2011 WIND RELIABILITY WORKSHOP
August 2-3

Blade Vital Signs - Ongoing Inspection, Repair and “Tune-up” Strategies
What do we know about blade health?

Challenges
- What are we looking for?
- Difficult to see blade defects at a distance
- Tower height and blade surface area

Access Methods
- Rope access
- Cranes
- Suspended scaffolding
Blade Inspection Techniques

External
- Visual
  - From ground with optics
  - Up close and personal
- Non-Destructive-Testing (NDT)
  - Tap testing
  - Advanced NDT to detect known serial issues
- Conductivity Testing (Lightning Protection)

Internal
- Confined space issues affect time and cost efficiency

Proper documentation of findings
Cradle to Grave Mentality

Obsolescence

20+ year life

we keep it turning
Ignorance may be bliss, but...

Examples of blade damages
Are blades and environmental conditions matched properly?

Buyer awareness

- What challenges does a specific site present?
- Are blades leading edges protected?
Preparedness

Once operational:
- The first two years are a crucial baseline of wear and tear
- Inspect externally and internally
- Document all results
- Utilize a service company that can assists with findings
Prevention

After inspection:
- Analysis of data to determine a repair priority
- Repair
- Document all repairs
Proactive

Pre end-of-warranty inspection
- Inspect externally and internally in advance so warranty claims may be made on time

Post warranty inspection at regular intervals
- Both internal and external every two years is suggested
Tune Up Strategies
Lessons Learned

– Improved blade quality through positive feedback loop
– Regular inspection and repair strategies
– Site specific considerations
  • Rain, ice, dust, salt, lightning, wind shear, etc.
– Blade leading edge protection
– Increasing output with tune-up or enhancement strategies
– Sharing blade condition data with Sandia’s BRC
Thank you for your attention!

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