17th NATIONAL CONFERENCE ON BUILDING COMMISSIONING

NCBC 2009

EFFICIENCY • PERSISTENCE • PERFORMANCE

Mentoring Field Technicians

Lessons in Technology and Life for Everyone

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Facility Dynamics ENGINEERING

AIA Quality Assurance

Learning Objectives

1. **Mentoring provides a mechanism for transferring life experience to those who will follow us.**
2. **Mentoring is about more than technical knowledge**
3. **Mentoring provides growth and a learning experience for both the mentor and the mentee.**

The Challenge

Developing field savvy in new recruits to the commissioning industry may be one of the biggest challenges we collectively face

Option 1

Learning by experiencing

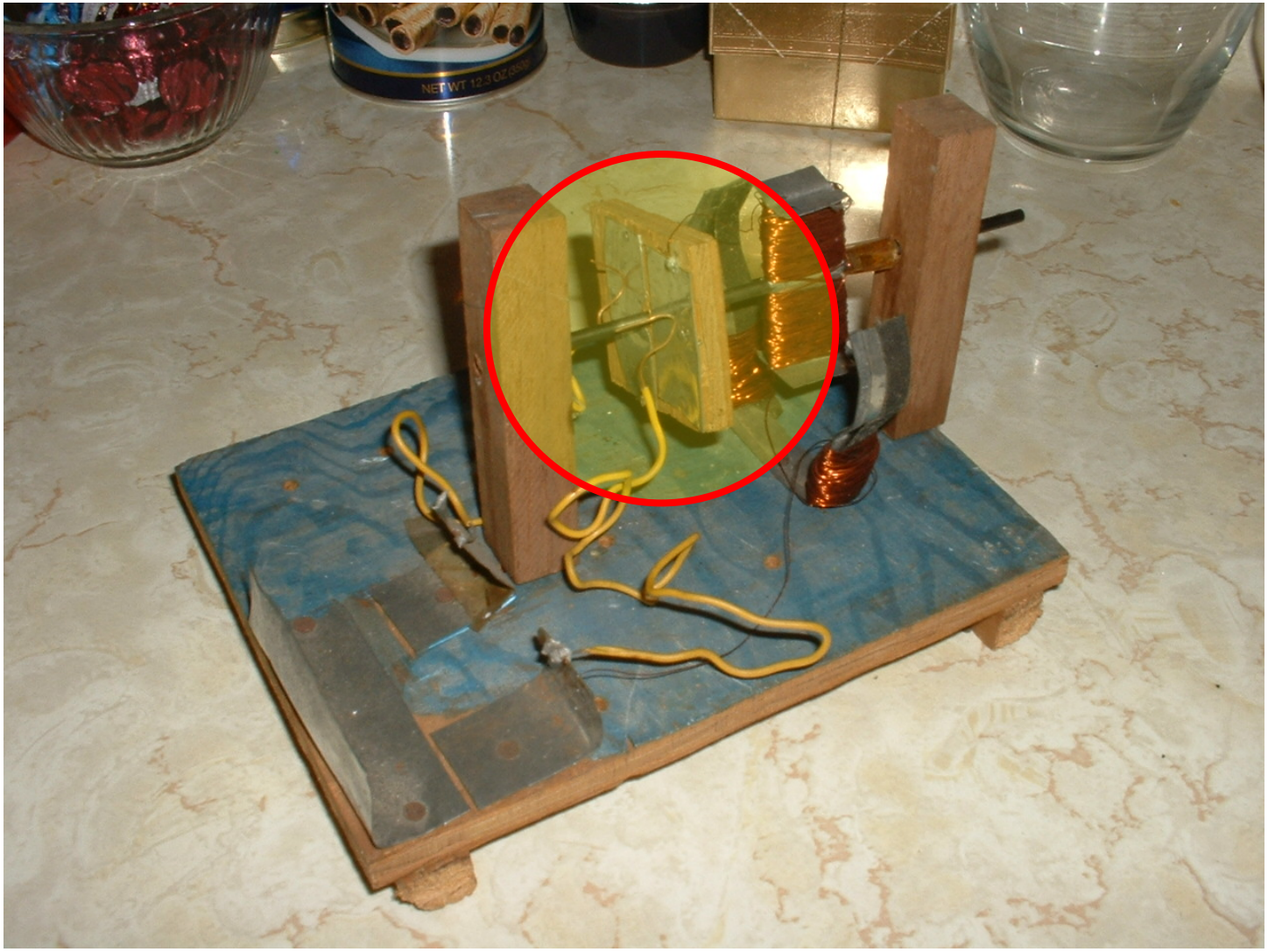
- Powerful
- Takes time

Option 2

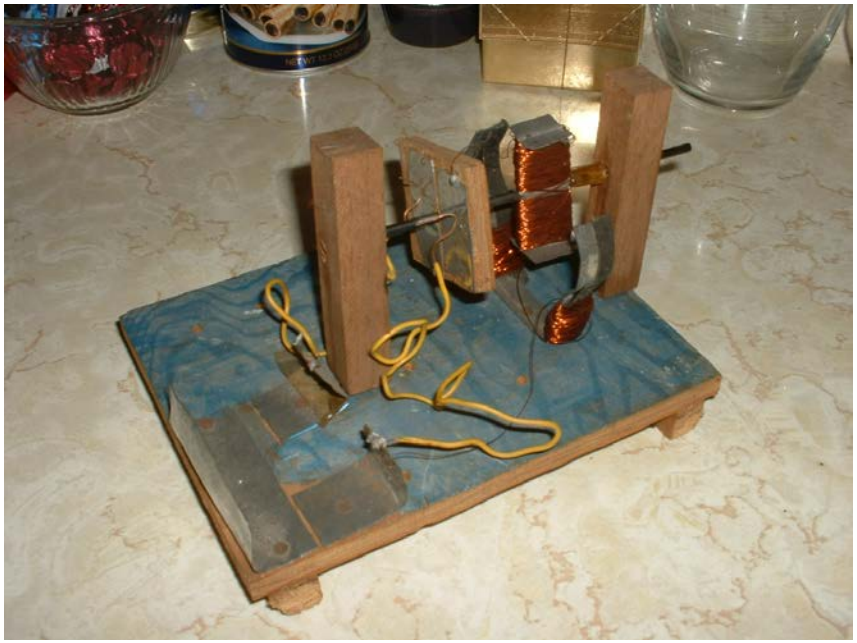
Learning from experiences

- Powerful
- Compressed timeline
- Requires a mentor
  - Technical skills
  - Interpersonal skills

My First Technical Mentoring Experience



My First Technical Mentoring Experience



Technical Lesson

Just because it spins doesn't mean it has to be round

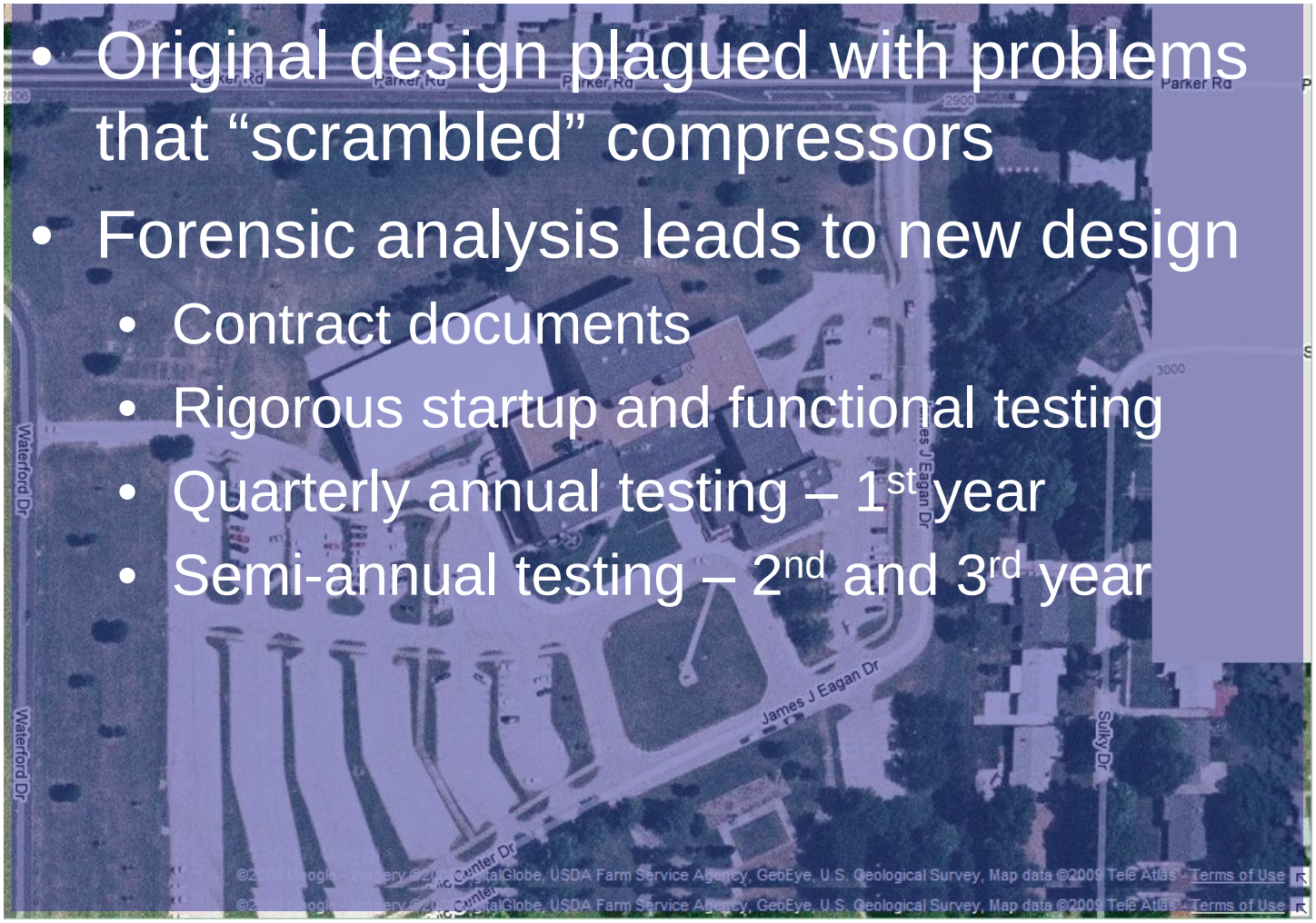
Mentoring Lessons

- Share your passion
- Ask a question
- Follow-up

See *Mentoring and Thinking Outside the Box* in CSE's *A Field Guide for Engineers* blog; www.csemag.com, August 28, 2008 for the complete story

Florissant Civic Center Ice Arena

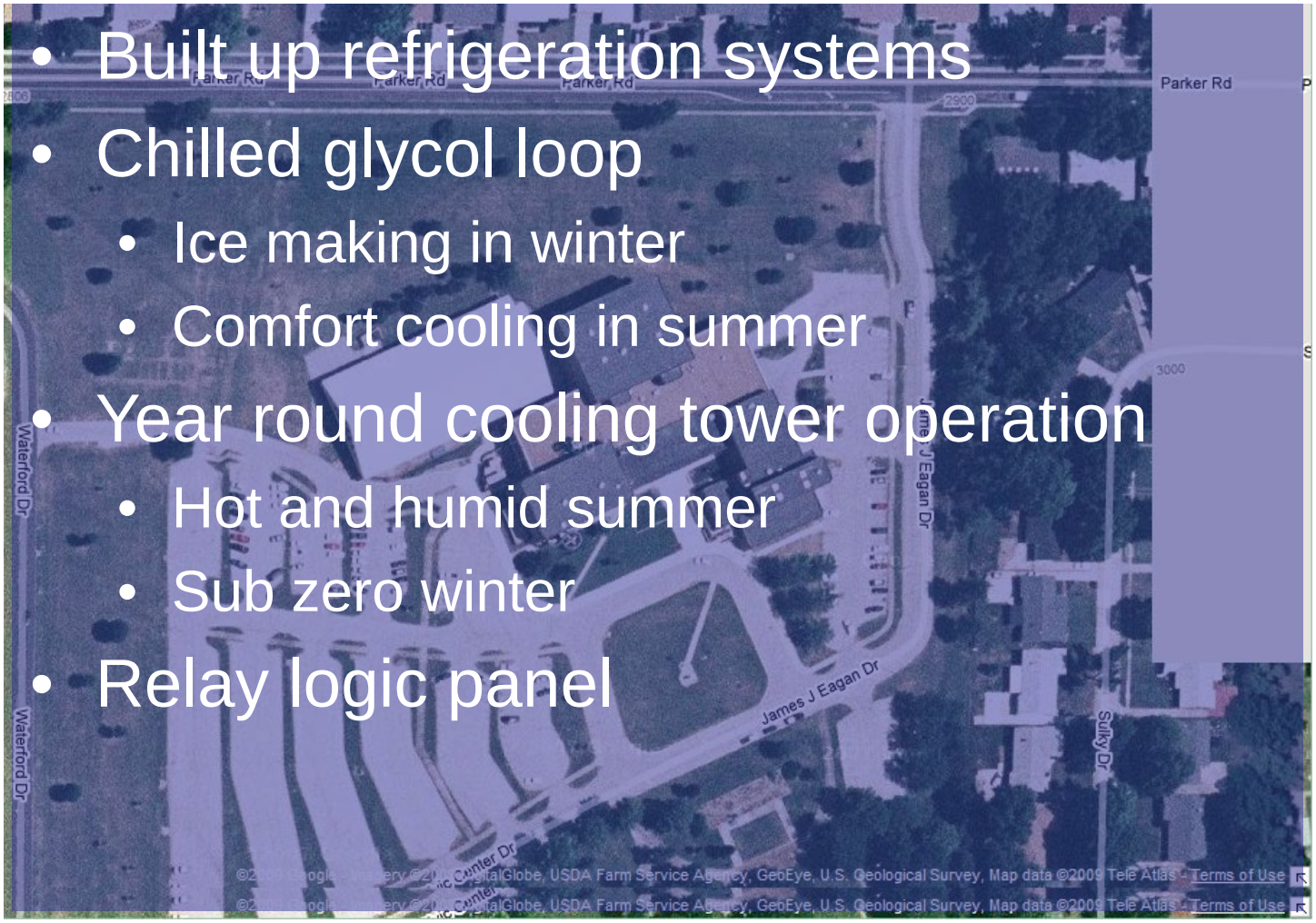
Florissant Civic Center Ice Arena



- Original design plagued with problems that “scrambled” compressors
- Forensic analysis leads to new design
  - Contract documents
  - Rigorous startup and functional testing
  - Quarterly annual testing – 1st year
  - Semi-annual testing – 2nd and 3rd year

Florissant Civic Center Ice Arena

- Built up refrigeration systems
- Chilled glycol loop
  - Ice making in winter
  - Comfort cooling in summer
- Year round cooling tower operation
  - Hot and humid summer
  - Sub zero winter
- Relay logic panel



Florissant Civic Center Ice Arena

Phil and Rosalie Sutherlin and me

Grounded, field based engineering approach

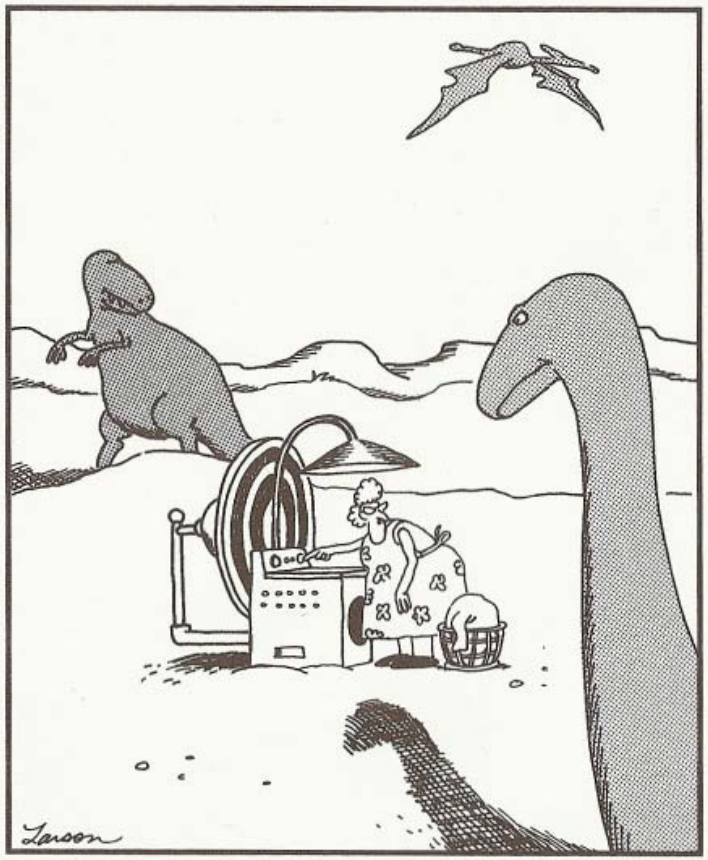
- Address issues by design approach
- Verify design approach by testing
- Test rigorously

Florissant Civic Center Ice Arena

Head pressure switch test

1. Verify existing gauge
2. Verify current settings
3. Be ready to intervene
4. Monitor head pressure and throttle condenser flow
5. Verify head pressure shut down at set point
6. Intervene IMMEDIATELY if the head pressure switch doesn't
7. Document results
8. Return to normal
9. Report and repair discrepancies

Florissant Civic Center Ice Arena



Disaster befalls Professor Schnabel's cleaning lady when she mistakes his time machine for a new dryer.

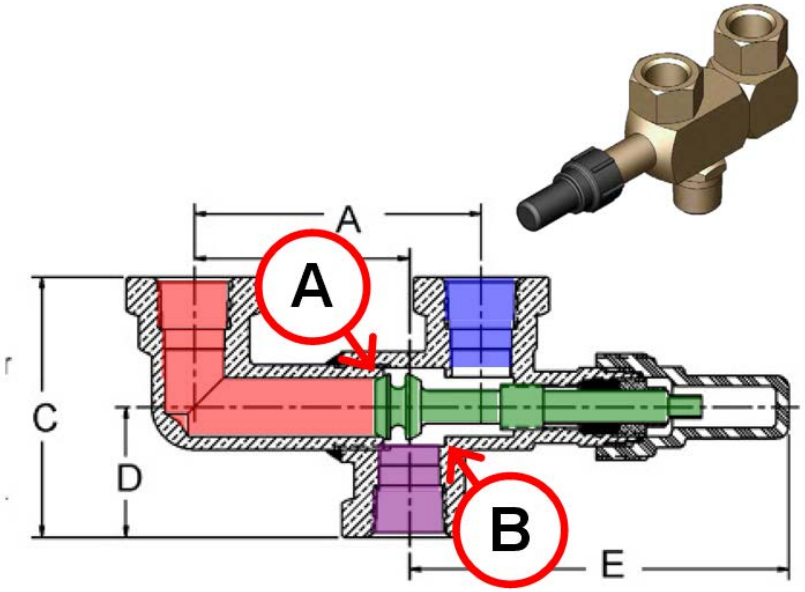
Technical Lesson 1

Sometimes, things work differently from what you expect

Mentoring Lesson

- Share your lesson's learned

Florissant Civic Center Ice Arena



Technical Lesson 2

This is a shuttle-cock

Mentoring Lessons

- Solve the problem
- Youth is impetuous
- You probably don’t need to say “I told you so”
- Never miss an opportunity to connect concept with reality
- Believe in yourself

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Mentoring Lessons

- Be yourself
- Demonstrate integrity
- Be human
- Learn from you mentee
- Give credit where credit is due

Technical Lesson 3

Technical expertise is valuable

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Technical Lesson 4

Loads are interesting; Load profiles are everything

Mentoring Lessons

- Notice uncertainty
- Help them think
- Reinforce important concepts

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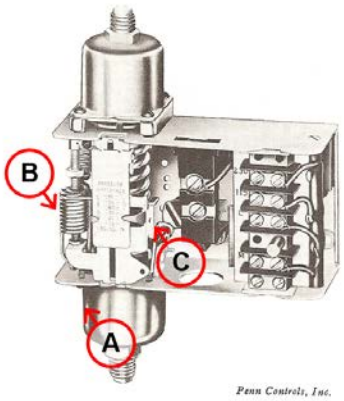

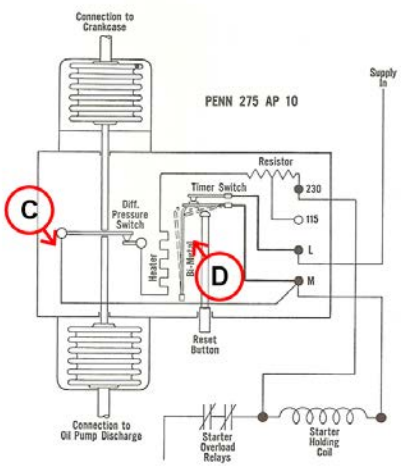

Mentoring Lessons

- Acknowledge a task well done
- Teach balance

Technical Lesson 5

Balance rigor with risk

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Early experiments in transportation

Technical Lesson 6

Technical details matter

Mentoring Lessons

- Share your experience
- “Break bread” together
- Share your knowledge

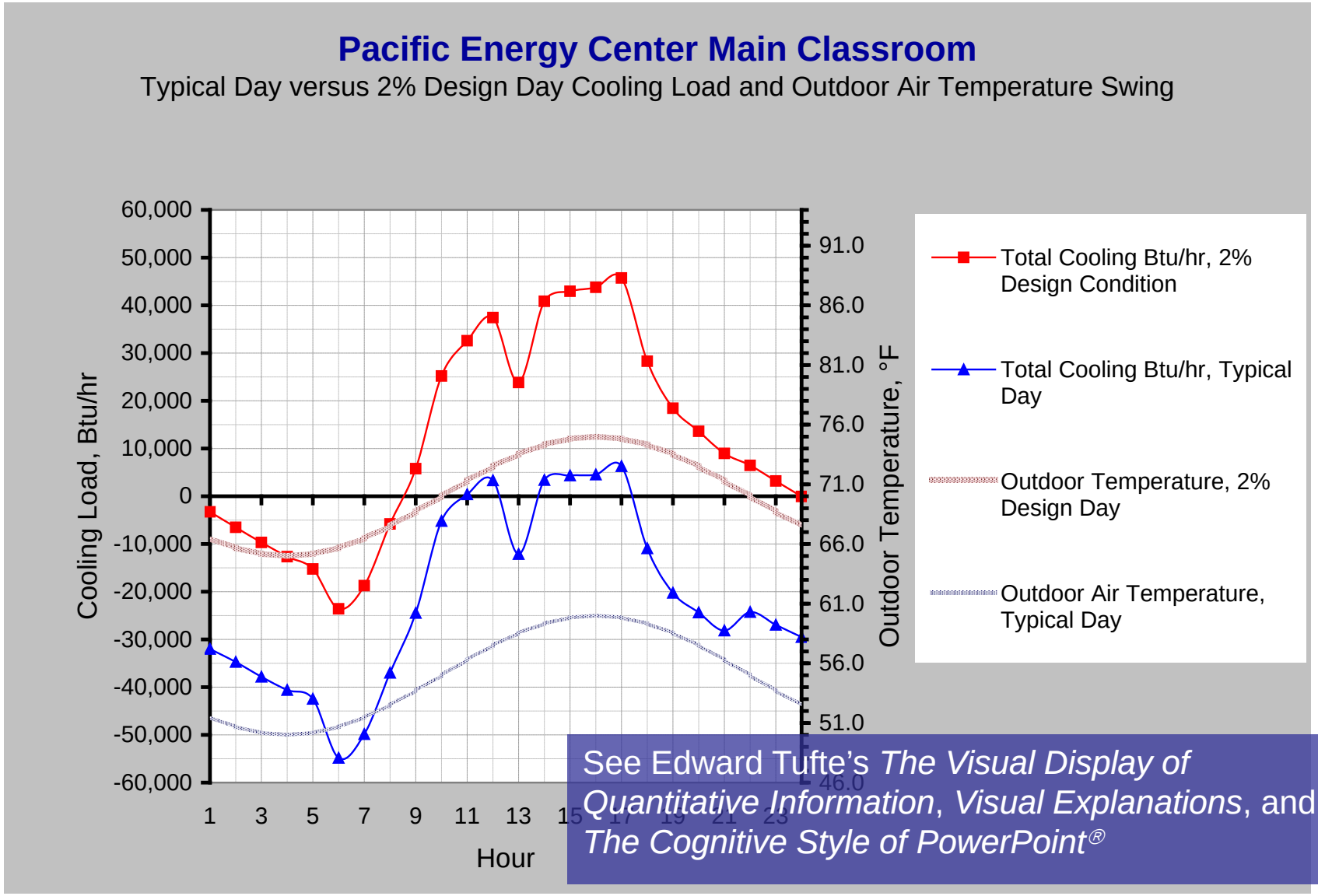
Mentoring the Masses

- Commissioning process is beginning to be understood and embraced
- Technical issues; not so much
- Active learning
  - Hear it and retain 20-40%
  - Write it down and retain 40-60%
  - Use it and retain 60-80%

Mentoring the Masses

- Iowa Energy Center Commissioning Class
- Pacific Energy Center EBCx Workshop Series
- PEC, SMUD and NCBC Analog Lessons for a Digital World Class
- PIER/STAC Hands-on RCx Training at NYMEX
- Marriott Advanced Engineering program
- UC Berkeley Stop Waste sponsored Commissioning and HVAC Fundamentals training

A Picture is Worth a Thousand Bullet Points



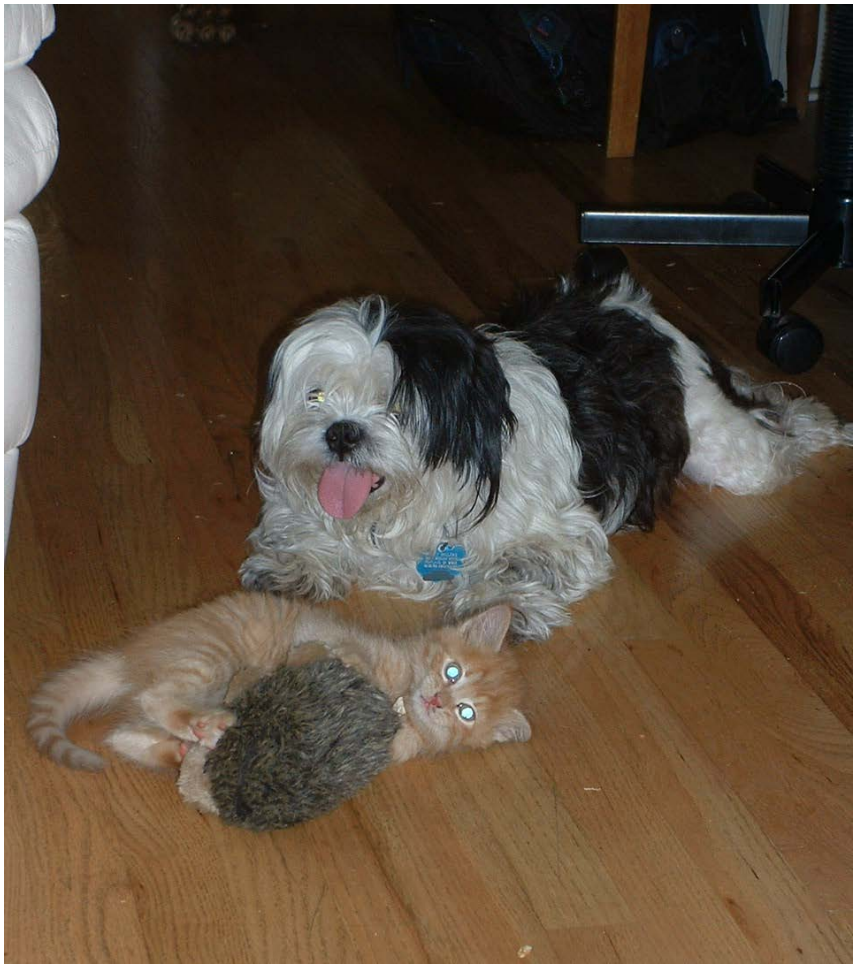
See Edward Tufte's *The Visual Display of Quantitative Information*, *Visual Explanations*, and *The Cognitive Style of PowerPoint®*

Real World Experience Connects the Dots

Stories are Engaging

- Put you at ease
- Establishes a connection
- Adds color to potentially dry topics

Mentoring Fundamentals



- Unbounded enthusiasm for their work (a.k.a. play)
- Always happy to see you
- Wag their tail even if you step on their paw
- Share life with you

Mentoring Bottom Lines

Mentor

- Live life with integrity as a cornerstone
- Demonstrate your beliefs

Mentee

- Aspire to what you admire
- Don’t beat yourself up when you miss
- Share what’s been shared with you

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Thanks for Attending

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