

Panel Presentation on Airline Maintenance Human Factors - Kania

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INTRODUCTION

Thank you, John. I appreciate your comments. John was very complimentary to a lot of people, but I got to tell you that if it wasn't for John, we probably wouldn't be here today for USAir telling you about our experiences because we really did start this up. Hopefully what you are going to hear from us today is a description of a living partnership program in action focusing on human factors. The partners are the FAA, labor and management. We feel it is an honest, no-holds-barred approach to improving safety and compliance. We call it MRM at USAir. I don't know if we are going to change that; we may find some type of little catchy word that we want to use like the "team concept", but right now its MRM.

RECRUITING THE TEAM

MRM was created in USAir in 1992 to enhance the safety, quality, reliability and efficiency of the company's maintenance and inspection program. As John pointed out, the union and the FAA came to us; it wasn't our program. It's a spin off from crew resource management, and it enlists the cooperation and open communication between management, AIM and the FAA. It embodies the intent of compliance through cooperation and partnership. The program is unique because of the FAA's role of support and encouragement among the parties versus enforcement. Keep in mind that in 1992 the partnership wasn't alive and well; it has come a long way since then.

DEVELOPING A GAME PLAN

Our initial objective back in 1992 was a project to conduct research into the causal factors which result in human error and maintenance paperwork. Why did we pick maintenance paperwork? We thought long and hard on this. There are a lot of areas we could have focused on as a team and tried to resolve the problems, but the FAA is obligated to take certain steps if there is a serious violation. We thought if we focused on paperwork -- the airplane is normally safe; it's normally air worthy; it's simply a paperwork error that was admitted -- we could resolve and identify some problems if we focused on that one area. That's what we did. We tried to develop a strategy supported by management, labor and the FAA that strives to eliminate paperwork errors and other issues that surfaced. We developed a means whereby the results of this research can be used to enhance the safety, improve maintenance training and quality control programs related to paperwork errors. We begin a process of open, honest communications among management, the IAM and the FAA which is this partnership.

This approach is not typical. Usually you throw all of your problems into a funnel and your work goes out and your result comes out of the funnel and that's what you focus on. Here we start at the bottom of the funnel with just paperwork we are trying to see what would come out of the top. We knew we were going to see other problems in addition to paperwork problems. The perceived benefits for the FAA -- decreased number of enforcement actions against mechanics and the company through increased compliance with FAR enforcement action -- in my opinion (a lot of this is my opinion) is a pain in the butt for the FAA just as it is for the carrier or the mechanic. Enforcement action, again in my opinion, does not promote compliance or safety. I'll speak to that in a little bit more in-depth in a minute. The benefits for the company -- increased safety, compliance in productivity as a result of lowering errors and approving maintenance quality -- this is what it's all about. This is what we want. This is, of course, what you some of you as our customers want for the mechanics -- reduction of enforcement action by the company and the FAA a result of improved compliance.

Enforcement action against the mechanic is extremely traumatic. I'd venture to say it borders on being unsafe. When a mechanic is going through the process of enforcement he or she is totally preoccupied with what's going to happen to him or her. However, if a mechanic knows he or she will receive amnesty for an honest mistake that person becomes a safe, productive employee immediately. Consider the three or four months or whatever it takes for the mechanic to resolve the problem he is having. He is worried about losing his license; how much time; how much money he is going to pay. He is not a very good employee during that period of time. With this program we think we eliminate all of that.

I mentioned earlier about the enforcement action from the FAA. For example, let's compare a letter of investigation with a self disclosure -- I hope that you all are familiar with those two programs. When we receive a letter of investigation from the FAA we answer that letter assuming that we are going to end up in court. We don't put all of our cards on the table. We are not entirely up front with them. We don't lie of course, but we don't tell them everything. Why can't we tell them everything? If we tell them everything it may cost us money; we may get a bad reputation. So we hide things. The FAA, on the other hand, does the same thing -- there is absolutely no communication other than "we will see you at the informal hearing, or we will see you in court." That is not a very productive exercise to go through. On the other hand, in self disclosure -- keeping in mind it means just that -- the airline found it, the mistake, before the FAA found it. Is that right? I don't think it is right, but that's the way it is today. So you are looking at timing here. Self disclosure versus letter of investigation. In self disclosure we tell the FAA that we found the mistake. We work together with the FAA to resolve this mistake. All the cards

are on the table; you cannot put a comprehensive fix in place unless the FAA agrees to it.

TEAM WORK, TEAM WORK, TEAM WORK

Now, it doesn't take a rocket scientist to know which one of these two exercises gives us better safety better compliance and a better relationship. Every project has to have a steering committee, and we have one too from the USAir management side. It was myself and Dave Driscoll, Dave is right here in front; we are still involved. From the IAM side it was John Goglia who we said earlier introduced it, and now Terry Clizere is picking up for him. Terry is right over here. We mentioned the managers. Without the managers -- Vince Laperra and Al Zito -- we couldn't have done this either. Dave Cann started it and Jim Balock, who is also here today, is picking up on it. Our program facilitator evaluator was Dr. Jim Taylor whom John mentioned earlier. That was our team, and we got along really well.

Our initial approach was to conduct focus group meetings before we could fix a problem. We certainly had to understand what the problem was. We had 160 lead mechanics, inspectors mechanics and foreman involved in 28 separate sessions in seven stations. We averaged about six employees per meeting. All of this was conducted by our independent facilitator, Jim Taylor. Sessions were conducted as brain storming sessions to list paperwork errors and their causes and to develop a set of possible solutions. It is kind of interesting how Jim approached this. It was all new to us. I am sure for some of you who have done this before it isn't new, but Jim got the people in the room to put the butcher paper up all around the wall and just listened the first half of the meeting to whatever the employees were having problems with, what don't they like about management. He kept it directed toward paperwork, allowing them to get off paperwork just a little bit just to let them vent a little. About half way through the meeting he cut it off and he said "OK folks you gave me all your problems. Now your task is to give me the solutions." This is where the butcher paper came in. Writing on the wall worked really well.

The next step then was to summarize all of these comments and suggestions. We didn't yet analyze them; we simply summarized them. If three or four focus groups gave us the same problem we would just lump that into one problem. We classified the data into categories, and we established a corrective action plan. What we can do immediately and what we can do long term. One of the things we realized we could do immediately came out when we started conducting crew meetings. We heard the message that we don't communicate very well, so we started conducting crew meetings. We initiated a maintenance newspaper. It dramatically reduced the calls to the FAA. The mechanics were giving us a chance to resolve the problems before they went to the FAA. When they go to the FAA, and this is for the FAA people that are in here, you know you have a formal procedure you have to use for the hot lines and it's no fun either. An example of this is the log book redesign after we merged with Piedmont Airlines.

We had two log books. We had a wide bodied log book for [ETOPS](#) airplanes. We had a narrow bodied log book, and it worked O.K. But we felt we were at a point after a couple of years after the merger that we could reduce this to one log book so we went to La Guardia. We said "La Guardia you said you wanted to help, help us redesign this log book." Dave Driscoll handled it personally; they wouldn't even talk to him. They said "Get out of here this is just a one shot deal. You are really not interested in redesigning the log book." Dave was persistent. He kept going in. It wasn't too much longer after that they were calling Dave up to get his butt up to La Guardia. They redesigned the log book 100%. The mechanics redesigned the log book. Of course, they consulted with maintenance; they consulted with management, but it was their log book. In previous log books, the edition that we put out for USAir for 33 years, there was always something wrong with them. You know what usually happens if you don't have a part in it -- Ah! you should have done this, you should have done that. There was absolutely no criticism of this log book, no suggestions to improve it after the mechanics improved it. We are very proud of that.

Take our general maintenance manual. To the airline people in the audience, if you are anything like USAir 40 years ago we had a policy manual. It's our general maintenance manual. We put all our policies in there and it hasn't changed since. The only thing we kept doing was adding policy, adding policy. We asked Jim Taylor to look at our general maintenance manual when we first started working with USAir to see if he could interpret anything or understand our policy, and his response was "No, I can't." But we expected the mechanic to comply with the policy that's in the GMM after about 40 years of evolution. We had such a success with the log books that we decided to let the mechanics, the labor group, rewrite our GMM. We did it and it was a great success. Dave and Charlie from the IAM headed that up. Their first step was to take that manual and go through every page and put it into a certain section. Maybe one section would be all deferred maintenance. another section would be time cards or whatever. They sent those sections out to various stations and said "here folks you wanted to do it, reformat it so that it is user friendly send it back to us."

Now I'll be a little honest with you, we didn't trust them totally. We thought they are going to slide something in on us, so that they get more money, easier work rules, stuff like that. So we had to review this. I have to tell you we did not find one incident of that, not one. The book was reformatted. It's becoming more user friendly and it was totally done by the work force. Again we are proud of that. On December 21, 1994 Dr. Taylor sent a report to Galaxy basically summarizing a lot of the things that we just discussed here and another thing that we had done. Let me tell you about that.

DEVELOPING NEW STRATEGY

Dr. Drury, who is also in the audience today, worked with USAir on our formatting of our paperwork -- how we write the paperwork. The typical scenario is that the engineer who writes the paper work sends it down to the floor. Then he gets upset because the mechanic doesn't follow what he is trying to say. He should take the paper work down on the floor and work with the mechanic for the first time to prototype it and then produce a much, much better document, Dr. Drury also looked at the way we lay out our job procedure cards, the sequence -- check the tire pressure, go in and check the cabin lights, come back out and check the brakes, then go and check the tail, those types of things. Dr. Drury helped us tremendously with that. It is now our pride and joy. Our pride and joy is our round table meeting. Our round table is nothing more than our name for a group of people getting together to analyze, to understand why a person made a mistake. John alluded to this earlier. If we bring this mechanic in we can really, really learn something from him.

We have had 15 round table discussions. Let me tell you a little bit about the process. Round table meetings provide forums for addressing human factor related errors that have occurred in USAir's work place. Error discussions are conducted in a problem solving, non-accusatory approach to resolution The IAM has agreed to accept management's decision on errors to receive a round table approach. In other words, if the person did something and it's gross negligence we are not going to bring him into the round table and waste our time there. It's the honest mistakes we want, and the IAM has agreed to let management make those decisions. The round table working board consists of representatives from the IAM, the FAA and USAir management. I think No. 3 is very important. If FAA enforcement action is contemplated, the FAA round table working board member serves as a chairman and has sole authority for final determination in accordance with the FAR. We don't know where the discussion is going to lead whenever we bring everybody around the table to discuss the error, so we have to give the FAA that flexibility if something serious comes up they certainly have their guidance to react to that.

As I said, we have done about 15 round tables. What we do is ask the mechanic: "You made a mistake. You have total amnesty from the company. We are not a 100% sure what the FAA is going to do. You may end up with a letter, you may end up with something more serious, but we want everybody to learn from your mistake, and most of all we want to learn from your mistake Why did it happen? What were you thinking about? What paperwork didn't you have? What tooling didn't you have?"

That person comes to that table very, very apprehensive. There are usually two FAA people on the table, two management people and two IAM people. We allow people to sit in, but we don't allow them to talk, unless they raise their hand, or we ask them something because then it would get kind of confusing. It's not a formal hearing. Our first task is putting the mechanic at ease because he is very, very apprehensive. But I can tell you, the ones that I sat in on, and, as I said, Dave handled about 15 of them, everyone of the mechanics came out of there thanking us. Each one became an ambassador for the program and ambassador for the partnership, and he left there with a feeling that he had accomplished something. We were definitely sure that he went back as a better person. This approach versus the previous method of giving him three days off or 30 days off depending upon the severity of the mistake, and the FAA coming down and the mechanic having to go through all of that. We know that we are really accomplishing something, so when I say this is our pride and joy it really is; we are really proud of it.

This new approach not only improves the relationship between the three parties -- the IAM, the FAA and management -- but also, more importantly, enhances safety. We learn from all of this. We've had some incidents where a mechanic cut a tube a little bit too short. We sat down around the round table and talked about it and he showed us an engineering diagram that he was using. The thing was handwritten. The engineer thought he was doing his job, but this mechanic is looking at this with all the handwriting on it. I turned out that there were six tubes in this one case that we are looking at, five of the tubes had fixtures. The mechanic puts the tube in the fixture, and he cuts it off. This particular tube didn't have a fixture. Maybe he told somebody in management about it, maybe he didn't. We immediately got him a fixture. Now this is the type of stuff we can share outside of USAir; it doesn't have to stay in USAir. We can share throughout the industry; the rest of the industry people who have problems like this can share with us. So again, as I say, we are very proud of that program.

I told you earlier that we are tracking paperwork errors. I'll go through this very quickly quick, only one time. This is the monthly paperwork discrepancies summary for August 1993. It speaks to engineering orders, job procedure cards, not all of them just the ones that are production and control items -- log sheets, tags, which are our return to service tags. The total accomplished in this case was 41,000. Incorrect or incomplete total is 774, that percentage was 1.86%. Missing paperwork 78, that percentage was 19%. Obsolete paper work is 4, percentage was 0.01%. Total discrepancies out of 41,000 were 856, for a percentage of 2.6%.

Component removal request -- if we have paper work, if we had scheduled a component removal and the paperwork doesn't verify that it was done we will change the unit. Again, if we can't get the paperwork corrected, we reschedule tasks, inspection tests, those types of things. Again, if we can't verify it by the paperwork, we reschedule it. For the month of August we had 13 and 15 there respectively. Now we jump to August 1994, we went from 2.06% in 1993, to 1.59% in 1994. In August 1995 we went from 1.59% in 1994 to 1.36% in 1995. The most current one we have is November of 1995, and we are all the way down to 0.93%, so it is a significant difference. We break these down by stations, and we further break them down by the EOS. It is probably a 15 or 20 page report. This is only the summary, so we have had some successes with improving our paperwork.

I also mentioned the round table. This is simply a round table group in discussion -- the FAA, the IAM, Management and the person who made the error. We usually meet in the FAA office; they have the nicest facility. Again, my point is that bringing that mechanic to the FAA office is very tough on him or her. These discussions usually last a couple of hours and are very, very productive. Other than that there are some action items. We don't just find out what the error is and walk away. Everyone has some action item. Maybe the FAA has to interpret an FAR or some guidance that they are giving us. Maybe the company has to rewrite job procedure manuals or fixtures as I mentioned earlier. Maybe the person doesn't have enough help. There are always action items. They are always documented. They are always followed up.

We also give that erring person, the mechanic, an action item. It's usually different action items. I've brought two with me here, this is out of that faces and places magazine. I am not going to let you read it. We brought a couple of hundred here; we'll put them across the room if you are interested in taking them. It is really a chore for the mechanic to write an article on the error that he or she made. The one you are looking at up here concerns a sheet metal repair on the airplane. We had to take the ADC's out to repair it, gave the mechanic the job to close it back up again, before he had it closed up his lead mechanic came and asked him to help on an engine. He went and helped on the engine, he had not as yet connected the static lines. When he came back to the job, the panel was closed, and he assumed that the static lines were closed up. The airplane took off and returned. We had to hook up the static lines. This gives you some idea what he went through. John, or somebody, mentioned earlier about turn overs, obviously, this wasn't a very good turn over. It was just his explanation of what happened.

This story goes out to all of the maintenance people throughout the company and to the flight people. We just lay this in different areas and people pick it up, and as you can see, the other articles there are the social articles. I would recommend that if any of you are going to develop a paper, put those social articles in there. People don't tend to pick up the purely technical information. They like to see that social information in there and that drives them into the other issues. Such as this one: "The lift that let me down". The mechanic, I believe, was in La Guardia. He was going to change a fuel control underneath the U part. The lift truck was underneath the airplane, he removed the fuel control and went in to see where his new fuel control was. While he was in there, lift truck went up by itself and damaged the airplane. The lift truck was tagged that the lift wasn't working only in the down position. The mechanic assumed it was working in the up position. It malfunctioned and went up under the airplane and damaged the airplane. We have a policy in the manual that says you do not leave equipment running around the airplane. The mechanic did not follow the manual because he did not understand the manual. Now we send this message out to the entire field about running equipment and what this mechanic's mistake was.

THE NEXT MOVE

Where do we go from here? We definitely want to continue the round tables. We are having a lot of success with the round table. We want to expand the program to encompass all of the benefits derived from the human factors programs, which is one of the reasons we are here. We want continued communications mechanic involvement, and we want to develop a partnership with the other carriers and the industry. As I said earlier, there is no reason why this should stay within USAir. There is no reason why the Continental program should stay within Continental. The Northwest program, the United program, we should share this and be able to bring you up to date on their programs what they are doing right now and also what the industry is doing.