



I Did Not See That Coming

Problems you can't fix with just
technical skills

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About me



- Avionics technician in USAF
- Electrical engineer
- Last 25 years with GP as a consultant, technical writer, instructor, doing whatever else needs to be done
- Live in Tampa
- Three kids, one wife

About today...

- So here are the topics for today:
 - I'm not sure why we call this work because when I'm here I can't get anything done (prioritization/time management)
 - Thanks, but I don't want your help. I can do it myself. (personnel/personality issues)
 - Why does this keep happening to me? (root cause failure analysis)



Started with thoughts about crisis management



Ended up realizing that this kind of stuff happens every day

First Topic – What's Important, What's Not

How do you know what's important? A few examples:

- It's a safety issue
- It's critical to your operation or to a process
- We're losing a bunch of money if we don't get it fixed
- I was told by my supervisor/manager/boss it's important and to get it done as soon as possible

What's not so important. Shiny objects...

- Anything that takes your attention away from your priorities.
 - Example: Someone tries to dump a problem on you without proposing a solution

Is this important (enough to stop what you're doing and work on it)?

What do you do if you're working on something important and this comes in on your email?

Does anyone have the exact answer for this problem? We have several answers floating around based on a few different factors.

PRACTICE EXERCISE XVIII

A 460 volt, single-phase, 10 horsepower, code H motor is powered through power lines which have a total resistance of 0.5 ohms. The motor needs at least 370 volts to start up. Will it start? See Figure 62.

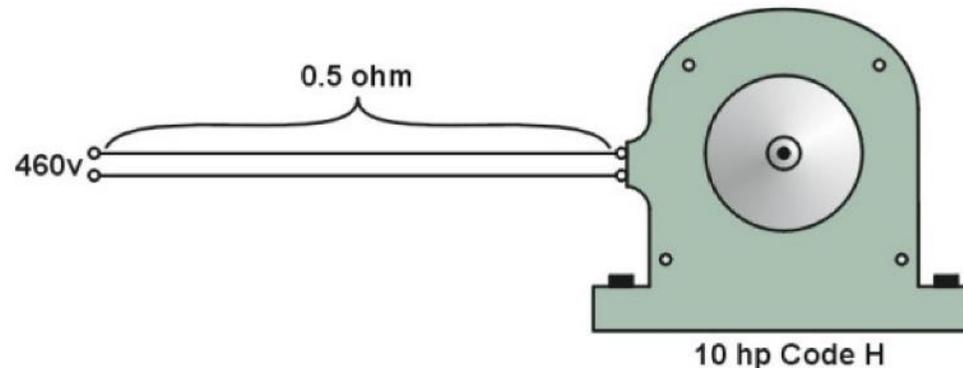


Figure 62: Motor Powered Through Power Lines

If you think multitasking will work...

This is from the Cleveland Clinic
(10 Mar 2021)

Why Multitasking Doesn't Work

Studies show it makes us less efficient and more prone to errors

- “One study found that just 2.5% of people are able to multitask effectively. For the rest of us, our attempts to do multiple activities at once aren't actually that.”

<https://health.clevelandclinic.org/science-clear-multitasking-doesnt-work/>

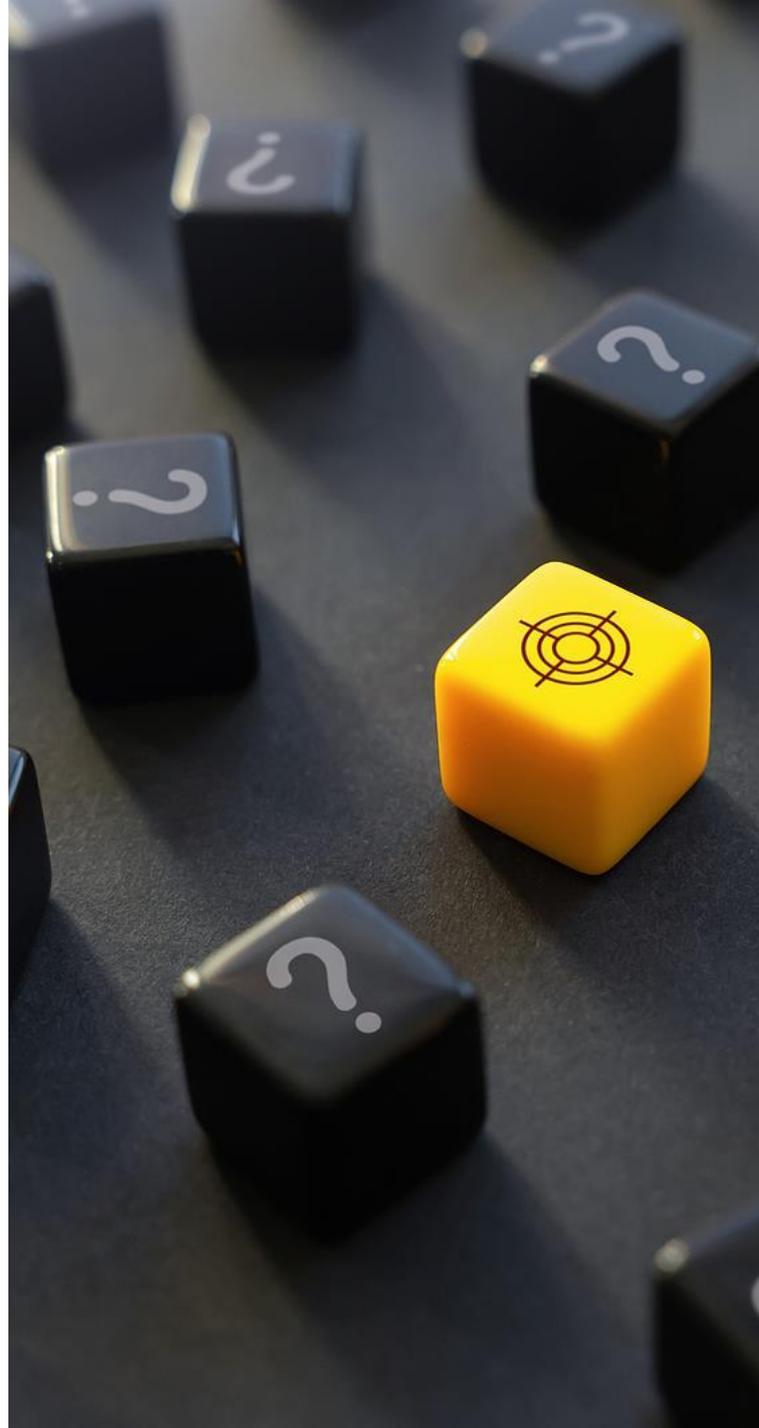


Getting important things done – part 1

- Stop trying to multitask.
 - Accept (admit) that trying to do multiple things at the same time is inefficient
- Make a list of all the important things and start working from the top
 - As much as you can, work on one thing at a time
- Split your day into blocks of time so that you can focus on important tasks
- Delegate what you can
 - This doesn't mean dumping the stuff you don't want to do on someone else



Getting important things done – part 2



- Unplug - do your best to ignore email/cell phone messages/notifications for as long as you can
- If you're being assigned another important task while you're working on something else that's important, ask what the highest priority is
- If what you're doing now isn't working, then you should probably try something else

Second Topic – Working with Other People



- You (probably) have to work with other people
- The problem with those other people:
 - Lava Lamps
- Two types of people
 - Those who like to solve problems (like maintainers, some engineering types)
 - Everyone else



Problem solvers



- Engineers like to solve problems
 - Trained to make rational decisions based on facts
 - Problem solving skills are developed and refined in engineering programs

- The basic issue with formal technical education
 - We don't do a good job of teaching interpersonal skills

Personality (control) issues may come up when...

- Promoting a good maintainer into a management or supervisory role
- Hiring someone straight out of an engineering program into a supervisory role
- You can't let go of something because it won't be done to your standards, so you just do it yourself



Recommendations



Understand who you
are working with



Ask questions



Training, mentoring,
and coaching



Assess progress and
ROI

Last Topic – It ain't
over till it's over

Finding the Root Cause





Identify the Real Problem

- For example – what’s the problem here?
 - The car is in the water
- Why is the car in the water?
 - What were they thinking to drive on the ice like that (personnel/training issue)?
 - What failed on the car that allowed it to go on to the ice (mechanical issue)?
 - Why was that hole there so the car could drive into it (environmental issue)?
 - Why are they using that model car for ice fishing (methods issue)?

Performing Root Cause Failure Analysis



- Start with a good problem statement
 - You won't get right solution by answering the wrong question
- Restate/refine the problem statement if you need to
- Don't assume you already know the answer
- Ask lots of questions (even dumb ones)
- Once you think you have the answer, look for another one
- The simple answers are often the best answers

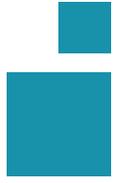
Results of a good analysis

- Ability to target resources to fix the root cause of the problem
- Ability to track where resources are being allocated
- Guidance in budgeting or process optimization

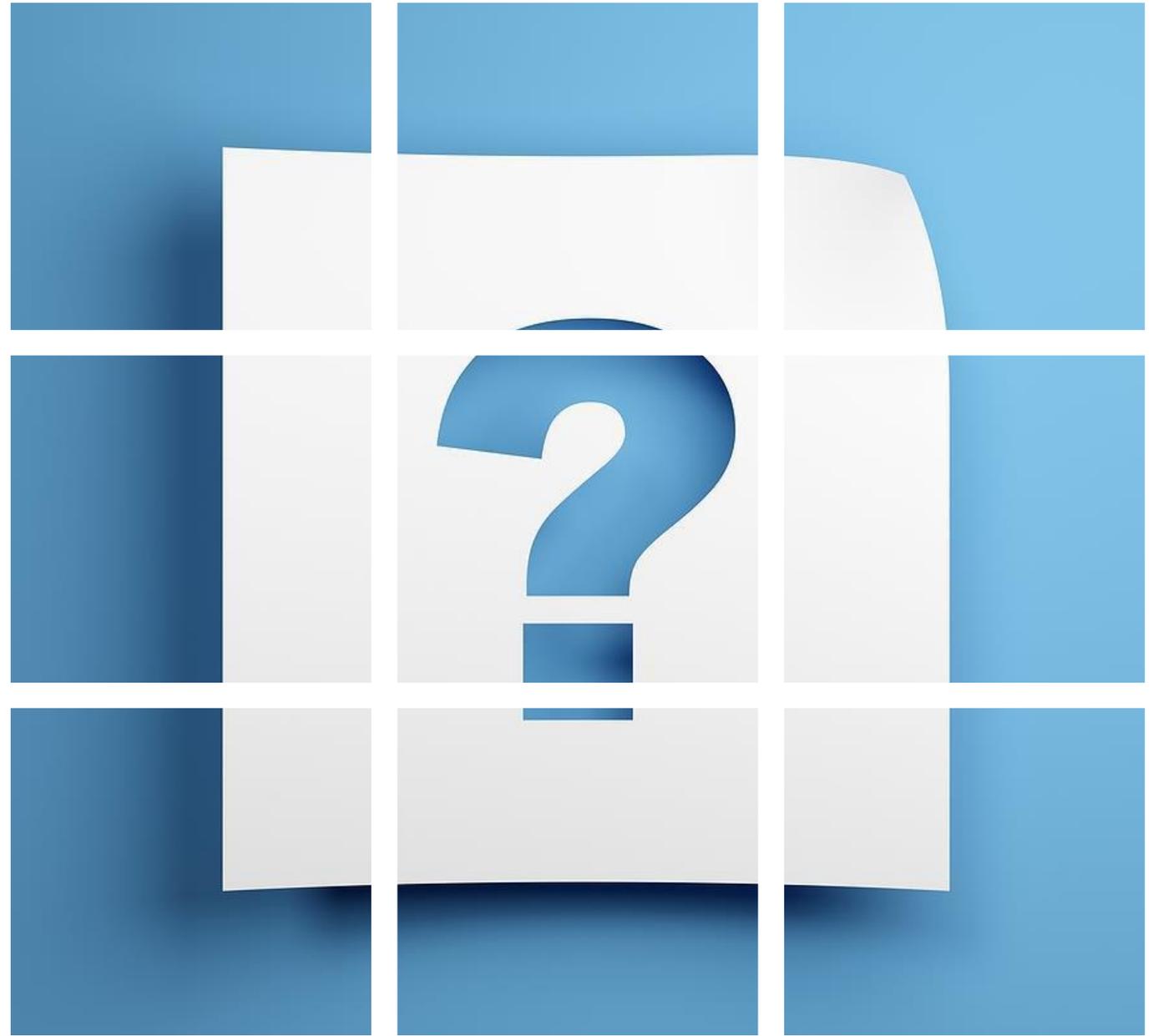
Resources

- Hansel, Tim; Eating Problems for Breakfast – A Simple, Creative Approach to Solving Any Problem; Word Publishing
- Biehl, Bobb; Stop Setting Goals if you Would Rather Solve Problems; Moorings
- Hummel, Charles E.; Tyranny of the Urgent; Intervarsity Press
- Phillips, Patricia Pulliam and Jack J. Phillips (eds); Measuring ROI in Learning and Development, Case Studies from Global Organizations; ASTD Press





Questions



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PRACTICE EXERCISE XVIII

A 460 volt, single-phase, 10 horsepower, code H motor is powered through power lines which have a total resistance of 0.5 ohms. The motor needs at least 370 volts to start up. Will it start? See Figure 62.

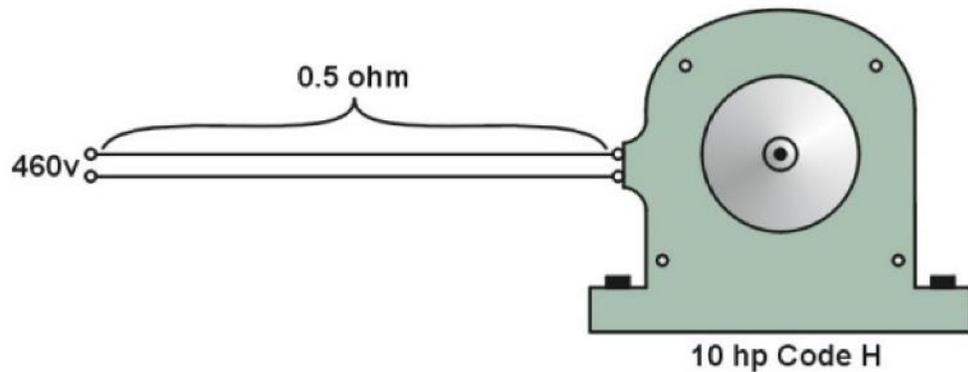


Figure 62: Motor Powered Through Power Lines

Table 1: LRA

Code Letter	Locked-rotor (kva per horsepower)
G	5.6 - 6.29
H	6.3 - 7.09
J	7.1 - 7.99

Worst case is 7.09kva/hp for a Code H motor.

$$7.09 \times 10 \text{hp} = 70.9 \text{kva.}$$

$$\text{At 460V the motor draws } 70,900\text{VA} / 460\text{V} = 154.1\text{A.}$$

$$\text{The voltage drop due to the 0.5 ohm line} = 154.1(0.5) = 77.06\text{V.}$$

$$460 \text{ source voltage} - 77.06 = 382.9\text{V at the motor terminals.}$$

Motor should start

