight
- How much is too much?

- **New Sites**

- Planning ahead
- Staying flexible

- **Ferrites**

- Why Jeff loves them
- How they work when used with other things

- **Existing Sites**

- How to fix them
- What to look for



Photo credit: Elaine Jones Associates, www.elainejonespr.com



Get Well Grounded...

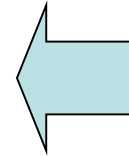


- _Single point ground for racks and individual pieces in a room
- _Keeps all audio shields at a common potential
- _What's wrong with this picture?

Get Well Grounded...



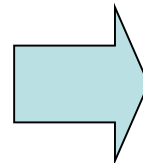
Buss bar for AC grounds



- _Tied to station reference ground
- _All primary equipment connected

Bulkhead ground for coax cables

- _Best done where cables enter building
- _Connected to station reference ground
- _Keep ground leads as short as possible



Get Well Grounded...



MAKE SURE YOUR GROUND CONNECTION
IS ACTUALLY GROUND!!!

Get Well Grounded...



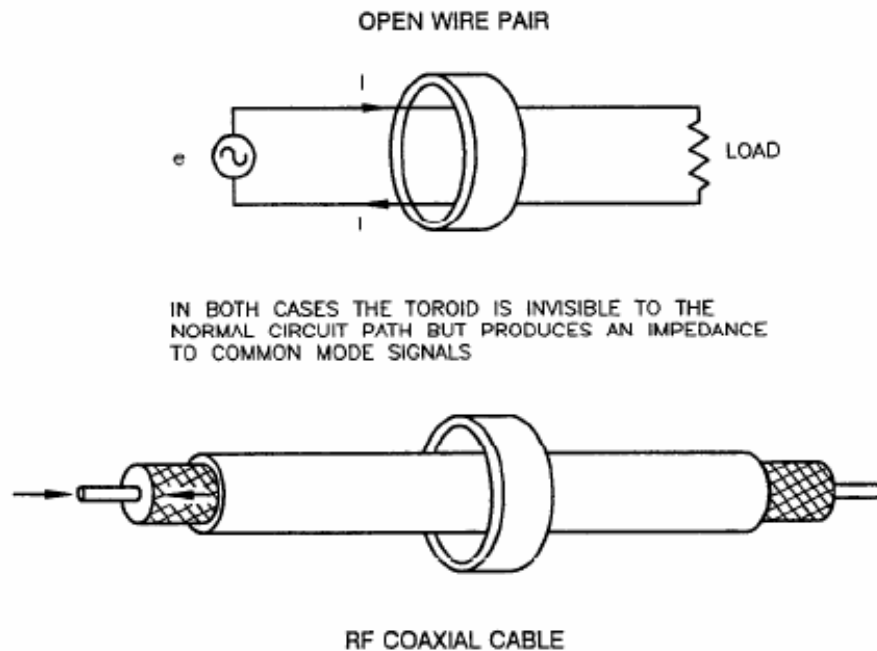
The best building grounding in the world doesn't help, if it doesn't go anywhere when it reaches the outside world!

Get Well Grounded...



Ground rods are good – but they work better if they are driven straight into the ground. Preferably into the water table, or a chemically augmented ground point.

Keep your Shields UP!



Ferrites are good for reducing common mode signals

- _ Lightning surges
- _ Induced RF (especially at co-located AM and FM sites)
- _ Power line and power supply noise

Figure F-4 Use of Toroids to Impede Common Mode Signals

Keep your Shields UP!



Ferrites can also be a troubleshooting tool

- Hot ferrite = imbalance current

Ferrites on coax help reduce lightning susceptibility

- Installed between the coax ground at cable entry and the equipment being protected



Keep your Shields UP!



Ferrites on AC cabling can protect against surge related power supply damage

- _All feeds and a ground return through the ferrite
- _In some cases, such as with purely balanced power supplies, it's desirable to make chokes (wrap each AC conductor around a separate ferrite). In this case, ferrite composition needs to be considered more carefully.

Always Use Protection



AC Power line protectors are a must – and they **MUST** be connected to your station reference ground.

Always Use Protection



Other brands are available and acceptable – as a minimum, a shunt type MOV protector with fused links (and a solid ground connection!!!) is recommended.

Online Information



Webinars

<https://www.nautel.com/resources/webinars/>



Nautel Waves Newsletter

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YouTube

<http://www.youtube.com/user/NautelLtd>



THANK YOU!

