

Rethinking Technical Presentations: The Assertion-Evidence Approach

Adapted from
Work of
Michael Alley
College of Engineering
Penn State

**Xenon headlights illuminate signs better
than halogen headlights do**

Halogen Headlight



Xenon Headlight



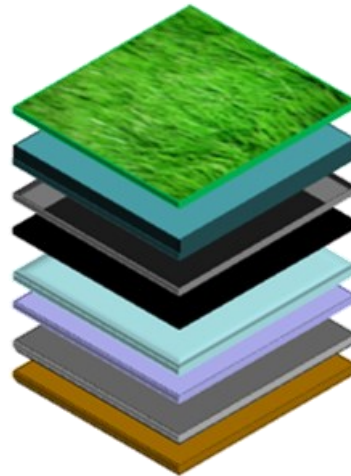
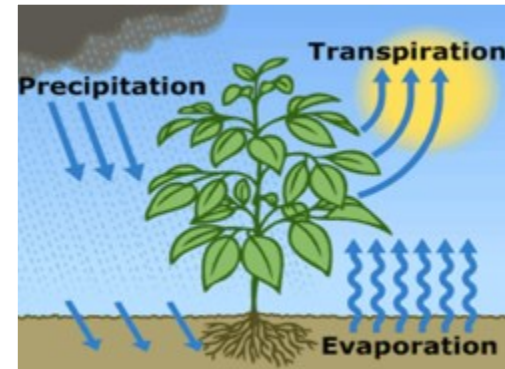
[Alley, 2013]

[Sylvania, 2008]

**Build your talk on
messages**

**not
on topics**

Support your messages
with **visual** evidence



not
bullet points

Build your talk on messages

Urban Temperatures

- Often warmer than surrounding areas
- Caused by materials in roofs and roads
- Also caused by lack of shade and vegetation
- Lead to higher temperatures in buildings
- Require more energy for cooling



**Build your talk on
messages**

Urban Temperatures

Temperatures in urban centers are often much warmer than in surrounding rural areas



The first step is to write a sentence headline that states the main message of the slide

Xenon headlights illuminate signs better than halogen headlights do

← **sentence headline**

Halogen Headlight



Xenon Headlight



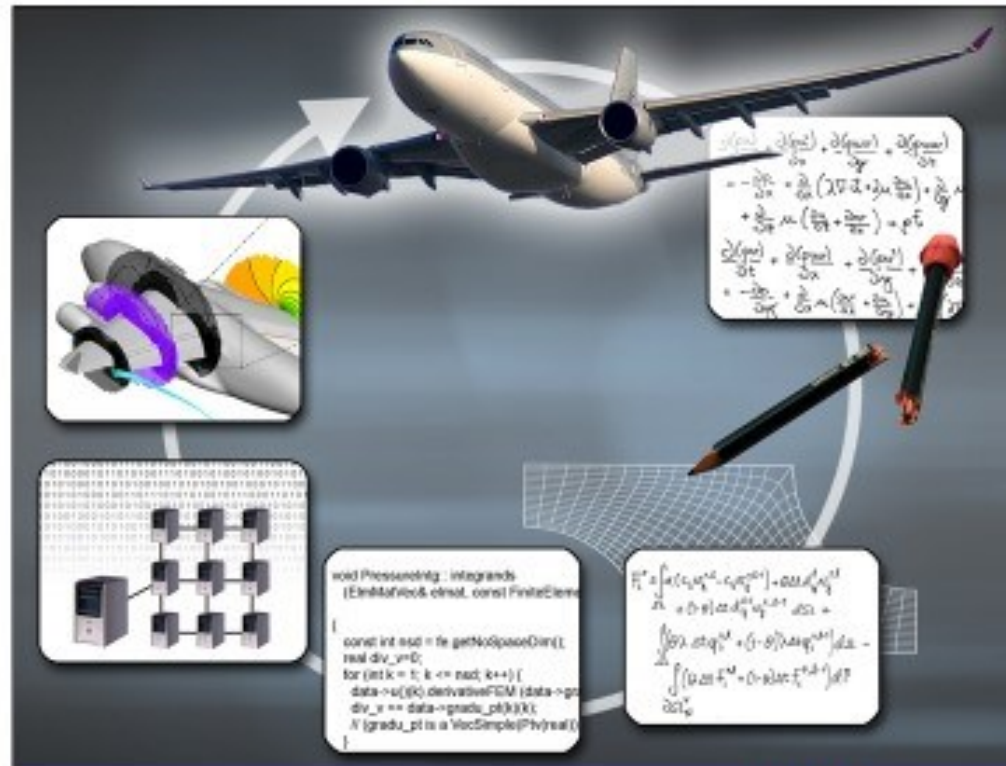
[Alley, 2013]

[Sylvania, 2008]



The second step is to find or create visual evidence that supports the sentence headline

The computer simulation of an event is an iterative process



[simula . research laboratory]

visual
evidence

Since its construction in 1952, traffic across the bridge has grown exponentially

1952

1.1 million vehicles



Since its construction in 1952, traffic across the bridge has grown exponentially

1952
1.1 million



1961
1.5 million



Since its construction in 1952, traffic across the bridge has grown exponentially

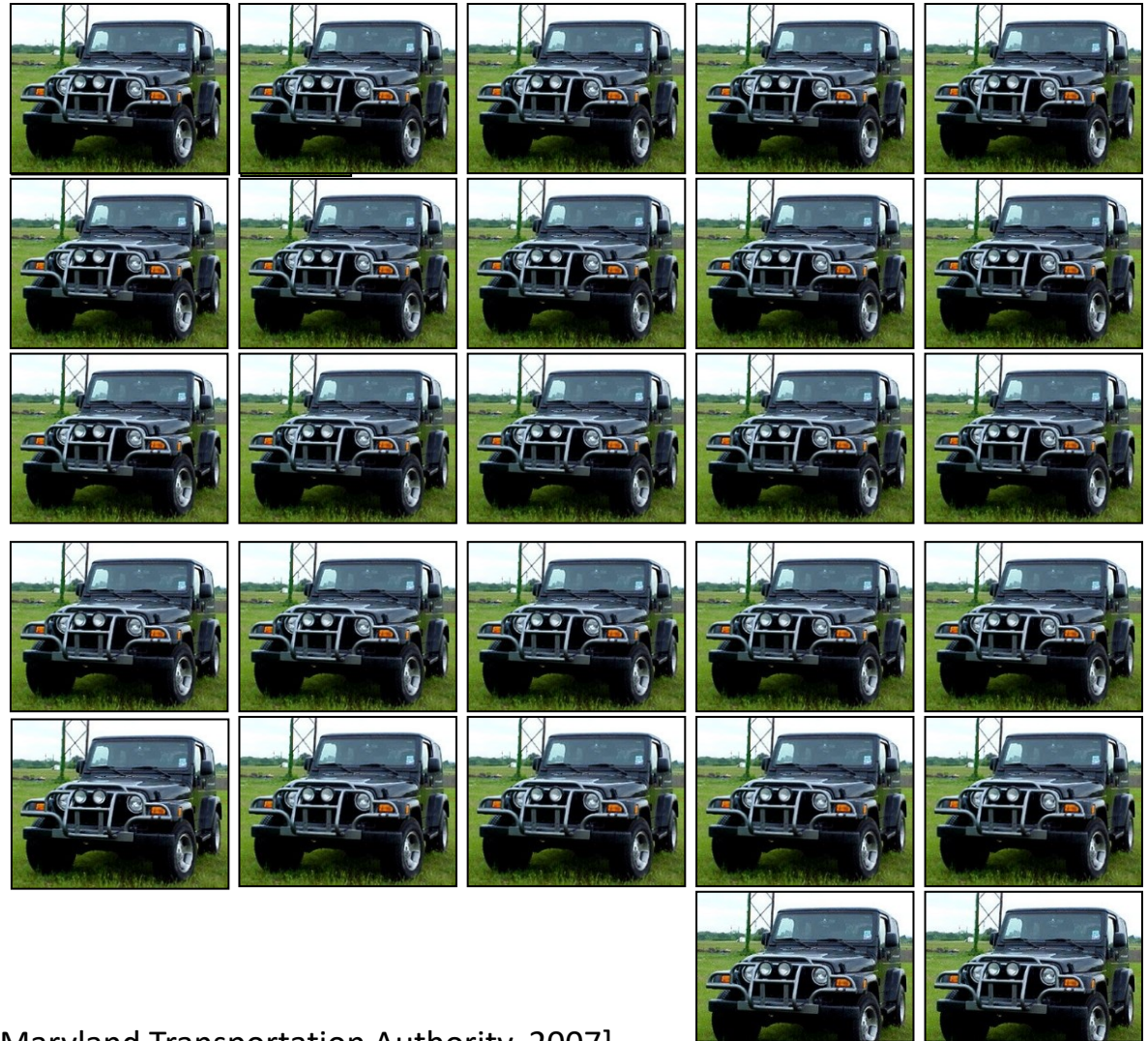
1952
1.1 million



1961
1.5 million



2007
27 Million



The third step in creating assertion-evidence slides is to breakout of the default PowerPoint layout



Encourages topics as titles

Encourages long text,
not visuals

Title of Presentation in Initial Capitals: 36 Points, Calibri Bold

Name

Name

Name

Department

Institution

Date

Replace with
your Logo

**Replace this box with key image to introduce
talk's scope, importance, or background**

A common error in the beginning of scientific talks is to leave the audience behind



Atmospheric Mercury Depletion Events (AMDEs) in Polar Regions During Arctic Spring

Stuart Apple, Kerry Cho, Dale Gray

Environmental Engineering Department

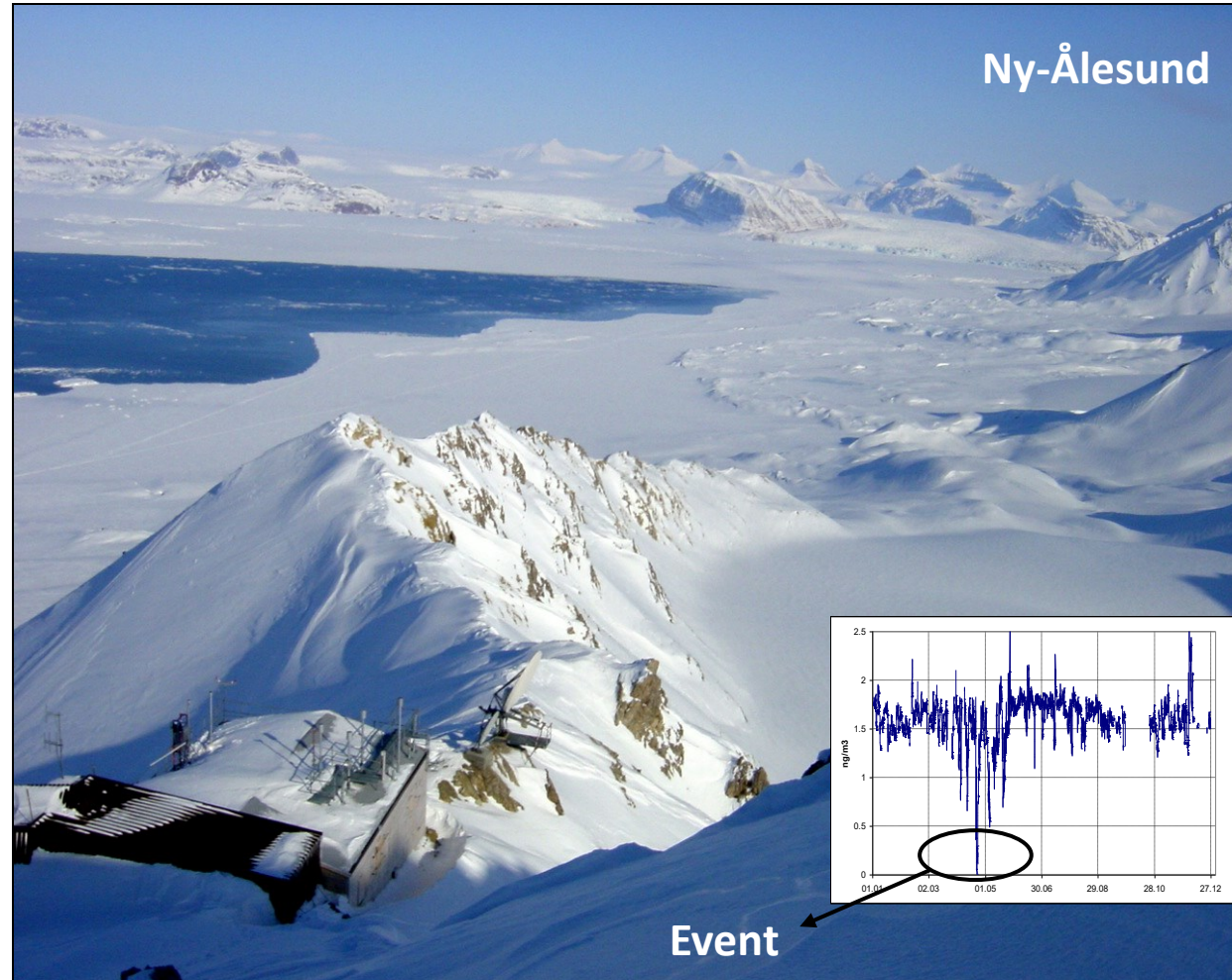
22 October 2011

Determining Whether Atmospheric Mercury Goes into Surface Snow after a Depletion Event

Katrine Aspmo
Torunn Berg
Norwegian Institute for
Air Research

Grethe Wibetoe
University of Oslo,
Dept. of Chemistry

June 16, 2004



**This presentation focuses on... (complete sentence,
but go no more than two lines)**

**Image for
Topic 1**

Topic 1

**Image for
Topic 2**

Topic 2

**Image for
Topic 3**

Topic 3

A common error in the mapping of scientific talks is to show a list that is not memorable

Outline

- ▣ Introduction
- ▣ Background
- ▣ Theory for Hg Cycling
- ▣ Measurements from Station
 - Atmospheric Hg
 - Surface Snow Hg
- ▣ Environmental Implications
- ▣ Conclusions
- ▣ Acknowledgments
- ▣ Questions

This talk traces what happens to mercury after it depletes from the atmosphere in arctic regions



Theory for mercury cycling



Measurements from Station



Environmental implications

**This sentence headline makes an assertion on the first topic
in no more than two lines**

Image(s)
supporting
above assertion

If necessary, identify key assumption or background for
audience—keep to two lines (18–24 point type)

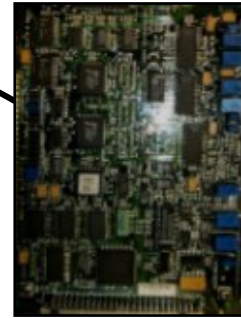
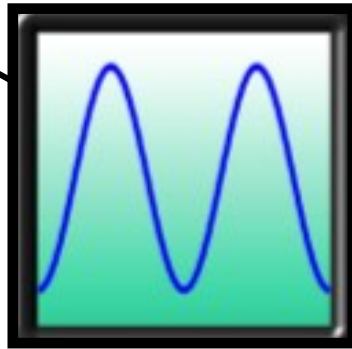
Digital Acquisition System Sampling

- Vibration measured by accelerometer
 - Analog voltage produced
 - Sinusoidal shape
- Analog signal converted to digital signal
- Signal sampled at a specific rate
- Rate \rightarrow high enough to retain analog shape

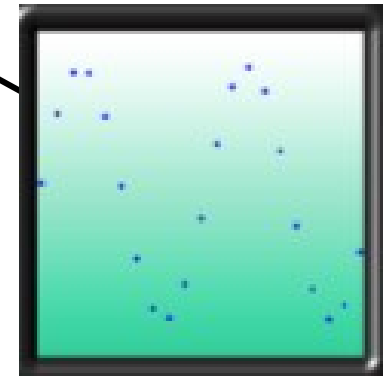
A digital acquisition system has to sample at a rate fast enough to retain the shape of the analog signal



**Measurement
Device**



**Analog-to-Digital
Converter**



Fragments quickly outpace the blast wave and become the primary hazard to personnel



Tsunamis cause devastating destruction, especially to sparsely vegetated areas

Before



After



2004 Indian Ocean Tsunami: Gleebruk Village, Sri Lanka

This sentence headline makes an assertion on the second topic in no more than two lines

Call-out, if necessary: keep to one
or two lines

Call-out, if necessary: keep to one
or two lines

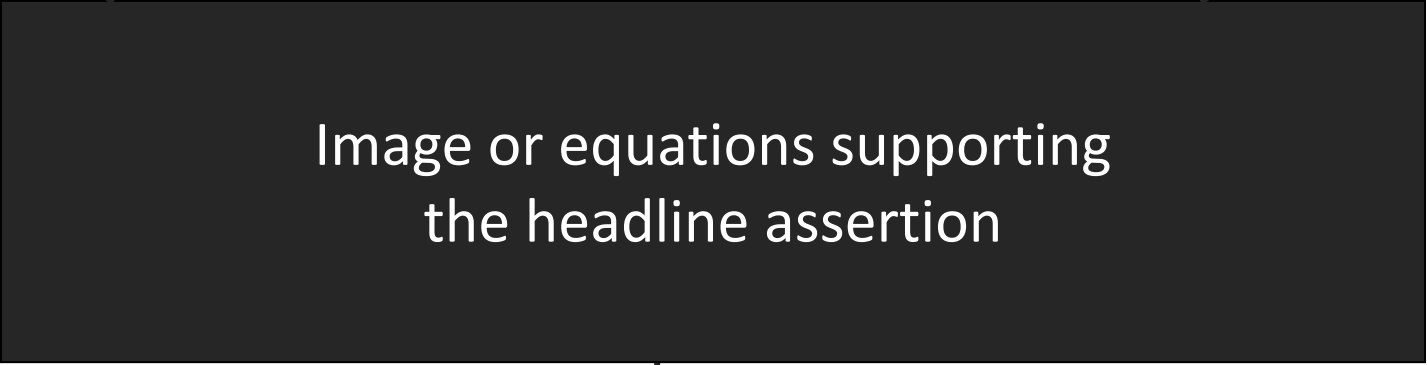
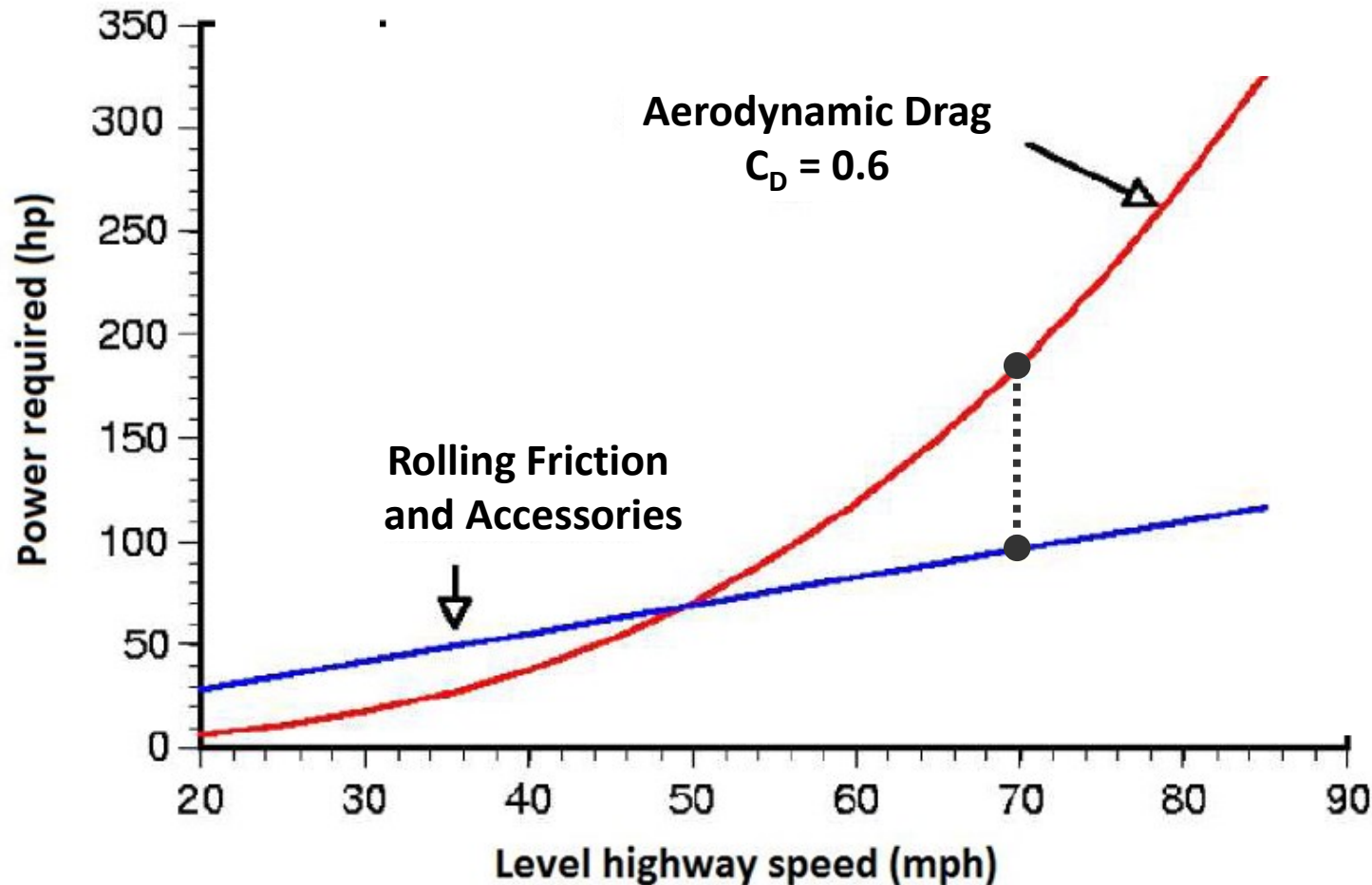


Image or equations supporting
the headline assertion

Call-out, if necessary: keep to one
or two lines

At typical highway speeds, overcoming drag requires about two-thirds of a truck engine's output



Normalized friction factors and Nusselt numbers correlated our data with the data of others

Pressure Taps



Pressure Drop

$$f = \frac{dP_{tap} \cdot D_h}{2 \cdot \Delta x \cdot \rho_{air} \cdot u_{bulk}^2}$$

Venturi Meter

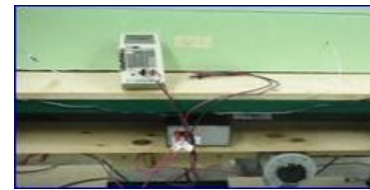


Reynolds Number

$$f_0 = 0.046 \cdot \text{Re}^{-0.2}$$

$$Nu_0 = 0.023 \cdot \text{Re}^{0.8} \cdot \text{Pr}^{0.4}$$

Voltmeter



Heat Flux, q''

$$Nu = \frac{h \cdot D_h}{k_{air}}$$

Thermocouples



T_{inlet}

T_{wall}

T_{bulk}

h

**This sentence headline makes an assertion
on the third topic in no more than two lines**



Image supporting above assertion

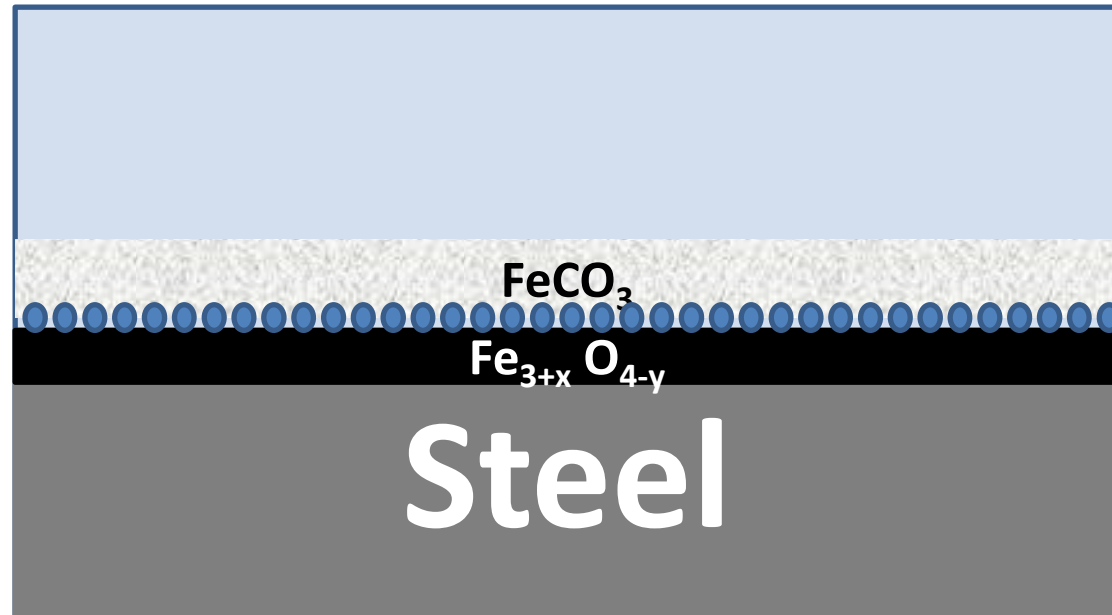
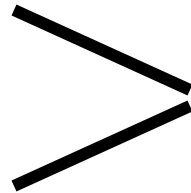
Feature or call-out—no more
than two lines

Feature or call-out—no more
than two lines

High concentrations of acetic acid help protect steel from corrosion

Adsorbed HOAc allows the growth of siderite

A thick siderite layer protects the steel from corrosion



In summary, this sentence headline states the most important assertion of the presentation

Supporting point (no more than two lines)

Another supporting point (parallel to the first)

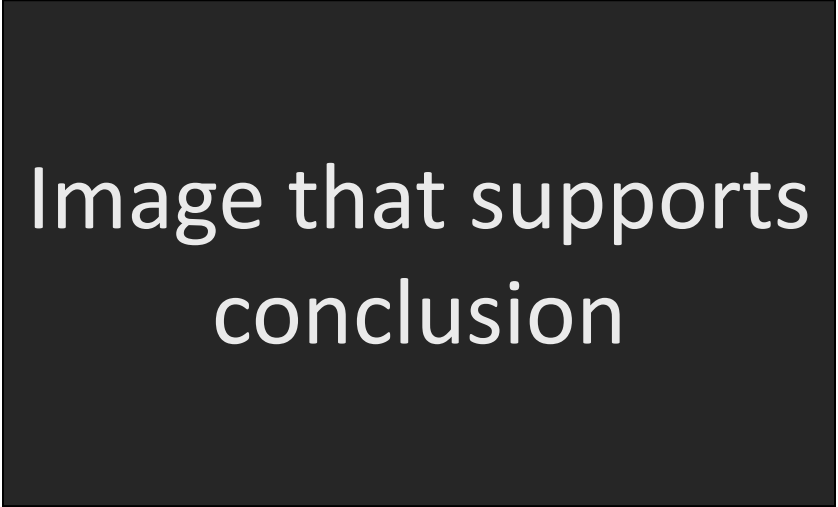


Image that supports conclusion

Questions?



Logo

A common error in the endings of scientific talks is to waste the last slide



Questions ?

June 23, 2008

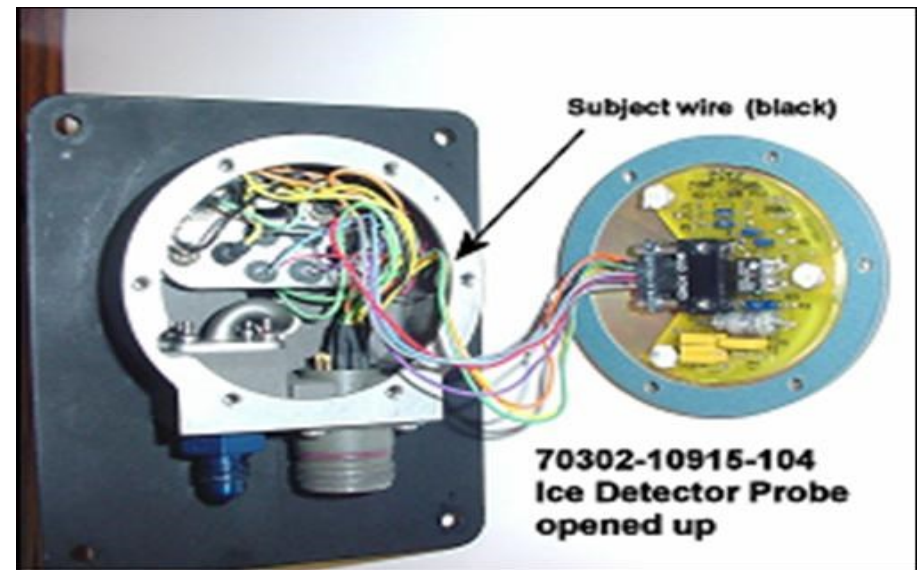
2008 ASEE Annual Conference -- Pittsburgh

In summary, the detector failed because of a short-circuit created by the abrasion of wire insulation

Wires not harnessed to prevent contact with housing



Short circuit to ground created where wire contacted housing



Questions?



Sikorsky
A United Technologies Company

**No need to be religious in using assertion-evidence;
Rather, I want to open up your minds to new possibilities**

- **Look here, I'm using a bullet point. It's not a sin. 😊**
- **Regardless of which format you choose, there are takeaways**
- **Takeaway 1: Organize around messages, not topics**
- **Takeaway 2: Title should express message for whole slide**