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HOW TO MEASURE – AND IMPROVE – LABOR

## SAFETY FIRST

BY DR. TONY KERN

**"THAT WILL NEVER WORK"** 

THE EVOLUTION OF A TECHNICIAN BORN – TECHNICIAN DESIGNED APPROACH TO SAFETY AVIATION MAINTENANCE NEVER EVENTS®

In the summer of 2012, the President and CEO of a major US insurance company contacted me with a challenge. An Original Equipment Manufacturer (OEM) with a multisite maintenance network and more than 1.000 aircraft maintenance technicians, was experiencing a severe trend of technician-induced damage that had lasted nearly a decade. The events appeared to be random but were sustained, resulting in an average of nearly \$4 million per year in insurance claims. The OEM was already paying high premiums with a high deductible, but they were now approaching the point of becoming uninsurable, an unthinkable situation for an aircraft manufacturer. This is a story of how that OEM turned their performance around to create one of the strongest performing cultures in the industry.

This call was the origin of the Aviation Maintenance Never Events<sup>®</sup> program, which has now trained more than 35,000 maintenance technicians. But let's go back to the beginning — because it almost didn't happen.

To be honest, I was not an expert on aviation maintenance when I received the call. That turned out to be a Godsend, as I was not limited to trying to improve on existing error control approaches, because I didn't know anything about them.

Since I was already linked into the insurance company, I asked for all the data they had not just on this company, but on all claims of a similar nature. I was astonished to see the scope of the problem. Then I



went out to other insurers and asked to get a look at their data, which they graciously shared with me after stripping out the client names. This is where I discovered that the challenge of technician-induced damage around the world was somewhere in the range of \$20 to \$40 billion dollars per year. Hundreds of hours of research later, we had identified seven specific events that caused over 90% of this damage. We decided to call these "Never Events" because they all appeared to be 100% preventable. Here they are: **Wrong Person** — Pressure to perform to demanding schedules was leading to under-qualified maintenance completion, inspections and signoffs — resulting in delays, rework, expensive repairs and all too frequently, a non-airworthy aircraft being released to fly. Additionally, we discovered how the "right person" can become the wrong person through fatigue, distraction, or lack of proficiency.

**Wrong Part** — Acceptance of subpar, over-timed, or expired materials, and reuse of single-use components



was causing more expensive and serious problems. But that was only one piece of the puzzle. Improper installation errors were also causing serious problems, so we included that as a second element of Wrong Part events.

**Wrong Fluid** — Fluid errors and improper lubrication often resulted in major cost incidents due to complete system contamination. On more than one occasion, this had also resulted in the tragic loss of an aircraft and all on board.

**Improper Movement** — Ramp rash incidents were estimated to cost the aviation industry at least \$5 billion annually. There was a need for heightened awareness of surface control movement, equipment movement, communications, and movement protocol to raise awareness and employee defenses to these events.

**Lost Tool or Item** — Lost tools or other misplaced common-use items were a key contributor to the estimated \$4 billion lost annually due to FOD damage. Tool controls were often in place, but not rigorously adhered to. Personal use tools were also a problem.

**Unsecured Panels** — Improperly secured panels, doors, cowlings, and caps are one of the most embarrassing — and most preventable — technician errors. We needed to teach memory and briefing techniques for task handoffs and shift changes to virtually eliminate this problem.

**Improper or Incomplete Inspection** — The final event was the catch all — we discovered that improper or incomplete inspections were not all that uncommon. As the last chance to catch a previous error, this was a key focus area.

We also found that documentation issues ran through all these events, so we focused on that as well. The following graphic explains the approach.



The next step was to talk to line technicians, to see what they had to say. I soon discovered that these young men and women were natural problem solvers. The bolt from the blue came when one 28-year-old maintenance SAFETY

**Major OEM Insurance Losses** 



supervisor suggested we simply tell the technicians what the events were and let them work it out.

It couldn't be that simple. Or could it?

When we took the idea to the company management the response was less than enthusiastic. After all, they were aware of the problem and had been working on it for years. They had tried all the traditional means — disciplining the guilty parties, adding layers of supervision, developing new procedures and polices - nothing had worked. I recall the senior executive in the room's body language when I proposed our solution, but if I had misread him, it didn't take long for him to clear up his thoughts on the idea."That will never work," he said with conviction."Bring me something that will."

It was the last few words of my earlier conversation with the 28-year-old supervisor that was the breakthrough, "Let them (the line technicians) work it out." We expanded our plan to four simple steps.

- 1. Train the technicians on the seven events. Just what they were, not what we thought caused them.
- 2. Ask them to rank the events in two ways, most likely to occur, and how often they occur.
- 3. Ask them if they were to occur, to them, in their location, on their next shift, what would be the reasons?
- 4. Feed these insights back into the company to fix.

This time, the response from managers was a bit warmer, but not much. With tepid approval, we launched the first generation of the Aviation Maintenance Never Events® program. We were not prepared for what happened next.

During the initial training, we captured digital data on the "most

likely" and "how often" questions and provided cards for each Never Event to get technicians to write down their insights on why these events were occurring. Following the first round of training for 500 technicians, we had more than 4,000 comments to analyze. As I said before, maintenance technicians are natural problem solvers, and they were thrilled to be asked for their insights.

AMNE Comment Cards. Maintenance line technicians have a lot to say, if we take the time to ask them.

Armed with new insights and lots of relevant data, the training was revised, and the company went to work, making sure to include line technicians and supervisors in crafting new solutions. This reduced change resistance and the world got better, fast. After a decade of struggles, this organization did not have a single insurance claim for technician-induced damage for the next eight years.

## SAFETY

Losses before and after AMNE Training. Source: Major Insurance Company

The ROI for this effort continues to grow every day a mishap is avoided. Based solely on the insurance payouts that were routine for a decade before this program was implemented, the ROI of this single effort is currently over \$36 million.

With each new set of technician input, the AMNE program has matured and is now in its 5th generation. We continue to leverage



line technician insights to evolve the concepts which now include targeted micro-briefings before critical steps, monthly two-minute videos on important topics, posters, and followon training to keep the information top of mind.

Celebrating the Aviation Mechanic All of this came to be because this group of under-appreciated (and too often overworked) group of smart men and women had a chance to engage and do what they do best —

solve problems. My perspective had always been from the cockpit, where I showed up to an aircraft and flew with little thought of the thousands of hours of effort that went into making my bird airworthy and safe. No more.

After a decade of working closely with technicians, supervisors, and managers, I am reminded of an old poster that said, "We have done so much, with so little, for so long, we are now qualified to do anything with nothing." Its high time we recognized, rewarded, and adequately prepared these fantastic men and women for the challenges they face.

From our little corner of the world, we decided to declare 2022 as The Year of the Aviation Mechanic, celebrating these young professionals for what they do and who they are. This effort will culminate this September with a daylong virtual celebration featuring some of the finest minds in the aviation maintenance industry. Not surprisingly, there are a lot of them with wisdom to share.

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