



XRF-Wear

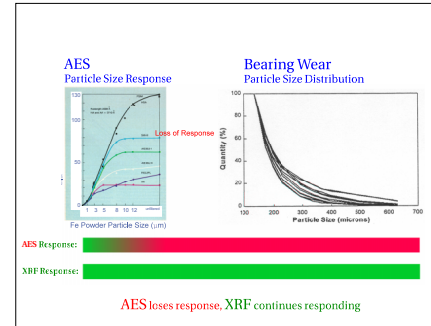
"A near-term technology with long-term early warning"



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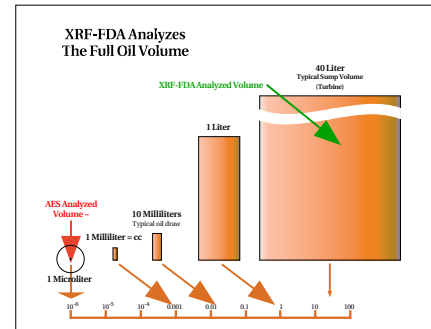
XRF and Particle Size

Bearing failures produce small masses of small particles and large masses of large sizes
AES sees only small particles (<10 um)
XRF sees all sizes
small signals from small sizes
large signals from large sizes



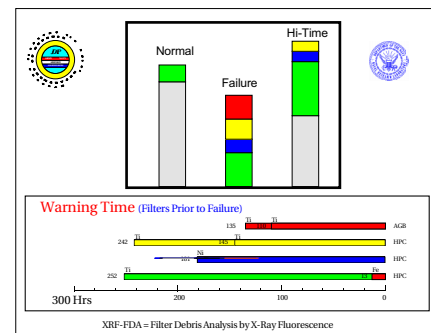
XRF and Sensitivity

Oil volume is many gallons
AES measures only microliters
XRF-Wear monitors the entire oil volume
XRF detects several atomic layers over 1 cm sq
--better than machining tolerances



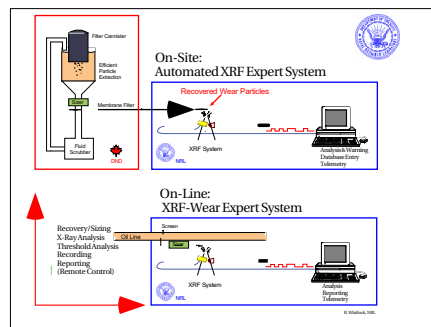
XRF and Warning

XRF detects wear-related failures
XRF identifies normal engines
XRF has seen failures well over 100 hrs in advance
XRF advanced failure warning is not available to methods lacking chemical analysis capability



XRF and Automation

XRF-Wear On-Site and On-Line
automated machine-type wear profiling
automated data capture, analysis, and warning
automated reporting



For full presentation, contact R. Whitlock