Written by Ken Bannister, Contributing Editor
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Ken Bannister, Contributing Editor The most successful series on television these days is the CSI (*Crime Scene Investigation*) franchise. Modeled on the classic Sherlock Holmes "whodunit" format, this modern series uses a seductive mix of cutting-edge forensic technology and common sense to quench our quixotic need to provide simple answers and solutions for complex problems. (OK…I admit it…I'm a CSI junkie!)

Over the past few years working with my Maintenance clients, I've conducted many informal "water cooler" polls, trying to learn which CSI program is favored most and what attracts so many maintainers to regularly watch these shows. Apart from morbid curiosity as to how each week's victims meet their demise, the majority of respondents point to the series' attention to crime scene details as its most compelling aspect. That's not too surprising, when you consider how a maintainer conducts troubleshooting.

Whenever a system or component fails, it leaves behind an evidence trail that will lead not only to the failure cause, but to a strategy to help you understand and/or predict and prevent future failure events. Even though we CSI junkies know we must "protect the crime scene at all costs," in our haste to "keep the equipment running at all costs," we often destroy the "crime" scene and either contaminate or throw out the evidence. Sound familiar?

I submit that we all are "failure scene investigators" (FSIs) within the Maintenance profession—*that we all are responsible for equipment reliability through better understanding of equipment failure.*
If we are to reduce our levels of maintainability while increasing both availability and reliability, we must follow the CSI lead and investigate all equipment failures via a systematic approach, much like the seven-step approach below:*

1. ***Secure the scene.*** Work with Operations to perform a quality evaluation of the failure before beginning repairs and/or restarting the equipment.
2. ***Photograph the scene.*** The old adage that "a picture is worth 1000 words" could not be truer in a failure investigation. Photos allow the scene to be revisited well after the equipment is back up and running, and act as good training materials for preventing future failures.

3. ***Perform on-scene forensics.*** The Maintenance/ Reliability group can perform many technical diagnostics at the failure scene, including infrared signatures, oil analysis signatures, etc.
4. ***Bag and tag all physical evidence of failure or tampering.*** Once all local physical evidence of tampering and breakage has been photographed, bagged and tagged, the actual failed components can be dismantled and replaced. Any parts for repair must be photographed, and any parts requiring replacement must also be bagged and tagged.

5. ***Interview witnesses.*** Operators can describe any abnormal sound, smell or vibration emanating from the equipment prior to failure.
6. ***Perform laboratory forensics.*** Examine all past failure records and vibration readings and conduct necessary metallurgical and oil testing.
7. ***Analyze findings.*** Write up the FMEA report and recommendations and distribute to the appropriate audience.

Taking a CSI-inspired approach will enhance your reliability program while adding new value to your predictive toolset. Good Luck!

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*Adapted from materials for "Achieving Reliability Through Effective Failure Scene Investigation." ©

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