War Stories
Why did we do that again?

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Overview

• When bad things happen to good equipment
  – What happened
  – Why it happened
  – How can we keep it from happening again?
IT Security

[Google search results]

Trump rioters hack radio stations to blast 'Donald Trump' on repeat
https://thenextweb.com/Politics/
Feb 3, 2017 · Multiple sources report radio stations in South Carolina and several other states across the country were hacked to blast a less-than-supportive ...

Top stories

Hackers hack Indiana radio station and broadcast Zombie apocalypse messages
Techworm · 2 days ago

More for radio station hacked

Radio stations that ignored major vulnerability start playing anti-Trump ...
ars technica.com/.../02/unesecured-radio-transmitters-get-hacked-play-anti-trump-song/ ·
Feb 2, 2017 · News of the song's unexpected playback on radio stations began emerging shortly after Trump's inauguration on January 20, and the hack has ...

Someone Keeps Hacking Radio Stations To Play "Donald Trump ...
https://www.buzzfeed.com/.../someone-keeps-hacking-radio-stations-to-play-fuck-do...
IT Security…
IT Security

• Use a firewall, block any ports that aren’t essential to operation.

• CHANGE DEFAULT USERNAME / PASSWORD!!!

• For critical devices (most of them) consider a VPN – or put them all on a non-internet connected local network, then use a VPN to access it.

• Alternately, use a product such as TeamViewer or RealVNC to access.
Get Well Grounded…

- Grounding is important
  - Not just the installation, but the actual type of connection.
  - If you do it right, you won’t have to redo it at night!
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.
Get Well Grounded…

Good grounding can help to prevent the transmitter equivalent of a toe tag.
Grounding...

- What’s wrong with this picture?
  - How can it be fixed?
  - What’s missing?
Trim Around the Edges

This transmitter was always shutting back with VSWR alarms.
Antenna System Maintenance
Ground Loops

Clean up excess wiring
• previous installs
• broken connections that were replaced

Keep ground connections to a minimum
• one per piece of equipment
Something Wicked
This Way Came…

The purpose of grounding is not to prevent lightning (you can’t), but to use voltage divider theory to help reduce the potential for damage.
Good Engineering Practices

Photo credits: Rod Thannum, Northwestern Media
AC Service…

• Take time to review overall facility electrical layout!
• Do a thermal sweep
• Calculate branch loads
• Avoid surprises!
Hardware

- Compression connections must be checked periodically
This is an example of poorly considered airflow

- The gray rack is the transmitter.
- The silver pipe is the incoming air – directed away from the transmitter
- The hole below is the exhaust fan – pulling air AWAY from the transmitter air intake (the rear of the transmitter, or left side of the photo)
- This site was plagued with PA and power supply failures.
- Rerouting the airflow has solved that problem.
Maintenance

Not replacing fan filters – cost $0.00

Except....
Maintenance

I’m the only one who’s ever here…

- what if you’re sick?
  - or away?

Safety ramifications – and more legal issues.
Were You Raised in a Barn?
Sometimes it costs more to do things right, but there’s less risk than doing things halfway.
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- Webinars
  https://www.nautel.com/resources/webinars/
- YouTube
  http://www.youtube.com/user/NautelLtd
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