

# • **Transmitter Site Security**

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# •Introduction

- Scrap copper prices have consistently been at or above \$2/lb for about 2 years. Current scrap price is around \$2.60/lb at many recyclers.
- As scrap prices climb, the incidence of transmitter site vandalism will increase with not only the price but with the spreading awareness of the quantities of copper at transmitters.

## • Introduction (ii)

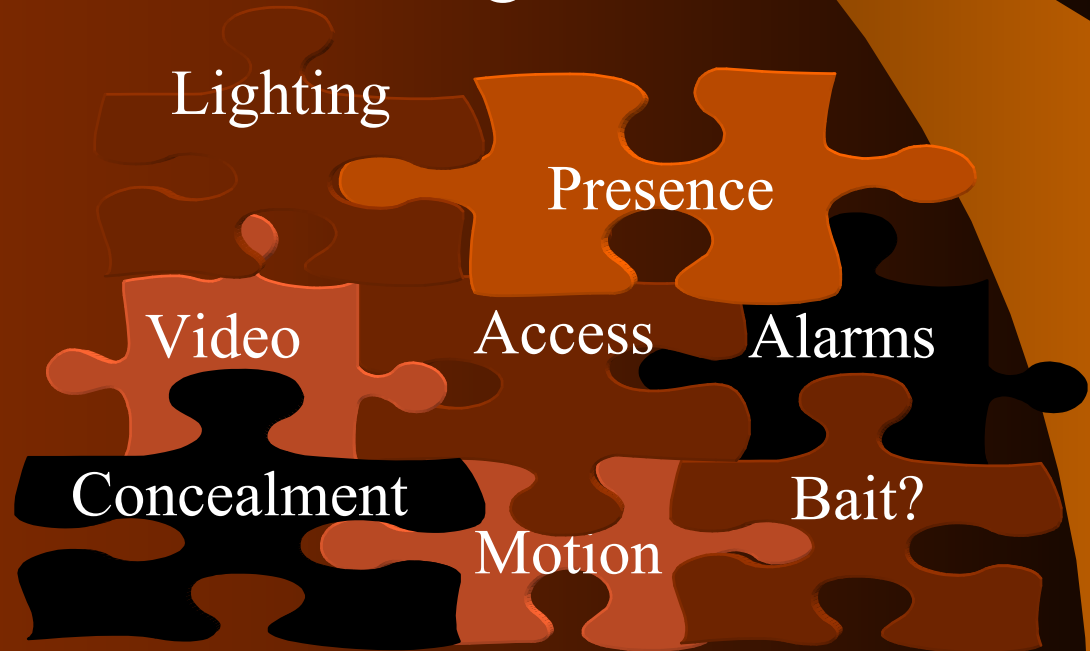
- The fact that most of the copper found at transmitter sites is buried and not recoverable OR that it is low mass (coax, etc) does not deter copper thieves.
- The prospect of quick bucks keeps the allure alive.
- Materials stolen (scrap price) is usually around 2-5% of the repair costs. It's not usually what they steal but what is torn up in the process.

# • Information to Be Offered

- Basic security considerations
- Advanced security considerations
- Discouraging !\$%\*@!\$% thieves
- Catching the @\$%^&@\$ thieves
- Vandalism Remediation
- Dealing with local law enforcement before and after a vandalism event

# • Overview

- A combination of efforts will help to discover, minimize and successfully prosecute vandalism damage.



# •Site Access

- Site should be gated and if possible entirely fenced.
- The gate should be located at the entrance to the road.
- Substantial gate and fence should extend to a point where it cannot be driven around **NOR** conveniently walked around or climbed over.

# •Lighting

- The TX building and tower areas should be dusk to dawn lit on all sides.
- Tower base area's should be dusk to dawn lit.
- See next slide for LIGHTING SECURITY

# •Lighting Security

- All lighting circuits should be current monitored. If a lamp is extinguished or fails to come on, an alarm should be sent to station personnel.
- Vandalism to lighting often precedes other vandalism or burglary by several days. 100% of the vandalized sites that we have worked on that HAD some type of outdoor lighting was vandalized AFTER the lighting was damaged.



# • Presence

- SOMEONE should go to the site a couple of times per week even if they are non-tech.
- Check for vandalism, burglary attempts, etc.
- Vandalism that is discovered later is almost NEVER solved.

# •Engineering Inspection

- Part and parcel to Presence above. TX and DA readings should be taken regularly AND investigated if different from normal / licensed.
- TX and DA departing from the norm will not only signal impending technical problems but also may reveal that the impending technical problem is a thief.

# Concealment

- Out of sight, out of mind.
- All copper should be covered or buried.
- Exposed copper should be disguised or hidden with paint.

# •ALARM(S)

- Probably should have 2 separate alarm / monitoring systems.
- 1 alarm for controlled access and another for Technical and uncontrolled access.
- Reliability... An alarm that constantly false' is worse than NO alarm at all.

# •ALARM 1

- Transmitter building should be fully alarmed with a professionally monitored alarm to detect intrusion, fire, etc in the controlled environment of the building. Non-emergency Zones might be used in place of Alarm 2 below.
- Sirens? Silent?
- Trade an alarm and publicize your trust in their services. (Big Voice) “WINO trusts AGSC Security Services to protect our studio and transmitter property...”

# •ALARM 2

- A separate alarm to notify station personal of lighting failures, outside motion detections and other potentially high false rate (not intrusion, fire, etc) INCLUDING motion detectors around towers (if possible) and outside of transmitter building in the UNCONTROLLED environment.
- The police will get real upset if they are dispatched to the TX every evening at dusk because one of the lamps has burned out.
- Might use status or metering channels on existing transmitter remote control.

# Motion Detection

- Motion detectors typically do not work reliably in outside open areas such as transmitter sites.
- They do offer reasonably reliable operation around fixed and semi controlled areas such as transmitter building perimeters and fences.
- Motion Detectors work well in controlled access areas such as inside transmitter buildings.

# •Video

- IP cameras can be monitored via internet and cell phone with browser.
- Cheap security server apps are available that uses cheap and amazingly good quality USB camera's.



# Examples

- This is a tale of 3 vandalized AM directional sites.
- 2 were discovered (TX off, DA out, visually, etc) as the vandalism progressed.
- The third was discovered by a third party engineer doing cell site due diligence.
- Authorities were able to locate the copper at recyclers in the first 2 instances AND make arrests.
- The third and all other vandalisms that were discovered cold have not resulted arrests.

# SC

- This South Carolina station had no idea when the theft started
- This vandalism was probably ongoing for MONTHS.
- The station had no regular engineering support.
- No one from the station had inspected the site in MONTHS.

# SC

- The readings probably hadn't been taken for months.
- The DA *probably* had not been changed to night mode in MONTHS.
- However, the thief got greedy and decided to strip wiring from the tx room. He finally cut enough to take the station off and someone came out to see what was wrong.

# SC

- Station personnel discovered the TX building doors broken in and obvious damage to everything copper (including numerous HVAC units, PX lines, building wiring, DA feed/sample lines, ground system, audio wiring, control wiring, water fountains, etc, etc).







# SC

- The perpetrator was found to be a young white male with a long history of substance abuse.
- He lived less than 1 mile from the site and had hauled the stolen copper away on his moped.
- He claimed to have been operating alone but neighbors reported seeing this subject and others at the site.

# SC Site Security Findings

- ZERO station personnel presence to notice OBVIOUS damage to building and ground system.
- No readings taken to notice OBVIOUS departure from normal.
- No site fencing or gates. Tower gates were broken thru.
- Site lighting was damaged or disabled.
- No alarm to detect building intrusion, no cameras, motion detection, etc.

# AL Example (a)

- A Mobile, AL station failed to come on and operate at high power on the licensed ND tower.
- The engineer proceeded to the site and discovered that someone had been digging around the ND tower base and that a large amount of copper had been removed. I estimated that the thieves had been working for probably 2 nights previous before tearing up enough to take the station down.
- Local law enforcement was notified and reports filed.



# AL Example (b)

- The engineer contacted AGSC for advice and when returning to the site the NEXT morning to shoot pictures, discovered that the thieves had returned again. Local law enforcement was again notified and additional reports filed.
- We arrived at the site about 5 days from the initial event and began our inspection and evaluation.

# AL Example (c)

- Upon returning to the site for our second day to begin evaluation and repairs, we discovered that once again the thieves had been at work over night.
- More cops, more reports, more damage.





# AL Example (d)

- The thieves had carefully pulled and rolled up numerous radials but had cut and dug up all of the strap they could locate. Ironically, they were very careful to avoid the sample and feed lines. No damage to the sample or feed lines was located.



# AL Example (e)

- The detectives made another round of the local recycling yards and found suspicious material at a recycler only a mile from the site.



# AL Example (f)

- This recycler had purchased just over 50 lbs of copper for about \$1.50/lb. We estimate that there was around 200 lbs of copper stolen. The thief made maybe \$300 and cost the station's insurance about \$45k to rebuild.
- $\$300 / (4 \times 8 \times 2 \text{ man hours}) = \$4.68/\text{hr}$
- $\$4.68 / \$5.15 = 90\%$  of minimum wage
- The could have been working at McDonalds for more...





# AL Example (g)

- The recycler had recorded the sellers info and detectives knew them by name. A few hours later, the thief and an accomplice were guests of the city of Mobile.
- A local security patrol was contracted to do random site inspections and to date no further vandalism has been reported.



# AL Site Security Findings

- Station engineer visited site every few days.
- Readings were being taken but the damage progressed to the point of taking the station off-the-air overnight.
- Ineffective site fencing and no site gates.
- Site lighting was damaged or disabled.
- A simple building alarm was in place but the thieves did not attempt to enter the fenced TX building compound or building.
- No cameras, lighting current monitoring, motion detection etc.

# OH Example

- This Cincinnati Ohio station had been operating on STA's for 7 years. Finally filed bankruptcy and was placed with a receiver with less than 60 days left to completely build and proof a 5 tower DA.
- The original GS had been built in the late '90's with copper wire but had immediately been stolen. Possibly while still on the reels. The decision was made to use Galvanized STEEL horse fence wire instead of copper. BAD, BAD idea but that is a subject for another presentation.



# •OH Example

- The stations CP was set to expire Spring of 2006.
- We built a 5 tower GS in late February... In Cincinnati... In the snow... 5 to 50 degrees... In a “dirty” fill disposal area... Missed Valentines Day with our various and assorted wives and girlfriends...



# OH Example

- We also ended up subcontracting the installation of feed and sample lines, etc, etc. A local contractor was supposed to be handling that task but apparently decided to go out of business that week. His workers had received bad or no pay checks for several weeks.
- I still have nightmares about that site.

# OH Example

- The station was built and proofed and received it's license to cover in the summer of 2006.
- The consulting/contract engineer was paid, thanked and not called again until late fall 2006.
- A third party engineer contracted to perform 22.371, 27.63, 73.1692 due diligence had noticed that the monitor points were MAGNITUDES out of tolerance.

# OH Example

- The consulting / contract engineer was called (for the first time in months) and upon arrival at the site found tower gates open, copper missing, areas of gravel and landscape fabric pulled aside AND the transmitter and antenna monitor very unhappy.





# OH

- Apparently this was the first visit by station personnel to the site in months.
- Apparently the station had not been taking readings or at least were not acting upon them.



# •OH Example

## THE NIGHTMARE CONTINUES

- January of 2007 we were notified that the site had been vandalized and were asked to provide an estimate for repairs.
- May of this year we were asked to update that estimate.
- June we were asked how quick can you be there? You can't be here next week????

# •OH Example

- On our arrival, we discovered not only the original damage but additional damage that had occurred sometime between the original pictures from December 2006 and the last week in May 2007.



•OH

Now the damage encompassed 3 of 5 towers  
AND the area around the transmitter  
building.



# •Site Vandalism Recap

- Site lighting was vandalized prior to copper theft in all 3 examples.
- None of the sites were monitoring that lighting
- All 3 sites had inadequate site fencing and gates.
- All 3 sites had good tower fencing but was broken thru or climbed over.
- 1 of the sites had regular engineering visits and was discovered immediately.
- 2 of the sites had no regular engineer and was discovered after the fact.

# Pre-Vandalism Preparations

- Site photographs.
- Site documentation. AS BUILT.
- Copies of above stored off-site.
- Insurance.
- **SITE VISIT SCHEDULE!!!!**
- Take meter readings **AND** act on them.

# Post Vandalism

- Call local law enforcement
- Be prepared to describe the damage and the purpose of the site.
- Photograph EVERYTHING
- Contact Insurance Carrier.
- DO NOT go looking for vandals yourself.
- Keep an eye on the site. They almost certainly will come back.
- Review site security.
- CALL AM Ground Systems Co.
  - 1-877-766-2999