

Margins of Error

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If you had to walk through 10 miles of desert and I told you that you needed 1 liter per hour of walking and the average person in decent shape could make that walk in 5 hours would you only take 5 liters? Or would you take a little extra just in case?

If I told you that the house you wanted to buy cost \$300,000 but you needed to put 10% down and you only had \$30,000 total available to you would you buy the house?

If I told you that the treasure at the bottom of the lake was 200' below the surface, would you take suit only rated for 200'?

If I told you that the house on fire was 300' from the fire engine would you stretch a 300' line?

If I told you that an SCBA cylinder was rated for 30 minutes and that once the vibralert went off you had about 5 minutes of air left would you wait until the vibralert went off to head for an exit?

In high school physics class we could figure out how far a hockey puck would travel if a certain amount of force was applied to it, the math was pretty easy because we never figured friction into the equation. High school physics was imaginary because it dealt in a frictionless world.

For the average firefighter in the average house, under average conditions, five minutes of air is an eternity, is if there is no friction.

Friction is getting hung up in a dangling wire or getting your foot trapped in a floor that just gave way or getting pinned under a hunk of drywall that just fell down. When things like this happen to you your five minutes of eternity just went from forever to not long enough.

So why would I risk it? Why would I wait until the vibralert went off? Perhaps so I could finish putting the fire out, perhaps so no one will call me a sissy?

We could make the low air alarm activate sooner. But if we did that firefighters will simply allow themselves more time to work with the buzzer ringing. The real answer is to shift the way we think about these things, to realize that we are human and we are dealing in wildly unpredictable situations, every call is an instant of eternity; plan for that. For the modern firefighter light smoke conditions become death traps before anyone even notices that something changed.

What I am talking about here is more than a low air alarm. It is about how we frame the universe we are dealing with. I hear so much talk about how silly all this safety stuff is. One guy told me with pride the other day that his department was not caught up in all the safety stuff. Yeah, really he said it and yeah he was really proud.

How about using your head?

We should be thinking about leaving from the second we enter a structure. We should be constantly evaluating and monitoring our exit routes and our exit plans. We should leave before the vibralert goes off but if not we should leave the second that the vibralert goes off. We should not think that it is brave or cool in any way to not leave ourselves a margin of error because we do not live in a frictionless world.

If I do the fire flow calculation for a 10 x 10 x 10 room on fire I would find the volume and divide by 100 giving me a fire flow of 10 GPM. Why do I stretch a 125 GPM or greater hoseline to this fire? Because I do not live in a frictionless world, that's why. I could stretch a garden hose on this fire I would have to be sure that:

- It had no kinks, none at all, not even a little one
- I distributed the water perfectly the first time
- Nothing changed between when I started and when I got to the fire

In other words I would have to have the perfect fire ground operation.

Most departments take 150 GPM to that same 10 GPM fire; they take 1500% more water than they need to fight the fire because friction exists. But somehow those same guys are ok with stretching their air supply to the limits leaving themselves with the thinnest of margins. I am not sure that I understand.

The air pack may be rated for 45 minutes but how long is the person rated for? And I am not talking about the superman, Combat Challenge, marathon runner firefighter but rather the simple “average” guy. How long can the average guy in average condition work himself before he simply runs out of fuel? I bet the answer is less than 45 minutes. If that firefighter gets trapped in the 25th minute, what then, what energy does he have to free himself, what air does he breathe while he struggles to call a Mayday?

I realize that I have no control over building construction. The modern house burns down faster and there is simply nothing I can do about that. I ain't my fault. I don't see construction changing anytime soon. We will not go back to building “the old way” in our lifetimes.

Given a fire in a building of light weight construction once the fire is no longer confined by the drywall we are no longer fighting the fire we talked about in the old days. We are fighting a fire that will cause the structure to fall down faster than we can imagine; which is to say faster than we can react to it. The only way to survive is to not be under the roof when it falls down.

So we ought to stop thinking about how we did things in the old days and concentrate on how the modern world with all the different forms, shapes, and types of friction impacts how we meet our stated objectives of life safety, incident stabilization and property conservation.

The way I see it when we find fire attacking a middle of the row townhome of lightweight construction the lives we save are our own, the incident is stabilized by putting water on the burning surfaces, which is in this case the building itself, and property conservation starts a few exposures down.

We have to be acutely aware at all times of our limitations, that there is more information available than we can effectively process, that conditions change exponentially and that we are ill equipped to manage exponential degradation. We have to remember that the young people who hear us talking around the kitchen table are not aware of all the nuances of firefighting, they do not yet know how quickly things change, they are not yet equipped to manage in the true crisis moments, they should not be made to believe that bravery only is only framed by close calls.

In this modern world there are many trade offs but our margins for error should not be among them.

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