SLEEPING BETTER IN SEATTLE
Cyber Incident Response Put to the Test
Kirk Bailey, CISSP, CISM
CISO – City of Seattle
Ernie Hayden, CISSP
CISO – Port of Seattle

AGENDA

- INTRODUCE
  - THE CITY OF SEATTLE (Kirk’s Stuff)
  - THE PORT OF SEATTLE (Ernie’s Stuff)
- A HISTORY OF EXERCISES
  - ALKI
  - TOPOFF2
  - LIVewire
  - BLUE CASCADES II
- SOME LESSONS LEARNED YOU CAN USE

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City of Seattle

MY OFFICE ... a room with a very different view

Kirk Bailey
CISO, City of Seattle
A Diverse Port

Seattle Fire Department

Port of Seattle

A Diverse Port
“City” of the Port of Seattle

- Multifaceted public agency
- Generates 165,000 jobs in region
- $5.5B payroll
- Revenue > $12B
- State & local tax generation >$660M
- Airport, seaport, fishing terminal, parks & recreation
- Police, fire and EMS services

Infrastructure interdependencies

- Utilities
  - Power: Seattle City Light and Puget Sound Energy
  - Steam heat: Seattle Steam (Pier 66)
  - Gas: Puget Sound Energy
  - Telephone/Internet: Qwest, AT&T (Cell), NexTel (Cell), Verizon (Cell)
  - Water: Seattle public utilities & local water districts
  - Airport fuel transport: olympic pipeline
- Information Systems (servers, networks, 2000+ desktops)
- Railroads (BNSF, Union Pacific)
- Highways (I-5, I-90)
- Viaduct
- Banking / Finance

The big combined cyber picture

- 13,000+ Desktops and laptops
- 2,500+ Servers
- 1500+ Network peripherals (printers, fax, etc)
- 4,500+ Radios (all types)
- 3,000? PDAs (nobody knows)
- 18,000+ Telephones (desk and cell)
- Huge fiber and cable infrastructure (across state)
Infrastructure interrelationships

- Power
- Sewer
- Water
- Telecom
- 800 MHz
- Transportation
- Cross Public Safety – Fire, Police, EMS

Summary = We are all one!

THREATS ABOUND

- Airport events
  - Hijacking / hostage events
  - Crash – intentional or accidental
- Railroad events
  - Spills, stalls, derails
- Container events
  - Explosions, spills, suspicious cargo
- Highway events
  - Bridge destruction, tunnel destruction
- Dams / locks – destruction or damage
- Earthquake / volcano / flooding
SEATTLE RANKS HIGH AS A TARGET
INSURANCE SERVICES OFFICE (NEW JERSEY)

Terrorism Risk Insurance Act of 2002
Indemnification for insurance companies for losses due to terrorist

1st TIER (100X MORE LIKELY TO BE ATTACKED):
New York, Washington DC, San Francisco, Chicago

2nd TIER (20X MORE LIKELY TO BE ATTACKED):
Seattle, Los Angeles, Houston, Philadelphia, Boston

Tons of criteria including: geographical location, economic importance, accessibility as target (port city), iconic buildings and businesses, infrastructure sites, sports venues, intelligence indicators, and “gut feel.”

Cyber-based Terrorist Threats:
Analysis for
The City of Seattle, and
The State of Washington

Prepared by: Kirk C. Bailey, CISSP, CISM
CISO, City of Seattle

Confidential
(Disclosure Protection provided under WA State RCWs)

Vulnerability exercise
City of Seattle’s “ALKI”

International exercises – US / Canada
TopOff2
Livewire
BlueCascades II

TABLETOP EXERCISES UNDERSCORE CRITICALITY OF CYBER-ISSUES

- Vulnerability exercise
  - City of Seattle’s “ALKI”
- International exercises – US / Canada
  - TopOff2
  - Livewire
  - BlueCascades II
ALKI: A VULNERABILITY ASSESSMENT EXERCISE

TABLETOP STYLE OF EXERCISE
FOCUS: "CYBER-TERRORISM" AND OTHER ELECTRONIC THREATS

PARTICIPANTS
Hosted by...
City of Seattle & SPD Emergency Preparedness Bureau
• In collaboration with...
  the AGORA
• From City of Seattle...
  DoIT, SPU, City Light, SDoT, Library, SPD, SFD, EOC
• From Other Agencies...
  DoD, White House, DoE, etc.
**OBJECTIVE:**

ANSWERS TO THESE QUESTIONS...

- What are the city’s technical vulnerabilities?
- How might they be exploited?
- Are there any early warning signals?
- Are there any “low-hanging fruit” for mitigation?
- What about long-term mitigation?

**4 TEAMS:**

1. Long dwell
2. Short dwell
3. Trust team
4. Kill team

**Results from Alki exercise**

- Consensus findings
- Ranking of key targets
- Remediation recommendations
  - Governance
  - Policies & procedures
  - Training & education
  - Tactical - technical
  - Strategic - technical
Topoff2 CyberEx
May 6-7, 2003
Washington State Emergency
Operations Center
Camp Murray, Washington
Designed and Controlled by:
Institute for Security Technology
Studies (ISTS),
Dartmouth College

Electronic Gaming
Network Simulations
by Sonalyst

PARTICIPANTS

Government Players:
• City of Seattle
• King County
• State of Washington (DIS, EMD, DOT)

Supporting and Observing:
• University of Washington
• Microsoft
• Boeing
• Qwest
• Seattle Joint Task Anti-Terrorism Task Force
• DHS (National Communications Systems)

Designed to test incident response capabilities to a series of “force-multiplier” cyber-attacks

Included 3 scenarios or vignettes:
(1) normal day at the office, with “normal” network and computer problems;
(2) an escalating series of events - computer and network problems which might be preliminary symptoms of a directed cyber-attack; and
(3) a major cyber-attack on participants’ computer networks, coupled with a weapons of mass destruct (WMD) attack - a radioactive detonation device (RDD) terrorist bomb exploding in Seattle.
Lessons learned and benefits:

- Top official awareness of cyber-related issues
- The value of delegated command and control
- Training and education needs identified
- The value of strategic and tactical network architecture
- Clearer understanding of cyber-threat spectrum
- The value of a trusted network neighborhood

Livewire purpose & focus

- Livewire was one component of an ongoing discovery process designed to provide DHS with input as it considers what a mature National Cyberspace Security Response System should look like.
- A primary goal of Livewire was to foster trusted relationships between differing organizations that might be part of this system.
- The discovery event provided a risk-free environment in which private-sector organizations practiced communicating and coordinating with their government counterparts.
Livewire objectives

- Foster relationships between public and private sector organizations
- Help define and practice intra- and inter-organizational communications, coordination, and response decision-making
- Identify authority gaps and overlaps
- Validate large-scale, distributed, cross-sector cyber security exercises

Type of event: Actual Network Interface / Exchange
Event / scenario

- Time: Fall 2004
- Recent increase in cyber activity (significant)
- Source unknown – libraries, schools, foreign computers
- Intelligence points to terrorist intentions (since 2002)
- National intelligence focus on nation states of RED, BLACK, and PURPLE – referred to as the “Rainbow Trio”
- Since the 80s – these countries have ramped up cyber
- WMD issue between US and Trio – saber rattling, threats of military action, increased trade restrictions
- Ties between Trio and terrorists

Livewire questions

- Who is in charge when cyber attack occurs?
- What is the Federal role in cyber defense?
- What is the appropriate response to a cyber attack?
- What are the economic impacts of a cyber attack?

Blue Cascades II

King County  Pacific NorthWest Economic Region

PUGET SOUND  TransCanada  Microsoft
Blue Cascades II

- Focus on a cyber terrorism event followed by a physical event
- Blue Cascades II was follow-on to Blue Cascades I held in 2002
  - Dan Verton’s Book Black Ice covers much of Blue Cascades I results
  - Blue Cascades I centered on physical attacks & disruptions
- Infrastructure interdependencies tabletop exercise

Participants

- Sponsors:
  - Northwest Partnership for Regional Infrastructure Security
  - Pacific NorthWest Economic Region (PNWER)
  - King County
  - Microsoft
  - Puget Sound Energy
  - TransCanada
- Other players
  - Over 200 participants
  - DHS, CERT
  - DoD
  - Medical/hospitals
  - Public safety
  - Logistics companies
  - Canadian government players

Objectives

- Raise awareness of interconnections among the region’s critical infrastructures and organizations and associated vulnerabilities.
- Focus on attacks that disrupted business practices and operations of infrastructures and organizations, including critical telecommunications and electric power assets.
Teams

- Scenario design team
- Tabletop segregation
  - Separate into critical infrastructures
  - Energy / electric power / gas
  - Government
  - Public safety – fire
  - Public safety – police
  - Medical
  - Independent evaluators
- Lessons learned team

Results

- Large number of findings and recommendations
  - Participants
  - Independent evaluators
- Key Areas:
  - Understanding interdependencies and cyber threats and disruptions
  - Cooperation and coordination
  - Communications and information sharing
  - Incident management
  - Resource management
  - Public information and education
- Example: Regional Cyber Security Council (in infancy)

Cyber exercise lessons learned...

Ideas to help you
Lessons learned – What you can do

1. Don’t worry about developing a complex plan – simple will work - just let everyone’s imagination run free
2. Consider your focus on only cyber versus a combined cyber – physical attack – you’ll be surprised at what you can learn
3. Tabletops are very effective – you don’t need active, hardwired networks to play
4. Don’t be afraid to ask others to play – you’ll be surprised who’s interested in helping
5. Consider non-disclosure agreements for you and the region’s protection

Lessons learned – What you can do (2)

6. Use a Facilitator to Drive the Discussions and Provide the “Injects”
7. Establish a Scenario Team to “Build” the Primary Event and Collect Foundational Materials
8. Cross-Group Your Teams – Let the Technical and Non-Technical Work Together to Improve Communications and Broaden the Perspectives
9. Collect Recommendations – Before, During and After the Exercise – Take Advantage of Each Idea
10. Don’t Be Afraid to Try – Small is OK as well as the Giant Exercises

References

- Blue Cascades II
- TopOff 2
We appreciate the opportunity to speak at this event – Information Security Decisions

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