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INDUSTRY-GOVERNMENT GROUP SHOWS HOW TO INSURE THAT OEM INSTRUCTIONS WORK FOR YOU

DR. BILL JOHNSON

About the Author: *Dr. William Johnson is the FAA Chief Scientific and Technical Advisor for Human Factors in Aircraft Maintenance Systems. His comments are based on nearly 50 years of combined experience as a pilot/mechanic, airline engineering and MRO consultant, professor, and FAA scientific executive.*

"Failure to use technical documentation" continues to be the #1 challenge in aviation maintenance. There are many factors that contribute to the challenge ranging from corporate culture, to forgetfulness, to issues with the usability of written instructions/procedures. This is not the first time I have written about technical documentation. It won't be the last!

The Commercial Aviation Safety Team (CAST) is an Industry-Government organization that reviews data to ensure continuing aviation safety. CAST not only evaluates the feasibility of safety intervention strategies but also creates and evaluates specific action plans. One type of activity of cast is the establishment of action-oriented Safety Enhancement (SE) groups. The SE 170 group was formed in response to the 2001 Alaska Airlines Accident which stemmed from the apparent complexity of servicing the horizontal stabilizer jackscrew on the MD-83 aircraft. The group studied ways to ensure optimal communication between maintenance organizations and Original Equipment Manufacturers (OEM) and Design Approval Holders (DAHs). There will be at least two reports, that are in the final stages of production. One will be a CAST Committee Report and the other will be published as ATA Spec 119. Their likely recommendations are summarized here.

The CAST SE-170 group responded to the common complaints like:

"When it is difficult to understand the written procedures I don't use them."

"Complaining about the instructions does not help."

"When the documents are difficult to understand I

don't know who to call. I don't want to look stupid."

"It takes too long to get a document changed."

While users complain about the documentation revision process the company engineering department, the OEMs, and the DAHs are begging to get meaningful feedback so they can modify and validate problematic documentation. There seems to be a disconnect between users and those who write and revise documents. – "What we got here is failure to communicate" (From the Captain in Cool Hand Luke).

The SE-170 committee identified five major challenges and summarized recommendations as shown below. I took the liberty of simplifying some of the SE-170 report language and also attributing action to the responsible parties including:

- OEMs/DAHs
- Mx Engineering Organizations (MxO)
- Individual maintenance personnel (AMT)
- Aviation safety inspectors (ASI), who should monitor process.

Challenge 1. Insufficient or poorly executed operator processes for identifying and documenting problems or difficulties with maintenance tasks. It appears that many organizations do not know how to get poor instructions corrected or that they do not train one another to use the existing system to make documents correct and more usable. In some cases it may be better to consider changes to

the procedures, tools, or training as opposed to merely rewording a document. Reviewing the documentation is a good place to start to understand the challenge.

Solutions:
The aviation industry must develop and reinforce a culture that all mechanics work to the operator maintenance instructions, which are based on OEM/DAH maintenance instructions. (ALL)

The mechanic should understand that the carrier or MRO has a program for reporting and resolving problems with maintenance procedures. (AMT, ASI)

Reports about procedures and documentation must be perceived as a positive contribution from maintenance personnel. (ALL)

Operators should develop or reinforce a procedure for mechanics to report any problems following maintenance instructions. (MxO, ASI)
Operators should develop or reinforce a procedure for providing feedback to the mechanic on the resolution to the problem that they reported. (MxO, ASI)

Challenge 2. Need improvements in operator processes for reporting back to OEM/DAHs on maintenance task problems (including difficulties in performance or verification of task completion). This challenge is an extension of the first challenge but is more of an issue between the maintenance organization and the document provider. The instructions are sometimes unclear about whether a procedure has been completed and validated.

Solutions:
OEM/DAHs maintenance instructions providers should have a communication system that allows rapid reporting of safety related problems with maintenance instructions. (OEMs/DAHs, ASIs)

When the operator maintains work instructions they must have document revision systems comparable or exceeding that of the OEM. (MxO, ASI)

When mechanics find a better way to complete a task then that should be reported, for the sake of efficiency and safety. Why not improve the documentation? (AMTs, MxO, ASI)

All document revision systems must provide rapid feedback to the maintenance personnel and immediate assistance as necessary. (MxO, ASI)

All workers should know who (name and phone #) to contact to report a documentation issue. (AMT, MxO, ASI)

OEM/DAH's should respond as quickly as possible to any operator report regarding a safety-related maintenance instruction problem. (OEM/DAH, ASI). This response could be in the form of:
  • An acknowledgement of the receipt of the report and a description of the corrective action plan;
  • No action on the part of the OEM/DAH is required, but the operator may need to provide awareness or a recommendation for training;
  • A change to a maintenance instruction, to tooling, or to maintenance instruction usability.

Challenge 3. The OEM/DAH processes for reviewing and responding to these safety-related operator maintenance issues is not transparent or fast enough. It must be improved.

Solutions:
OEM/DAHs and operators should have a process in place to identify and rapidly respond to emerging issues and concerns regarding maintenance instructions that may cause a safety-related problem. (MxO, OEM/DAH, ASI)

Increasing quality and frequency from operators will promote development of a faster response system. (ALL)

Challenge 4. OEM/DAH is not clear regarding the kind of information and format that operators should use to report documentation issues. OEMs/DAHs must be specific about the kind of information and format of reports. They must provide an intuitive method to report information. Make it easy to report and there will be more reports.

Solutions:

Maintenance personnel must know what kind of problems to report. (OEM/DAH, MxO, ASI)

Maintenance personnel must know the best format for reporting perceived challenges with procedures and instructions. (AMT)

Operators should implement a practice of submitting reports, regarding safety-related issues, using the OEM/DAHs designated format. (ALL)

Challenge 5. OEM/DAH documentation changes are not transmitted well and are not comprehensive enough to ensure that the fix considers not only the documentation but also considerations as task complexity, accessibility, tooling and other factors.

Solutions:

The OEM/DAH should partner with the operator or maintenance providers to validate procedurally complex maintenance instructions, including an evaluation of the task and the environment in which it is performed. (OEM/DAH, ASI)

The OEM/DAH should incorporate human factors principles and techniques in the development of maintenance instructions and the maintenance task itself. (OEM/DAH, ASI)

What is the Next Step?

After a careful review it becomes obvious that the SE-170 recommendations are not necessarily bold and innovative. All of these things have been said before. They are as sacred as "motherhood, apple pie, and baseball." Nevertheless, the recommendations remain relevant and valuable. Mechanics still fail to

follow the written documentation every day. Many, including writers and maintenance engineering departments, would insist that they already follow the

recommendations. However, reports to the NASA Aviation Safety Reporting System and through the FAA Safety Action Program suggest otherwise.

This industry can affect change with increased leadership commitment. That must include industry leaders, from management and labor. It must include regulatory leadership and management motivation to guide safety inspectors to focus on ways to ensure the continuing quality of the documents and the document update process. The industry must continue to strive to ensure that documents are written and delivered in a way that today's workforce will increase their respect, reliance, and compliance.

Advanced document delivery technologies, with embedded communication systems, should make it easier for users to note difficulties and to add those "work-arounds" that are common place in the industry. Such technological approaches already have significant application in many other maintenance industries. When the work force sees that their recommendations can make a difference then the SE-170 recommendations will blossom.

Finally, the most important impact on the quality and application of documentation is the aviation maintenance technician. They must refuse to accept instructions that are difficult to understand and use. They understand how work is conducted on the flight line, hangars, and shops and the documents must reflect real-world working conditions. They must insist on timely responses to their recommendations. As that happens, the documentation culture can evolve to one where mechanics get the job done because of great procedures rather than in spite of the procedures.

# The Aging and Obese Workforce, Latent Medical and Environmental Conditions

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About the Author: Dr. Allen is a retired navy physician specializing in preventing health effects due to workplace exposure. His career in the Navy focused on care of workers at shipyards and air rework facilities. He is the author of "Working Healthy" and offers the training course ALC-117 on WING to prevent occupational illnesses and injuries. Dr. Allen resides in Wilmington, DE and can be reached either as a FAASTeam representative or through his web site **www.workinghealthyalways.com**.

Aviation safety involves management of risk. In the early days of flight, mechanical integrity of the airplane was a recognized risk. Over time, innovations and a disciplined workforce greatly reduced this risk. Safety Management Systems (SMS) collect data that allow operators to intervene with safety solutions that are efficient and timely for their operations. Public health data is generally not part of an SMS. Recent alerts from these authorities suggest that the SMS may have to recognize the new workforce trends as an emerging risk factor to aviation safety.

A casual view of aviation maintenance or general industry workplaces confirms reports from public health authorities. More older and full sized (medical term obese) workers are in the workforce. What is the significance of this finding? Let's look at public health data that focuses on trends, rate of nonfatal occupational injuries and illnesses, and specific risk factors. The intent is not to overwhelm you with numbers; but rather, to suggest that the SMS should include information about the skilled aviation workforce.
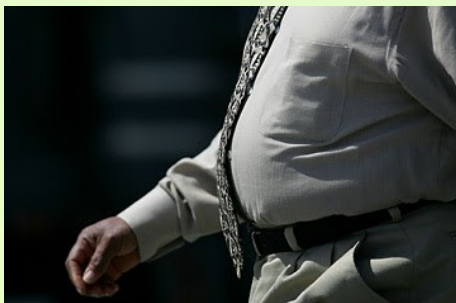
Two definitions are important. Older workers are those aged 55 years and over. Obesity represents a Body Mass Index of 30 or greater. For a visual reference, a 6 foot adult who weights over 223 lbs. is in the obese category.

First let's look at trends. Both the percentages of obese workers and those over 55 years have changed over a short time period. In 1996 no states had more than 20% of their population in the obese category. By 2007, 49 states had at least 20% of their population in this category. Among all workers, the national average is 27% in the obese category (1). Aging of the workforce shows similar trends. In 2009 older workers represented 19% of the workforce with their portion of the workforce projected to grow to 25% by 2018 (2). These predictions are consistent with industry reporting the average age for Aviation Maintenance Technicians (AMT) as 53 years in the US, 58 years in Australia, and youthful 45 years in Europe (3).

The public health view of the aging workforce uses statistics from the Bureau of Labor Statistics (2). The parameter is the occurrence of non-fatal injuries and illnesses calculated from employer reports of injuries and illnesses that meet record keeping requirements for OSHA. Older workers had similar or lower rates for all injuries and illnesses compared with younger workers. Where older workers differed from their younger co-workers was in the length of their absences from work following a non-fatal injury or illness. Those in the 55 to 64 age group experienced 11 days median off work while workers older than 65 required 12 days median for recovery. Another interesting finding is gender difference. Older male workers accounted for 55% of injuries and had longer absences from work compared to females, median 14 days versus 9 days respectively.

Types of injuries differed depending on the age of workers. The older workers had lower injury rates than workers of all ages for sprains, strains and tears. On the other hand, their rates for fractures and multiple injuries were higher than their younger co-workers. Important to understand is that these age-related statistics do not reflect the

exposures that mechanics of all ages receive in the work. In morbidity studies conducted by both telephone interviews and employer reported injuries, AMT have nonfatal occupational injuries and illness above the average rates for all private industries.

The public health view of obesity in the workplace also shows specific characteristics. More obesity is found in older workers, males, and those with less education (4). Obesity is associated with specific occupations (1, 4). Both state and national health interview surveys indicate that motor vehicle operators, workers in other transportations, workers in cleaning and building services, material-moving equipment operators and workers in protective services were most likely to be obese (4). Physical activity in the workplace reduces obesity of workers. Weight loss of 5% to 10% of initial weight reduces cardiovascular risk and delays development of type 2 diabetes (5), two conditions that impact the work of the AMT.

Public health statistics provide a retrospective view of what has happened. An SMS needs a predictive model oriented toward future hazards. Aging, obesity and exposures have medical consequences. Aging produces a decline in visual acuity, especially near vision, and reduces hearing. Obesity increases the muscular skeletal conditions such as limitations in shoulder and back movements. Obesity also increases the risk of diabetes, a condition that can reduce vision and tactile sensation in the hands and feet. In their work processes AMT use vibrating tool and solvents which can decrease sensations in their hands. A new term, Latent Medical or Environmental Conditions (LMEC), reflects these medical consequences.

LMEC refers to physiologic limitations experienced by the AMT that originates from abnormal medical conditions, normal aging, and occupational

exposures. It is not a catch-all term for unknown conditions. Like any element in an SMS it can be measured and evaluated in terms of standards. LMEC are a type of human factor limitation associated with aviation risk.

Why should an SMS collect information about LMEC? The answer is that appropriate information allows control of risk from a human factor type maintenance error. Consider the AMT who must visually inspect aircraft for fine cracks, coordinate their work by hearing spoken communications, and use their tactile sensation when making repairs. LMEC will limit an AMT's performance of these tasks. LMEC do not cause an active maintenance effort; rather, they form a link in the chain of events leading to the error.

The workforce is changing. Public health agencies urge action (6) and their statistics suggest LMEC from continuation of these changes. The challenge is to incorporate appropriate information into an SMS to manage the risk from LMEC. In the next issue we'll examine more closely data items for specific types of LMEC.

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MY PERSONAL EXPERIENCE OF MANAGING FATIGUE ON THE GRAVEYARD SHIFT

MAGGIE MA, PH.D.

About the Author: Dr. Ma is a Certified Human Factors Professional (CHFP) at The Boeing Company. She has over 10 years of experience in conducting applied human factors research to improve aviation safety through developing various safety programs. She has worked closely with airlines, manufacturers, maintenance organizations, ground service providers, and regulatory agencies in both US and China.

As a human factors professional, fatigue risk management has always been one of my favorite subjects to discuss at training workshops. The topic always sparks a lot of interest simply because people find it relevant both at work and at home. Being an industrial engineer by training, I had never worked second or third shift until I volunteered to work at the Boeing 787 Operations Control Center (OCC) in Everett, Washington this past March. Prior to this assignment, my exposure to fatigue and sleep deprivation was limited to the few late nights before finals in college and the first few months after my son was born.

The 787 OCC operates 24/7 to facilitate entry-into-service of the Boeing 787 fleet and help customers address Airplane on Ground (AOG) situations and other less urgent operational issues. Representing my division, Maintenance Engineering, I was scheduled to work fourteen 12-hr shifts at the OCC in a combination of first shift (5AM to 5PM) and second shift (5PM to 5AM) for the duration of one month. I chose to work all fourteen second shifts for personal reasons so that I would be able to take my three-year-old son to preschool in the morning and drive him to activities on weekends. My shifts varied from two to five shifts in a row across the weekdays and weekends.

Some things went as planned:

I practiced what I have been preaching regarding fatigue risk management for the shift work. For example, on an ideal weekday, I would get off my shift a little after 5 AM, arrive home around 5:45AM, and go straight to bed. I used window blinds, an eye mask, and ear buds to keep the sleeping environment dark and quiet. The challenging part was that I had to wake up to the alarm clock or was awakened by my son only 1.5 – 2 hours later. I got up around 7:30 – 8 AM to help my son get ready for school and then dropped him off by 9 AM. After I returned home, I spent some time doing chores around the house and preparing two meals for the next shift. Then, I ate lunch and went back to bed around 11 AM and woke up by the alarm clock around 3PM. Due to the rush hour traffic, although the second shift would not start until 5 PM, I had to leave the house around 3:45 PM. On a good day, I got about 6 hours of sleep, two hours short of the normal sleep I need each night. A twelve-hour shift plus a total 2-hr commute time certainly made the days appear to be so long, especially when operating on 6-hours-per-night of sleep. I was able to break the sleep into two segments and did not have much trouble falling asleep during the day since I was very tired.

After I arrived at the OCC each afternoon, I drank a 20 oz. coffee around 5:30 PM. I ate one meal around 7:30 PM and a second one around 4 AM, so when I got home I could go straight to bed. It definitely felt strange at first that my stomach was growling but my brain would question, "What?! Breakfast at 4 AM?" Overall, I felt alert and did not feel too sleepy on the job despite it being very much a desktop job at the OCC. Only one night out of the fourteen shifts required me to get a second cup of coffee in the early morning. I attributed my ability to maintain a reasonable level of alertness to the fact that I slept until a couple of hours before the start of my graveyard shift and practiced the following techniques on the job: e.g., using caffeine only when really needed, getting up and walking around from time to time, talking to colleagues, varying the tasks to avoid getting bored, and drinking plenty of water.

Things did not go that well:

I was not surprised to notice that I struggled to keep my eyes open on the drive home after the 12-hour shift, which was expected. One thing surprised me is that during those early morning hours, my perception seemed to function in a less logical way. Suddenly, I became afraid of walking down a long, but familiar hallway to use the restroom or kitchen, although the fear was invalid and unreasonable because the whole building was securely locked, and a roomful of people at the OCC were just down the hall. Willpower seemed to follow the circadian rhythm and took a nose dive after midnight, which explained why almost every day somebody brought in donuts and other sweet treats, and people snacked on them addictively.

Our Circadian Sleep Wake Clock
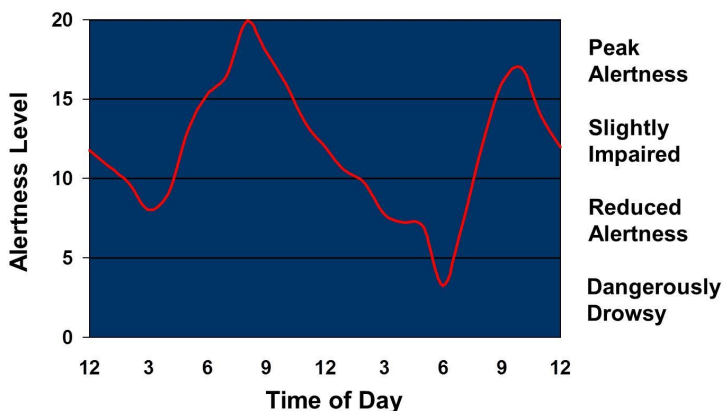
Weekend shifts turned out to be the most difficult ones because my son demanded attention and interrupted my sleep. On one extreme occasion, after coming off a 12-hr graveyard shift, I had barely 2 hours of sleep before I had to head back to work. I tried to address this challenge proactively by hiring a babysitter and recruiting my dad to help. A couple of times, my son happily went to the nearby playground and public library with the babysitter and Grandpa, and I was able to get some sleep. Other times, he refused to do anything or go anywhere without mommy. Of course, I felt tremendous guilt looking down at the wailing child who clung to my leg. It did not help when I tried to reason with the three-year old and explain why mommy needed to get back in bed to

sleep instead of playing with him. Surely, when I was tired, patience ran out quickly and I caught myself raising my voice. Then the 3-year-old looked at me and said "Mommy, you are not being nice right now." I was physically exhausted as well as furious at the fact that I was not able to rest properly.

I experienced the "March Madness" first hand this year. In addition to the OCC assignment, I had to work overtime on several occasions during my off days due to prior work commitments. I also helped to organize my lead's retirement celebration. Totally depending on Outlook calendar as usual, I literally carried a binder with all my appointments color coded, so I would not forget anything. Fortunately, there were no major schedule or work performance glitches. I might not be so lucky if I had to keep working graveyard shift at the same workload level any longer.

Summary

When I walked out of the OCC after my last graveyard shift, I had a big grin on my face. I heard myself say silently "Yippee!!!" I was glad that I had survived the graveyard shifts and I could get back to a normal, more manageable routine. Before I eventually got back into my normal schedule, for the first 4 to 5 nights after the OCC assignment, I suffered a bad episode of insomnia – I tossed and turned and was wide awake for almost the entire night.

Fatigue risk management requires education and self-discipline; however, personal responsibility and obligation often get in the way, which can be quite difficult to manage. Working graveyard shift has been an eye opening experience for me. Ever since then, when I discuss fatigue, shift work, and fatigue risk management with mechanics, I understand better and empathize more with the challenges and negative effects of shift work on mechanics.

Alcohol and Other Drugs (AOD) in Aviation Maintenance

Joy Banks, MA, LPC

About the Author: Mrs. Banks works for the FAA in the Human Factors research lab with emphasis in fatigue and Human Factors in aviation maintenance. She is a Licensed Professional Counselor in the state of Oklahoma, a retired Air Force Senior Master Sergeant, and a devoted grandmother.

Work in aviation maintenance is inherently stressful, with no room for error during time-critical emergency repairs. After your hard work, it is reasonable to look forward to your "play" time when you can relax, kick back, and maybe have a nice cold one. The motto "Work Hard, Play Hard" resonates with most of us. It promotes the virtues of a strong work ethic with a counterbalancing focus on play. However, the motto "Work Hard, Play Harder" promotes a work-life imbalance that over emphasizes excessive celebration, often fueled by alcohol and other drugs after a stressful period of hard work. So, when having nice cold one turns into having three, four, or five…you will find that too much off-duty "play" can jeopardize your ability to perform optimally when on-duty.

Using alcohol and other drugs before or after your shift can impair your ability to function on the job. Chapter 7 of the Civil Aviation Safety Authority (CASA) Human Factors Resource guidance for aviation maintenance engineers says to avoid additional drinking if you know you are required to work within 10 hours of your last drink, and if you drink, limit your consumption to two or three drinks altogether. Use this as a guide because we process alcohol differently as individuals, depending on our age, weight, gender, and overall health. If you are regulated under the FAA's drug and alcohol testing regulation, 14 CFR part 120, you cannot work within 4 hours of using alcohol.

If you've seen the movie, Flight, you know a hotshot, chemically impaired pilot's substance-abuse habit literally crash-lands him into a National Transportation Safety Bureau investigation. While I am sure that most aviation professionals are not as reckless, I questioned if AOD related incidents in maintenance were a problem. A quick query of the Aviation Safety Reporting System database (a voluntary public data repository developed by NASA) returned only nine AOD related reports. Seven of the nine narratives involved management ordering drug and alcohol testing after becoming suspicious of chemical impairment when aviation maintenance technicians (AMTs) made blatant mistakes. Just because my query returned only nine reports, doesn't mean the FAA should turn a blind eye.

According to FAA regulation, 14 CFR §120.105 and 120.215, each air carrier or air tour operator is required to test employees performing safety-sensitive functions, such as aircraft maintenance or preventive maintenance, within the United States. Testing programs can deter and detect inappropriate AOD use by an AMT which can reduce the risk for an aviation accident if that AMT is working under the influence.

Personal Assessment

Have you ever worked under the influence or worked hung-over? Could you or someone you know have a problem with AOD? To help assess, ask yourself these questions from the CAGE-AID questionnaire (Ewing, 1984).

1. Have you ever felt you should cut down on your drinking or drug use?
2. Has anyone annoyed you or criticized you for your drinking or drug use?

3. Have you felt bad or guilty because of your alcohol or drug use?
4. Have you ever had a drink first thing in the morning or used drugs to steady your nerves or get rid of a hangover?

If you answered "yes" to any of the previous questions, you may have an AOD problem. The first steps to getting help are to admit you may have a problem and then seek professional help.

By the way, not to ruin the end of the movie Flight, but that hotshot pilot finally takes responsibility for his substance abuse by first acknowledging that he has a problem and then getting treatment. Remember, your behavior during your time-off is your personal business, but you compromise the safety of others and yourself when you report to work unfit for duty.

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NOTICE: The FAA is currently considering amending its drug and alcohol testing regulations to require drug and alcohol testing of certain maintenance personnel outside the U.S. On March 17, 2014, the FAA issued an Advanced Notice of Proposed Rulemaking, No. 14-02, entitled "Drug and Alcohol Testing of Certain Maintenance Provider Employees Located Outside of the United States" (79 FR 14621). You may make comments to the proposed rule until July 17, 2014.

Line Operations Safety Assessments (LOSA) Best Practices:

Volunteers Needed!

LYNN CRAYTON

About the Author: Mrs. Crayton is a Psychology Technician for the FAA Civil Aerospace Medical Institute's (CAMI) Aerospace Human Factors Research Division, located in Oklahoma City, OK. She has worked on research projects involving selection of Air Traffic Control Specialists positions and Line Operations Safety Assessments (LOSA). Lynn received her bachelor's degree from the University of Illinois-Champaign/Urbana campus.

If you are interested in the best ways to identify and manage safety threats and errors in maintenance and ramp operations, consider using a Maintenance-LOSA and Ramp-LOSA (M & R-LOSA) database software tool. The M & R-LOSA software tool, based on Structured Query Language (SQL), is now available for organizations interested in establishing maintenance and ramp LOSA programs. The software tool allows users to enter and collect maintenance and ramp operations safety data. The data are transferred to a central repository owned by each individual organization as a comprehensive file that can easily generate reports summarizing the collected LOSA observations for future analyses.

Where to get the LOSA Database Software Package?

The M & R-LOSA database software is FREE and is an essential element to any successful M-LOSA or R-LOSA program. You simply download the software installation documents from the FAA's Human Factors in Aviation Maintenance website @ http://www.faa.gov/about/initiatives/maintenance_hf/losa/. In addition to the software, you can also get the M & R-LOSA manuals, training, forms, and marketing materials. The software package includes:

- maintenance and ramp database structures
- LOSA Administrator and User manuals
- observation forms
- threat and error codes to accompany the respective databases

Is YOUR Organization ready for M & R-LOSA?

Before you download the M & R-LOSA software tool, I encourage you to read the report titled, *Implementation Guideline for Maintenance Line Operations Safety Assessment (M-LOSA) and Ramp LOSA (R-LOSA) Program* (Ma & Rankin, 2012). In this report, they discuss two other important best practices that underlay a successful program: 1. steps for implementing a LOSA program, 2. LOSA characteristics. To create a successful program, a company should follow 11 major steps for implementing a LOSA program. These steps are:

1. Obtain senior management's buy-in
2. Form an implementation team
3. Market maintenance and/or ramp LOSA programs
4. Integrate with existing safety programs/SMS
5. Develop LOSA infrastructure, including three parallel activities:
   - Adapt/customize LOSA database
   - Conduct train-the-trainer training
   - Establish and maintain a virtual LOSA website
6. Adapt/customize and conduct observer training
7. Collect data
8. Validate data
9. Populate and maintain database
10. Analyze data and compile a report
11. Provide feedback to employees

In addition, there are 10 characteristics to ensure the integrity of your LOSA program. These characteristics are:

1. Peer-to-peer observations during normal operations
2. Anonymous, confidential and non-punitive data collection
3. Voluntary Participation
4. Trusted and trained observers

5. Joint management/union sponsorship
6. Systematic observation instrument based on TEM
7. Secure data collection repository
8. Data verification roundtables
9. Data-derived targets for enhancement
10. Feedback of results to the workforce

Want to be part of the Best Practices Study?

A study on *LOSA Implementation Best Practices* is underway at the FAA. The goal is to capture lessons learned from organizations that are utilizing or have utilized Flight, Ramp, or Maintenance LOSA programs. We would like to include your organization to produce a best practices report that offers support to existing and new developing LOSA programs. If you have questions regarding establishing an M & R LOSA program or were involved with the implementation process of your company's LOSA program and would like to be a participant in the study, please contact Lynn Crayton @ lynn.crayton@faa.gov .

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The FAA maintenance human factors site was launched in the late nineties. Its popularity grew tremendously over the years. Google hits reached in the hundreds of thousands yearly by 2010. Being over a decade since launched, the website was overdue for a "Heavy Check" to improve its search engine and public accessibility. Fortunately, the "Heavy Check" was not an "out with the old and in with the new." It continues to serve as an important dynamic repository of reports, conference proceedings, and other important MX HF materials. The new HF in Aviation MX website can be found at the original address hfskyway.faa.gov or under a number of alias addresses like humanfactorsinfo.com, and mxfatigue.com. Take a look today and please pass this information to your colleagues.

If you have a story to tell that will help enhance aviation safety, please email katrina.avers@faa.gov or bill-dr.johnson@faa.gov. The editorial staff will help writers with layout and graphics.

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