

# WORKFORCE PROCEDURES AND MAINTENANCE PRODUCTIVITY AT SOUTHWEST AIRLINES

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When I meet people from other airlines, I enjoy visiting and talking about the way we at Southwest Airlines approach our job. I find that people either are not very familiar with Southwest or that they are familiar with our operation because they have flown Southwest. Quite often, people want to know if we really have a maintenance department or if we contract it all out. We do have a maintenance department to do overnight maintenance; we do our own B-checks, C-checks, quarter-Ds, and half-Ds. The only part we contract out as is major overhauls which Tramco does. We have major overnight maintenance bases in Dallas, Houston, and Phoenix capable of doing anything we might schedule. We also have overnight maintenance at Midway and Oakland. In our 1994 Budget, we have included daytime maintenance in Las Vegas.

Every decision we make is based on what is best for Southwest Airlines. We do not want to invest money that we are not going to recover. Although I have been listening to all the claims for various computer programs, Southwest Airlines is only slowly adapting to the computer age. Our maintenance program is slowly becoming computerized. In December 1990, we first turned on the computer, and it is a slow process. Currently, we are inputting our records into the computer system, working our way up to the point that we probably will have computerized job cards some time in the near future.

For the most part, however, Southwest is still a pencil and paper airline. Although our dispatch office will have one of the most modern computer systems in the airline industry, they currently route the airplanes and operate the flow sheet with a pencil. They have 160 airplanes listed on one flow sheet that looks like a Dead Sea scroll. When Southwest has to reroute, it is all done with a pencil. Actually, it is a good system because it allows us to feel intimate with the airplane. If an airplane is broken in Sacramento, we might have to send some people from Phoenix to Sacramento. Once we get the airplane flying again, we can put our hands on the routing sheet and discover where the airplane will be for maintenance that night. The current system also benefits our minimal equipment list (MEL). We are fortunate to be able to route approximately one-third of our fleet into maintenance every night. That means that there might be eighteen planes in Phoenix, even though they do not like that sometimes. However, that allows us to limit how many open items we carry on the MEL. While I was at Eastern, our goal was two per airplane, so we felt successful if we had 600 open items.

Until 1992, Southwest started each day with a clean MEL sheet, that is, zero deferred items. As the fleet has grown and aged, of course, we have had to use our MEL more and more. We now average eight to nine open MELs at the beginning of a day, which is pretty good. We sometimes receive phone calls from captains who have not been on an airplane with an MEL. They call and say something like, "I have only been a captain for six months, and you are going to have to walk me through this procedure because I have never put an MEL out on an airplane." Conceivably, a co-pilot could become a captain without ever taking part in maintenance control procedures.

How do we keep our MEL list low and fly on time? We rate our performance daily on our MEL and our delays. We don't have a hub and spoke system; as most of you know, we fly point-to-point and so does our maintenance. If we defer an APU (auxiliary power unit) at 8:00 o'clock in the morning, we can look at the line an airplane is going to be on and see the segments it is going to be flying through. Particularly last summer, it was almost categorical that an airplane was going to go to all the hot Texas cities, all the hot New Mexico cities, and to Los Angeles. Naturally, we try to clear these items before our passengers complain

We do not want to inconvenience our passengers, so there might be a situation in Houston or San Antonio when we might call a mechanic and have him see if the APU Inlet door will open. When the airplane arrives in Phoenix, we might already know that the ignition system is not working. We can have a Phoenix mechanic standing by with the parts that we prescribe, ready to install them, hopefully clearing the MEL. If we work on the ignition system in Phoenix and do not fix it, we will contact a dispatcher. If we can put the airplane back in Phoenix, or wherever, the mechanic is going to get another shot at trying to clear the MEL for the flight day. The amount of turn time we have can be tricky, so we have to be on top of things. We have to know what we defer, how it operates, and what it is going to take to fix it. We are really active in that area, and that is how we manage our fleet.

Although we do not have any more 10-minute turns, we do have 15-minute and 20-minute turns mechanics use to change tires or brakes. Sometimes we do take a delay, but our airplanes are well-maintained. When an airplane comes to the gate and there is a crew change, the crew first performs a walk-around inspection. Any discrepancies they find are addressed right there. We try to do everything necessary at an airplane's scheduled time for maintenance. This approach really works. It is fascinating to watch one of the airplanes come into the gate from this angle, to watch the ramp truck from this angle, and to watch the mechanic from this angle, knowing that we all work for the same company. It is impressive to see.

As I mentioned, we have started putting more records in our computer. We also carry a dent manual on the computer. If a captain is performing a preflight in Ontario and sees something odd about the airplane, the captain can call us and we can provide him the information we have immediately. We track our lightning strikes and the various other things that happen during the day similarly. Southwest Airlines takes a hands-on approach, and I expect it to remain a hands-on airline as long as we understand that our business is to fly airplanes safely at a low cost.

Southwest Airlines employees generally have very good attitudes. When an airplane comes in with a problem, we address the problem and give plenty of consideration to the airline's schedule. We do not rush or hurry anyone or ask an employee to do anything illegal or questionable; our mechanics have to feel comfortable with the job they did. Southwest Airline's corporate culture makes our people feel good about their jobs. Our employees feel good when they go to work, and they feel good when they go home. This applies even to the job I have. I get to witness everything that goes wrong; the maintenance control department is a negative department because we are called in whenever there is a problem. We have some days when our cancellation rate is a little too high, and we have other days when our delay sheet is lengthy. Even though busy days for us are bad days for the airline, we usually feel good when we get home because we know we have done a good job. We use the Delay Sheet to capture, correct, coordinate, change, and discuss what we do. If we have a five-minute delay in Phoenix to change the landing light, we do not hammer anyone, but we do discuss it.

At 8:00 a.m. every morning I meet with the Vice President of our department and read every item that delayed an airplane the previous day. Major delays are those which results in a delay of an hour or more. A major delay would also include anything that resulted in a cancellation. We also have minor delays which really do not impact the schedule. We discuss each delay, whether it is major or minor, and I think that is a benefit. When I first learned that I would read the Delay Report to the Vice President daily, I wondered if he would ask any questions. He does. He needs to know how we arrived at a conclusion and what thought process we used when, for example, we called the mechanics at our Phoenix hub to come and unplug the lavatory. Generally, if we take a delay for a passenger item it is because we do not want to fly away with something like a blocked lavatory that could make for bad business. We make these types of decisions based on our dispatch input. On Friday, for example, our airplanes are extremely full so we take the opportunity to have a clean fleet: we want our lavatories working; we want our lights intact; and we want the airplane to be ready for a full day of paying passengers. As I said, we do take a hands-on approach; we track each problem and resolve each problem as quickly as we safely can.

We have a group of engineers and mechanics that monitor day-to-day operations. Most of that is the function of the Maintenance Control Group. Southwest's Maintenance Control Group is a little different than most maintenance controls. We have our most experienced people working in that group. They monitor the maintenance situation to determine when something repeats or when we did not fix something we thought we had fixed. There is a reliability group called the Honey Bees that pick up on this information; they are getting the information off our computer system now. They use different categories for repetitive items. When we have something that is approaching what they call a Category 5 (meaning, "This is getting embarrassing for you; fix it the right way"), it is brought up, discussed, and directly routed into a maintenance base.

I would like to talk about how we do our C-checks. We currently do C-checks in Houston and Phoenix, flying in the airplane needing the C-check during the day. We do not ground an airplane for an extensive time unless it needs a major structural job. We do our 200s and 500s in Houston. When an airplane arrives at about 8:00 p.m., we take it into the hanger for C-1, C-2, C-3 and C-4. We perform a segmented C-check; mechanics will do one wing, one elevator, and the cockpit maybe on, say, Monday and Tuesday night. They then do the opposite side, and six months later the airplane will be back in maintenance for another C-check. C-checks are performed on 180-day intervals.

Phoenix recently accomplished a coup when they took the 300 C-check line out of Dallas and put it in Phoenix. That was the result of a logistical measure from the dispatch office. Since certain legal restraints are placed on Love field, we were not able to service any airport out of Love field unless its state touches the state of Texas. In other words, an airplane cannot fly from Love field to Phoenix without having to stop in Albuquerque. That law was enacted to protect DFW. Since it is still on the books, as the airline grows, Dallas does not. Phoenix can grow; Houston can grow; and all of our other cities are able to expand. However, we can only fly Dallas so many times before the demand decreases. With eighteen airplanes overnight in Phoenix, it is natural that they got the C-check work and also took over some APU work.

In Dallas, we do our quarter-D checks and our half-Ds. These are pretty impressive for Southwest. We pull the airplane in the hanger and take its interior out, e.g. we pull the floor boards up. The quarter-D check is supposed to last three days. Unfortunately, during our transition period, the quarter-D check probably requires five or six days now because a lot of these airplanes have not been on this schedule very long. Next, the airplane comes in for a half-D check, a more extensive visit that can last as long as eight to ten days. That is the only time we plan on having an airplane out of service for so long.

As to Southwest's corporate culture, most everybody has seen Herb Keller on television, whether in an American Express commercial or with Sam Donaldson on a Sunday morning news program. Herb does a good job of presenting to the public that Southwest Airlines is just plain smart. That is the company's logo. I think Herb even arm wrestled a fellow in South Carolina because there was another company using the same logo. Instead of going to court and having a protracted legal battle about the logo, just plain smart Herb invited the other company's president to come to Dallas and arm wrestle. If you have seen Herb, you know he is not much of a physical specimen: he smokes four packs of cigarettes a day; we do not know how much Wild Turkey he drinks, but he does drink Wild Turkey. When the fellow from Stevens Aviation from South Carolina or North Carolina showed up, it appeared that he was a physical specimen. He looked like he benched pressed 300 pounds and worked out regularly. That did not detract Herb who had a couple of professional wrestlers show up with him, and he also provided the cheerleading squad. Herb collected the most beautiful women at Southwest Airlines to be in his corner, and not the most beautiful women to be in Stevens' corner, which did not go unnoticed by Mr. Stevens. They actually arm wrestled after Herb was finished. It is this type of event that Herb uses to make a media spectacle of himself, and he enjoys that persona.

Herb encourages departments to get together with other departments. We do not have a secluded maintenance department; we have a very open maintenance department. I communicate daily, sometimes hourly, with the people in flight ops. All three chief pilots and those at our four crew bases know that if they encounter a problem, have a personality problem with a maintenance employee, or experience some kind of a flash in the cockpit, they can give me a call. We will find out what went wrong and what we were thinking. We can, if necessary, get everyone involved together to resolve any problem. When we finish, those involved will come out knowing what went wrong.

We have a very active Crew Resource Management (CRM) Program in our pilot group, and our maintenance group is invited to participate. We try to schedule maintenance people to be with the flight crews as they go through the captain upgrade process. As the captain and the people in the CRM program review airline incidents and problems that have been documented through the years, they talk about what they can do differently and where the mistakes were made. Our maintenance people benefit by learning how a pilot thinks, just as a pilot benefits by learning what a mechanic is thinking. The Crew Resource Management Program instructors ensure we are available and invited to participate. All production managers have been involved and we make every effort to involve as many line mechanics as possible. Hangar mechanics have not yet been able to participate due to the limited amount of space available in the CRM training. Currently, only two mechanics per session are permitted. There are two CRMs: the two-day upgrade Crew Resource Management, and the one-day refresher. We just ask what course is coming up. If it is a two-day, we schedule for two days, or if it is one day, we schedule one day. We kind of blend in; we want mechanics to feel comfortable with that segment of the airline since it is our internal customer.

I probably should elaborate on that; it is one of our philosophies that if you spend as much time as you need to working on your internal customer, your external customer will be most grateful. Each department identifies its internal customer. My group is Maintenance Control; our internal customer is dispatch because that is whom we work with the closest. We try very hard to work with our internal customers so that they feel comfortable with what we are doing. Mechanics' internal customers vary depending on where they are. If a mechanic is at the terminal, internal customers are pilots, flight attendants, and probably a supervisor. This is all incorporated into CRM training as they go through that. They spend a lot of time on internal customers because most of the CRM is spent discussing airline problems.

We have a Training Department that actually spends most of its time flying around the Southwest system. Due to the nature of our airline, we do not have maintenance at every station. Since we have five maintenance stations and we serve 38 cities, like most airlines, we do use contract maintenance. However, our Training Department regularly visits our Quality Control Group and our vendors to make sure that everybody is up to speed. Anytime we have to change a part, we generally send our own mechanics. The only time this would not happen would be if the part was an indicator and we were at Las Vegas. American West hired mechanics to help with the Southwest contract because we had 100 flights a day to Las Vegas and we have not been able to hire new mechanics until our 1994 budget has been approved. During our downtime, American West hired some mechanics so that they could handle our contract. This helped us out.

This is Southwest maintenance in a nutshell. There are no gimmicks, no tricks, no magic. Southwest maintenance is simply a group of people who understand Southwest's objectives. For the most part, our 500 mechanics, 24 supervisors, and 6 managers are quite happy to be on the Southwest team. It is a good outfit to work for. We have identified our primary competition, which is the automobile, and we have also identified the airline we want to be most like. We most want to be like Southwest was last year. As long as we keep emulating Southwest and knock on wood, maybe we can participate another year.