Mentoring Field Technicians
Lessons in Technology and Life for Everyone

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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.

<table>
<thead>
<tr>
<th>Option 1</th>
<th>Option 2</th>
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<tbody>
<tr>
<td><em>Learning by experiencing</em></td>
<td><em>Learning from experiences</em></td>
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<tr>
<td>○ Powerful</td>
<td>○ Powerful</td>
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<tr>
<td>○ Takes time</td>
<td>○ Compressed timeline</td>
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<td></td>
<td>○ Requires a mentor</td>
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<td></td>
<td>○ Technical skills</td>
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<td>○ Interpersonal skills</td>
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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

Grounded, field based engineering approach

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

*Phil and Rosalie Sutherlin and me*
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 shutdown 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
Technical Lesson 1

_Sometimes, things work differently from what you expect_

Mentoring Lesson

- Share your lesson’s learned

_Disaster befalls Professor Schnabel’s cleaning lady when she mistakes his time machine for a new dryer._
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
Mentoring Lessons

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

Technical Lesson 3

*Technical expertise is valuable*
Technical Lesson 4

*Loads are interesting; Load profiles are everything*

**Mentoring Lessons**
- Notice uncertainty
- Help them think
- Reinforce important concepts
Mentoring Lessons

- Acknowledge a task well done
- Teach balance

Technical Lesson 5

*Balance rigor with risk*
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%
- 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

Pacific Energy Center Main Classroom
Typical Day versus 2% Design Day Cooling Load and Outdoor Air Temperature Swing

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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