

BROOKINGS INSTITUTION

BLUE RIBBON PANEL ON FIRE-FIGHTING

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AL HYDE: Earl, do you want to start? And then we'll turn to our first panel.

EARL MCKINNEY: Thanks, Al.

I'm Earl McKinney. I'm on the faculty of Bowling Green State University in the Business School. I'm a 25-year aviator and formerly with the military, but I still maintain a private multi-engine commercial ticket. I've done some studies and research in resource management and pilot decision making in general. I'm pleased to be here and trying to better understand what's going on with aviation within fire fighting.

KEN JOHNSON: I'm Ken Johnson, and you can probably tell from my accent that I come from Canada. And it's a privilege to be asked to come down here and take part in this. I started life as an Air Force pilot and then I flew the NAVAIDS flight calibration aircraft for the Department of Transport for a number of years. I was responsible for the operation of the federally operated airports in the province of British Columbia for several years and then I went to the Canadian counterpart of the NTSB, where I spent about 20 years. That's roughly what I've done.

AL HYDE: Thank you.

JIM HALL: Good morning. My name is Jim Hall. I am the former chairman of the National Transportation Safety Board. I served in that position for approximately seven years. Prior to that, I worked about seven years -- about six years as the chief of staff to the governor of Tennessee. I'm trained as an attorney and I presently serve as a consultant in transportation safety and security issues with offices in Washington, D.C. and my hometown of Chattanooga, Tennessee.

JIM HULL: I am Jim Hull, state forester of Texas. You can tell by my accent I'm not from Canada. I serve as chair of the fire committee for the National Association of State Foresters. Some of you are probably aware of this National Wildland Fire Leadership Council that the secretaries of Ag and Interior have put together within the last year. I represent the state on that. I guess I could tell you that I'm not sure if I'm on this panel specifically to represent users, but I am a user what you folks do. I find it kind of interesting that in Texas, to the best of my knowledge, we've never dropped anything from a helicopter before about 1996, when the drought started coming on.

But as we've traveled the nation doing these town hall meetings and other places, I find it quite amazing at the number of people that have been to Texas to drop something out of something over the last four or five years. If you fall into that category, let me say thank you very much. And how we can go about continuing to do that in all the ways

that we are charged to do with safety, cost effectiveness, sustainability and all those kinds of things, certainly as a user that's something I'm very, very much interested in.

BILL SCOTT: I'm Bill Scott. I'm the Rocky Mountain Bureau Chief for Aviation Week Magazine down here in Colorado Springs and I'm an ex-Air Force officer. I went to the Air Force Test Pilots School, graduated as a flight test engineer and then tested airplanes for about 12 years. I've been with the magazine quite a while. I pretty much specialize in airplane, military type things for the most part. It's kind of unusual to wind up on a panel like this as a reporter. But I did do a number of stories earlier this year after we started having so many accidents, and consider it a real privilege to be here and learn more about this fire fighting business and hopefully try to help make some recommendations that will improve it.

AL HYDE: Let me say as we welcome the beginning panel members this morning, we appreciate everyone's presence here and we hope everyone will have an opportunity to have an exchange with the panel at some point during the day. This is a continuing series of town meetings that we have held. The board began with briefings from the National Transportation Safety Board, the Federal Aviation Administration in Washington DC. We've had briefings in Boise, Idaho, from the Forest Service as well as town meetings in Atlanta, Portland and Salt Lake City.

MR. : Denver today.

AL HYDE: And Denver today. And then next week -- the week after next we will be in Albuquerque and Sacramento. So we welcome our opening panel and we'll turn it over to you, gentlemen.

DUANE POWERS: I'd like to do a brief introduction. My name is Duane Powers at Hawkins & Powers Aviation. And I'm attended here with my father Gene Powers. We also have a third generation of my son Ryan Powers, who participates as a initial attack crew member for aerial fire fighting and also a flight engineer and mechanic also working within our family operation. My background, I have a degree in mechanical engineering and my father is also a mechanical engineer. I served 20 years as a naval aviator, was selected for naval test pilot school and at that time had to make a decision on whether to continue with a regular Navy career or leave the regular Navy, go to our family business, which I decided to do, and got back into the aerial fire-fighting industry side of things. But I did continue the rest of my career with the Naval Reserve.

I'm a designated flight examiner in several reciprocating aircraft engine types and turbo propeller engine types. Also a designated examiner as a flight engineer examiner for the Federal Aviation Administration. My father also serves in many aircraft types as a designated examiner and flight engineer examiner for the Federal Aviation Administration.

I'd like to turn this over to Gene Powers briefly.

GENE POWERS: Well, I don't want to blow my own horn too loud right now, because I have too much to try to say and too little time. Needless to say, though, Hawkins & Powers Aviation was one of the earliest companies in this industry. I personally have been a pilot and involved in flying the longest of anybody that's in this industry now. I was doing this work back in the late '50s and I haven't ceased.

I could say that during that period of time that our company has existed, we've never defaulted on a contract, we've not had federal aviation violations, we haven't been cited. And one of my high points of pride, one of the reasons that our company has existed has been with the relationship that we've had with the FAA. We haven't really had to have a great deal of intercourse with the NTSB, but they have been here to help us. Contrary to some of the things we've observed with other people, we don't think it's a joke.

Now, I'll get right on past that quick because I'm sure that we all are dealing with the same area and we have the same concerns actually. Success in what you're investigating, success in prolonging, continuing or improving this industry is vital to us, as vital or more vital than it is to you. Accident prevention and safety is more vital to us than it is to you. You can say that you're interested in safety, but it isn't your son or your grandson or your employee that dies. It isn't your pocketbook nerve, which is quite sensitive to me, that gets hit. Enough of that.

I am very thankful we're here. Why we are here is quite unfortunate. I feel that Hawkins & Powers Aviation at this time is a sacrificial lamb if there ever was one. It sure is a shame that we had to suffer what we have suffered and what the industry has suffered just to get us to the position of this much attention and maybe this much oversight. We feel -- or, you know, it's sort of mixed emotions, I guess. Certainly you have to look at it as it's almost good for our company and good for the industry that something as spectacular as what happened here happened.

I know that we'll present data showing the safety record of our company through the years, and it's as good as any, much better. In fact, we'll give you statistics on it that our company accident -- incident thing is less than half of the industry standard. It's less than the industry standard by the Forest Service's own figures, even considering the two incidents.

Be that as it may, we have this accident investigation now. I don't think this -- I just don't -- pardon me for rambling. If the media, the television and so forth hadn't have been able to see the spectacular results of our C-130 incident, if it hadn't have been the fact that the second accident, the second tragic accident, hadn't been our company again, the same company, I think this could very well have went as we have seen multiple accidents in the past. Nobody paid much attention to it. We had to do a 9/11 to get some of the attention. Hawkins & Powers or our industry has had our own little 9/11 right here.

With that, I'd like to get on to this investigation and talk about this accident a little bit. This is self-serving in some ways, but when these tragedies occurred, at that point we were very quiet. We didn't communicate directly with the media. We suffered many slings and arrows. But as we were suffering those, one of the reasons we suffered them was a feeling of needing to wait until we saw what happened. It was a feeling of almost guilt thinking, my God, did something happen here we could have prevented? Did we betray our industry, our company and our employees?

I can say right now, loud and clear, that through the absolute professionalism, and as they came through for us again, as they have in the past always, the FAA and the NTSB have been able to mull through the facts. They're professionals that have went through the facts professionally with no influence from anybody else, thank the lord. They've come to some conclusions. And at the same time they came to those conclusions, they concurred with our conclusions. In the past accidents we've had to deal with it ourselves almost, because we've never -- somehow somebody tried to -- that we were almost prevented from really going. We had our own investigation.

But we have come to the position where I can truthfully now first state that I rest assured telling you that the results of this investigation will prove to the media, and it will prove to the industry, that there's nothing that Hawkins & Powers could have reasonably done to have prevented this accident with the information we had and with the procedures that are in place, and that these NTSB reports will reflect that.

There were mistakes made somewhere down the line in some of the things with the C-130, but we'll get on then with two incidents here. We have a C-130 incident, we have a privateer incident. In just the last few days, I think possibly because we didn't participate in the accident investigation, you'll find that there's not a direct connection between those two. The privateer incident is very much a unique individual incident that was caused by a unique, not ongoing thing, and there's no reason to think it would go on. And we've got an absolute positive solution to prevention of any further occurrence in that area or of that type.

The investigation results will and have shown that and any of it that isn't, we have some -- we'll read some of the comments here. This investigation and accident -- as an example, though, I guess to fill in -- as I said, I could talk about any one of these things for more than an hour.

This time the NTSB and the FAA were very much involved in everything that we went for. That has not been true in the past. Even at this time we were prevented because we've always instigated our own investigation. And one example, we couldn't even bring our airplanes home. The FAA didn't ground our airplanes. We could have made arrangements for fire permits and had those airplanes in our shop and been well on our way to an investigation, but we had to do that out in the field for many days. One example.

If we want to deal with the facts, it turns out at this point that the C-130 failed due to a quite predictable -- if you had the information you should have had, a quite predictable fault in the center wing. The media, no fault of their own -- maybe they've helped us in a way. But they've been erroneous and they've reported things without the true facts, but the media have dwelled upon wing faults in old airplanes. They didn't even realize that the wing faults that were dealt with in the aircraft, those faults we coped with and the existing problems and known problems of wing failures that private operators have known were in the outer wing panels and our outer wing panels did not fail. And the outer wing panel areas where we had repaired and/or replaced and/or were inspecting did not fail even at the point of this catastrophic failure.

Had the results of another air accident been investigated by these same professionals, had the true aviation people -- and by that I mean the FAA and the NTSB professionals -- investigated the area earlier, Pearblossom C-130, this accident would not have happened because we would have been that many years ago in the arena that we are now dealing with how do we prevent again a reoccurrence with the C-130? Now, the C-130 has operated since then. The faults in the C-130 exist even in the airplanes today in the late models, but with proper knowledge and proper maintenance you can live with them, you can cope with them. You can detect them and prevent them. That will happen or the airplanes will cease to operate. There's no doubt there.

Now we come to the Privateer. The Privateer is a little unique but we had to remain silent again until the investigation gave us the facts of what we were dealing with. The accident results or the incident investigation of the Privateer clearly shows, and I would quote one of -- and I term my friends not because they are anything personal, other than the fact that we work together and we cooperate together and I admire them. But the metallurgists and the NTSB people started out saying, you know, the fault in this Privateer that caused this tragic incident started 50 years ago when Rosie the Riveter -- this was the words he used -- pounded a couple of rivets. That aircraft is built out of different material. And we talk about old airplanes. This is wrong to hang a red tag on an aircraft because of its age because proper maintenance, proper inspections and proper replacement of the wrong materials or whatever can make an old airplane as good or better than a new airplane.

You have another advantage with old airplanes if you would accept it but it's true. If it's an old airplane it must be good or it wouldn't be old. That's just a fact. The bad ones have already gone 20 years ago. But anyhow, we found that where the fault existed in that Privateer wing -- and I've been in Privateers since I was in the Navy back in World War II. But we found the fault -- we didn't, the NTSB did. It was quite clear, they could examine for the media. You professionals understand this, but they can examine a crack or a fault and they can tell by the oxidization of the crack principally how long it took. One way or another, they said, this has been an ongoing thing for 40 years. As it progressed, it was also in an area that we could not detect with any normal means of inspection. We have trained NDI people. We go from every stage of non-destructive investigation and it would not have found that. The report also shows that. And this is not our report, this is the professionals' report.

But once we found that, we were lucky with the Privateer -- Hawkins & Powers was lucky. We had one home. We couldn't even bring the others home. But we, due to past experience, felt that we had to do our own investigation because we didn't really rely on maybe what had happened if we didn't have the professionals doing it. We took our airplane, the one we had home, apart far beyond anything that you could imagine as we tried to examine every square inch of that airplane to try to find if there was a fault. So we had the airplane completely apart.

MR. : Gene, can I interrupt and ask a question?

GENE POWERS: Yes.

MR. : So, in summary, you could make a statement that maintenance programs have been inadequately conceived to anticipate --

GENE POWERS: No. I can certainly answer that. What I'm really saying is -- and this is only with the C-130. For the Privateer it hasn't been inadequate because there are areas -- this particular failure in the Privateer came at what they would call a production break right at the wing. As they were constructing the aircraft, they make a production break and with the lower star web (ph). It had a sandwiched spot that they glued together, riveted together with fasteners, and it's in an area where you have to -- it's beyond the non-destructive inspection thing. You've got to destroy something to get there. But in between this sandwich where you could not really inspect, and the NTSB report clarifies this, a crack started. And it took it 40 years to get some place and when it got there, it went.

At this point we now have information to go exactly to the other aircraft and either detect, fix, repair or as needed, all of the above, that fault. It's the first time it exists. But the unique thing is that when we discovered this in the original fault, luckily we were able to recover the pieces and these people went out here and got all the pieces. When they reconstructed it, we clearly had pictures and photographs and the evidence. So now we tear apart our other airplane and with x-ray start taking pictures through here to design how we're going to repair, cope with or whatever that fault. As we're doing this we discovered a unique thing: the other airplanes aren't exactly like that.

MR. : So there's no problem with existing maintenance programs for either --

GENE POWERS: Certainly not with the Privateer. Not at all.

MR. : Let me, Mr. Powers, if I could at this point -- and I'd like you to continue as long as you want on the subject. But I want to be sure that all of us are reminded of the fact that there's an independent investigation, which the board has been briefed on, which the FAA and your company are parties to, being conducted by the National Transportation Safety Board. They have released preliminary facts about the

investigation which you are speaking about, which is certainly appropriate because it's been publicly released. However, the investigations haven't been completed.

So it is not the purpose of this panel, however, to look at those two accidents. Obviously the work of the panel in many respects was initiated as a result of those two incidents this summer. However, the panel's charge is much broader in terms of trying to look -- get an overall look at the wildlife fire-fighting program. And this morning I'm going to want to try and focus on your experience and how, as a result of these unfortunate incidents, we might look at improving that in the future. So I would want you to comment however you would like on the particular accidents, but be sure that all of us are reminded that that is not the purpose of our initiatives here to investigate those two accidents. That is the responsibility of the NTSB and the parties to the investigations.

GENE POWERS: I concur heartily. Apparently, as I said, it's difficult to say the things I want to, but you paraphrased exactly where I'm coming from. All I was trying to point out again is one of the things that has caused us to be here and need the very things you're doing: go on to sustainability, to be able to attain safety and so forth. But we have to look to the past to correct the future. And I was pointing this out to show again why it is that our industry is still running airplanes this old, why we've been economically handicapped. And I guess without the results of the accident or had we not had this accident, had my company not been a sacrificial lamb, I wouldn't be here.

The next thing is that clearly for a sole source industry such as this to continue to exist, one of the things that this panel, or you as people vitally interested in combating forest fires with this tool need to know is you've got to have a way so that you don't wipe out, completely destroy a company such as mine. And mine is not unique to the other companies. If an accident like this in an old airplane like this can shut us down and cause this, we need to do something about it.

And I guess from the safety results or whatever, I don't know how to go on at this moment. We have procedures, contracting procedures. We vitally need new equipment. We would have had new equipment, much newer equipment, 12 years ago if we hadn't have had to deal with the contracting and the procedures that are in place with the negotiated contract, with the lack of proper investigation. But principally and very strongly, gentlemen, my favorite saying that I always tell everybody, especially trying to tell the Forest Service, or BLM, but principally the Forest Service: gentlemen, safety costs money. That is -- it's all there is to it. And if you deprive somebody of the proper funds, he has to start allocating his dollars.

Now, the best place you can send dollars at any time is going to be in a safety related area. You'll get the biggest return for your dollar in safety because although we've been lucky enough for many years not to have too many of these accidents, I've never made a penny on a single accident yet.

MR. : Mr. Powers, can you tell us more about your safety program then within your company? I'd be interested in hearing how safety is conducted, what sorts of programs you have for training and --

GENE POWERS: Well, I think I'd like to read some of the results. We just went through again -- and this has been very positive, our company is stronger now. We had a NASIP inspection.

JIM HALL: With Earl's permission, could I ask one question before we get to your company's record in safety? You know, the overall issue which you just hit on is the process in which the United States government contracts for this function to be performed. And in doing that, we have the government contracting, and I guess in the past assisting in bringing about or bringing into the hands of private contractors military aircraft that were not initially designed for the fire-fighting function.

And in addition, the airworthiness certificate that -- the special airworthiness certificate that is given by the FAA in no way addresses the new mission, that they are airworthy for the new mission that they are to perform. And as you pointed out very well with the Pearblossom C-130, had we had flight data and cockpit voice recorders on these aircraft, these older aircraft, or had we had some special instrumentation that's available with the technology of today that would have permitted the operators and the government to monitor the envelope in which these planes are operating, we might have been able still to use these aircraft, but use them safely.

As we go forward, this is going to be one of -- and all the panel members here speak individually because at this point we have not obviously had a chance to collectively get together and put a report together, which we will. But I'm very concerned about what should the government's obligation be in terms of airworthiness of an aircraft for what we have heard is a very dangerous and difficult mission. And what type of aircraft should the government provide, even though the airworthiness permits -- a special airworthiness certificate does not make this aircraft suitable for the carrying of personnel.

Obviously I think that the life of the crewmembers is equally important. And to give someone an assignment, it should be the government's responsibility to ensure that they have the proper piece of equipment to do that job. That's going to be one of the dilemmas we're going to have to face as we go forward in the air tanker world.

GENE POWERS: Mr. Hall, I respectfully disagree strongly with the start of your premise there. As you referred to the Pearblossom incident and part of what could have prevented the accident. I didn't go ahead with Earl but I didn't get to go ahead and tell you. But that accident would not have occurred, could have been prevented had we had what this investigation has discovered, Lockheed reports. When Lockheed originally designed that aircraft, they did structural testing and fatigue testing and they submitted that airplane to loading and unloading to the design limit cycles. And they had an

extensive report that said that that aircraft had a certain number of cycles, would fail exactly where it failed.

The fault is not that it wasn't instrumented, like you said, although that could have helped us, not going to lose a valuable tool. But we didn't even need that. All we needed was that report that said, "Get in there and look. It's going to break here, fellas." If it's going to break here, let's look at it and detect it before it breaks and replace, repair or all of the above. We didn't have that report.

JIM HALL (?): And my only point, sir, so you understand, is had the board done a full investigation at that time and had recorders available, I think they would have found that report, just as they have in this investigation.

GENE POWERS: I think yes, sir. Yes, sir. But also -- well, that was the point. We should have had the report. We didn't have it. The military should have released that. Us as an industry have found now that there have been other failures in those airplanes that have never come out to us from the military or from Lockheed.

JIM HALL: And that's not my focus. Sir, I want you to understand my focus. My focus is on the government.

GENE POWERS: That's what I mean. The government should have given that to us.

JIM HALL: The government is providing the contract. In this case, the government furnished the aircraft or helped the operators get these particular aircraft, and what needs to be the obligation of the government in the future in regard to certification and monitoring of aircraft performance if we're going to use older aircraft for this function, and aircraft that weren't originally designed for this function.

GENE POWERS: Well, again, I would like to say that I rode many a mile in an airliner and I rode many a mile in an air tanker and there is an overemphasis on the severity of this mission we do. Even the cycles of loading the aircraft to its design limit and unloading it. I just got back from Washington D.C. I ride in a 767, the seatbelt sign comes on. And my wallet has a pretty good strain gauge in it too and I know how many times that aircraft went like this. I used to try to fly back and forth between Denver and Chicago in the summertime and for the cycles of G loadings, the stress on that aircraft as you go is just as great or greater. The airlines and the design of those aircraft don't have to be designed specifically for this. They have to be analyzed to see whether they're capable of this.

But I can take an air tanker and I can go out here to do this fire mission and I can analyze the flight conditions and I can slow it down. When I make this drop over the fire through the spectacular area that these people make, I'm normally going at 130 -- I'm down in maneuvering speed limits. I'm doing 130 knots. And if I want to go home because it's rough, I'll go home at 130 knots. The next thing is that our air tanker aircraft

get -- well, let's say the Privateer you saw had 8,000 hours total time on it. But to fly them 200 or 300 hours a year is the utilization. Now, how many cycles, how much strain does this get? And we don't overload them beyond the design limit and we don't land load -- the airliner, the C130, the cargo carrying airplane was designed to take off. It was designed for this mission. In many ways people don't talk about this.

MR. : So, Mr. Powers, can I summarize and just say that you're saying that the in-flight conditions that heavier tankers encounter are no different than airliners?

GENE POWERS: I'm saying that they do not -- they are not as extreme as people visualize them. And if they are extreme, it can be controlled by pilot training and techniques in for service oversight because --

MR. : How can you do those things, sir -- pardon me for interrupting. But I've flown at low level over the mountains in the western part of this country in many different kinds of airplanes and I've flown over the Midwest in relatively calm conditions. I honestly can't understand why you're saying that flying low level over the mountains, hot in the summer time, can be compared equitably to other flight conditions.

GENE POWERS: I'm comparing the number of cycles that you hit the turbulence, that I guess you're referring to, and comparing my ability as an air tanker pilot to take advantage of the air currents and so forth and the speed that I travel the airplane through there to -- I don't want to get personal, but to -- the average pilot isn't going to do this. It's a specialized mission. The average airline or the mission that the C-130 was built for, for the military guy to take it. He was out here and he makes an assault landing. He does assault type training. He does things -- I'm not making light of the dangers of this. I'm making a comparison and for me to go out here and fly 200 or 300 hours a year in an aircraft, I can have an inspection procedure and a monitoring procedure that will keep that airplane going safely and I don't have to get it -- if --

MR. : Does the government give you

GENE POWERS: -- (cross talk) in and detect --

MR. : Does the government give you adequate funds in the contract, if that can be -- assuming that what you're saying is correct, to do the pilot training, to provide for the techniques and to provide for the technology to monitor the performance of the aircraft?

GENE POWERS: The answer to that is simply no.

BILL SCOTT: And to characterize the environment that you work in, I understand the seat of your pants approach you're talking about and the comparison that you make with the pilot between what the C-130 was designed to do and what it did in tactical missions with the fire-fighting role. However, have you or anybody in the industry ever taken a C-130 or a PD4Y (ph) out and instrumented the airplane --

obviously you have to have government support to do this financially, maybe expertise wise, to characterize this fire-fighting mission so you know exactly with hard data exactly what that environment is? I mean, you're making comparisons based on seat of your pants, right? Well, is there any data? Have you ever seen the environment characterized as you, as a mechanical engineer, would like to see it?

GENE POWERS: Mr. Scott, I have not. I would like to see it and it's a very necessary thing, and so this is another key point of where I hope I don't miscommunicate to you. I'm telling you that this is another tool that we have been denied, just like some of this information, because of lack of funds, lack of oversight and even knowledge. We have been -- I came here hoping that this would not digress into a fault-finding thing. But I can say that there are things that we have been prevented time after time from doing because we don't have the economic dollar to do it. It's the safety dollar that I said. Safety costs money.

Now, what we're asking for and what we need clearly here, instrumentation, more knowledge about the ability of the aircraft is a very expensive thing. When I say I don't get it, the reason I don't get it is because I've only got this limited amount of safety dollars, and I have to decide if I can't have a strain gage, if I can't have cockpit instrumentation -- in fact, we've got plans right now we've had for years. If I can't have D-GAS (ph), if I couldn't have -- we were the first ones to go over people's bodies for Loran (ph) in our aircraft. We were the first ones, our company, to go with the GPS in our aircraft. We tried to put GPS in our aircraft and some of the later navigational tools in the aircraft, such as the C-130s. We went to this years ago, and we were told by Forest Service individuals that we couldn't put it in there because our dumb pilots didn't know how to use it. We weren't told that we would have a training -- we send our people, our pilots in training -- rather than spend the dollars for this instrumentation, because we only have so many safety dollars, we send them to simulator training and more instrument training because we have to make a decision.

Maintenance, the same way. We have to maintain these aircraft and inspect them, but we have to do it out in the field at night in an area where there is no lights, there is no power. We've only got so many safety dollars and so many mechanic dollars. How can we on an airbase some place in the middle of the night with no air, no lights, no power, perform the level of maintenance that we'd all desire? In this investigation again -- that's why I dwelled on this investigation. I could talk so many hours, but it's almost opportune. When we had our accident here, not knowing exactly -- and not knowing at that point we were going to get the wonderful oversight that has come.

We had an airplane down in Fort Huachuca on a base that they put us on, and we were several weeks and many thousand dollars just finding a way to get on that military station so we could just get the fuel out of it, because we couldn't even start the investigation until we could de-fuel it, unload the wings and tear in there to look. That's one example that goes. So we have these preventative things. Now, we went through again a wonderful thing here that goes to the same thing for safety dollars, or whatever.

Okay, let Duane talk a second. But also the NASIP. May I turn this over to my son a minute?

AL HYDE (?): Sure.

DUANE POWERS: We will be available also for you. I mean, I guess I have a heck of a time. I was going to say I'm like a baby robin, but you're --

MR. : Well, Mr. Powers, let me say that the panel -- and in this situation I think I can represent the panel -- all of us are interested if after your testimony today, if you have other information or recommendations specifically on how we might -- this board is not interested in finding fault. We are here to establish hopefully findings that will provide a new direction for this program, and we would like to be able to look at specifically your knowledge of the government contracting process. You know, how can the government make intelligent decisions in terms of the dollars required for adequate safety and maintenance programs for this important mission? Go ahead, sir.

GENE POWERS: I still want him to give a talk here, fellas -- (laughter.) But, you know, one of the things you can do right there is let us deal with professional or the same people year in and year out, the top level people. Boy, you guys can put me out of business here because, you know, I'm throwing rocks at the hand that feeds me. But I do feel that every few years the head of our aviation management changes. It's not the same people. The contracting concepts change and there is no stability in the industry, or incentive to let us go to the modern equipment or make major changes, because we have to survive with what we've got. Again, this safety dollar.

And as we go to this negotiated contract, or as the Forest Service comes out with a study saying that in the next few years we're going to go to different tools, they don't do it. As they award their contracts they put them out as a three-year unilateral contract. But our experience has been that by far the majority of the time they never even go to the three years. Now, how can a company that's as specialized as any one of us people in this industry make a major expenditure for a different tool, when we have no assurance that that tool will be used three years from now? And if we do make this or it isn't used, our specialized equipment, our specialized pilot techniques are draining programs in everything else. They're very specialized and they're worthless.

Right now if our C-130s, which very well may be -- I'm prepared -- fully prepared to park them if that's necessary, I'm fully prepared to fix them if that's necessary, I'm fully prepared to replace them. But right now if they don't go to work, they're worthless. They're not like if you had an ag plane or -- I operate helicopters. I operate many other airplanes. Our company has 80-90 airplanes one way and another with our affiliates. But most of those other airplanes, the day that they don't work for Smokey Bear they'll go to work for somebody else. We have Costas and Dorniers (ph) that haul smoke jumpers and do para-cargo work. But in the winter time they do work -- as an example, we just got done dumping sonar buoys in front of the hurricane down there, and then Christmas time we haul packages. We can do something.

What can we do with an air tanker? It's absolutely worthless. It's not only just worthless, it's an albatross around our neck because we've got to maintain it or take care of it but it can't generate a dollar and we can't even sell it.

MR. : Gene, maybe (off mike.)

(Laughter.)

GENE POWERS: Thank you. I appreciate that.

MR. : (Off mike.)

GENE POWERS: Well, we can't. If we're out of time already, fellas, we have got to say what you need to hear.

DUANE POWERS: Well, one thing on the contract, we can provide information. We need some dialogue after this meeting. It's a very complicated process. I think you folks already know that, and we'll be more than happy to provide you our insight. It is complicated and I think the contracting system is broke and that's why we're in the condition as an industry as we are today.

I want to address these training questions, because they're very good questions and I think that the information that is dealing with the facts will pleasantly surprise many people that have a totally different image of what this aerial fire-fighting industry experience in training is all about. We can lead into this national safety inspection program that Hawkins & Powers received as a project inspection from the Federal Aviation Administration. A NASIP is a special inspection, but there's only a very limited quantity conducted each year. It's a very extensive process. It goes through entire operations from head to toe of a company regarding anything from finance, accounting, maintenance, operations, training, the whole spectrum of your aviation participation in whatever that company does, whether it's manufacturing or operating aircraft.

We have a report from the Federal Aviation Administration after we had gone through this inspection process and Hawkins & Powers came out very, very well in this process. I'll read just a couple of quick highlights.

MR. : Excuse me, Duane, when did that take place?

DUANE POWERS: Well, it was ongoing over the last two months and it started --

MR. : Has this been released by the FAA?

DUANE POWERS: Only a memorandum to our company. Now there is a report that has come out. It has been submitted down through the appropriate channels. It goes down through the district offices and then, of course, that information may or may not be available depending on the time within the near future but it should be coming out.

The company has been very cooperative and open to suggestions for improvement. We found no significant compliance issues and nothing that would indicate immediate operational risk problems. Skill and knowledge tests required for pilots are backed by a comprehensive flight crew training program which is not required under the federal aviation regulations. In this aerial fire-fighting industry we do not have specific requirements that compare to the air carrier 135, 121, transportation levels. However, our company has a comprehensive flight retraining program and the Federal Aviation Administration inspected and determined that and made that decision.

A crew resource management program is also in place. This is also not a requirement. Hawkins & Powers initiated that and was one of the first companies to spend those valuable training dollars in this area. Hawkins & Powers' safety record prior to this 2002 fire season was less -- our accident rate was less than half of what the industry's accident rate has been.

Hawkins & Powers has not had an accident in aerial fire-fighting for 15 years. With the two accidents that occurred in 2002, our accident safety record is still less than the industry average. In other words, our accident rate is less than the industry average even after these two. So we have an outstanding historical performance.

The training records are also not required and our training records exceed even Part 135 requirements. So now you have an agricultural operator on par with a 135 operation and actually exceeds those requirements. Experience in terms of flight hours is impressive. It says, "Overall, we were impressed with crew training and qualification." So any specifics, we have very detailed records we'd like to share at some other time for anybody that would like to do that.

(Off mike.)

WILLIAM GRANTHAM: My name is William W. "Woody" Grantham. I'm the president of International Air Response, Chandler, Arizona. We're an air tanker operator. I started in this business in 1967 after college at Arizona State University and Army Aviation, Arizona Army Guard Aviation Division.

We have owned and operated most types of air tankers. I've flown and type rated (ph) in the B-17 and the B-26, the PB-4Y2 (ph), C-119, Douglas DC-467 (ph) and a Lockheed C-130. We operate aircraft up through the DC-8 today. We have not had a U.S. Forest Service contract for approximately the last 15 years. We licensed the very first ex-military C-130As that come out of the military in 1984, 1985 era.

MR. : I think, Woody, if you could pull the microphone, unless it's been -- the gentleman in the back would get you a little closer. Thank you.

WILLIAM GRANTHAM: Anyway, our company has operated basically with the C-130 as a fire-fighting aircraft worldwide, since we've not been able to receive a U.S. Forest Service contract for the aircraft. We operate in France and Spain and we have one en route today from Gander, Newfoundland, back to our home base at Chandler, Arizona. It finished up a Spanish fire-fighting contract. But anyway --

MR. : Which model C-130 is --

WILLIAM GRANTHAM: Those are A models. All A models. Yes, sir.

The thing I'd like to get to is back in the late '70s I was involved with the management of the air tanker industry as a whole. We had approximately 62 contract air tankers in the late '70s and most of those aircraft, or probably 50 percent of them, were 2,450 gallon and larger air tankers. The problem I see is the U.S. Forest Service has liked to always have total control of the air tanker industry. The industry tried to modernize as we spoke here earlier, Mr. Powers did, that companies were upgrading equipment, companies were developing flight training programs, flight safety programs. Prices came in approximately 10 to 12 percent higher in that period and the Forest Service, they had asked for, say, 62 contractor tankers. Everybody raised their prices 10 or 12 percent. The Forest Service turns around and didn't award any of the contracts and when you're in a sole source industry with a large financial expenditure, it's devastating to an industry. And the Forest Service knew that. They then turned around and asked for 35 air tankers.

Now, to give you a little more background, when we had this larger number of contract air tankers -- also the fire-fighting mission has changed devastatingly. The fire-fighting mission, back in -- when I started in this business and up through the early '80s, was done in a professional fire-fighting mode. The best time to fight fire, of course, is early in the morning. Early in the morning you have less winds, higher humidities. We used to do hours and hours. Mr. Powers and myself would take off many, many days prior to daylight to be on the fire scene at daylight.

You start pre-treating. You lay fire line in conjunction with cat line, hand line. You manage the -- you don't manage. You pre-manage the fire so that the fire can't develop into the devastating fires that we've had for the last five or six or 10 years. This was done at a great -- more safety factor to the aircraft and air crews and everybody involved, because you don't have the severe turbulence early in the mornings. You don't have the severe flight conditions that you have from 10:00 in the morning to 4:00 in the afternoon.

Back to now my cut back on tankers. When they did this cut back on tankers, the Forest Service took a position that they wanted to be media-orientated, or public relations orientated. So instead of fighting fires at the proper time, they then took the attitude that,

“Well, we’re going to put the tankers on from 10:00 in the morning till 6:00 in the afternoon. We’ll now call this the critical fire period of the day.” Which it is, I’ll admit. So what happens, they then put on a great fire-fighting show from noon to 4:00 in the afternoon and it’s a media show that does no good in a fire-fighting role.

MR. : Woody, can I ask for your opinion on something as you go?

WILLIAM GRANTHAM: Yes, sir.

MR. : One of the things we hear from the Forest Service is that the nature of their business has changed because there is so much more wildland urban interface than, say, 20 or 30 years ago.

MR. : And more fuel.

MR. : Do you think those things contribute to this, as you were calling it, sort of a -- not a media show, but something that people could see? Is there --

WILLIAM GRANTHAM: Sure. I definitely think they contribute. The urban interface contributes because you’ve got more concerned people.

MR. : Right.

WILLIAM GRANTHAM: You know, and you have a larger media and a more exposure type media today. So that does have an effect probably on what you’re trying to do.

MR. : What was the basis for this P.R. campaign, if you will? What are they trying to accomplish?

WILLIAM GRANTHAM: Bigger bureaucracy, larger budgets. I don’t think -- I think it’s what’s happened over the years. They really have run out of real fire expertise people. And I don’t want to say that adversely about the agency because I think there’s a lot of wonderful people there and I think it’s a wonderful agency. But the thing about it is I think it’s just the way it has bureaucratically ended up and some of that is probably -- you know, a lot of that may not be their fault. It’s a fault of probably environmental influence, different influences that affect them. You know, and so their hands are maybe tied in some of these problems so that they haven’t been able to fight fire. But if you fight fire at the proper time of the day, like early in the mornings, you know, you’re probably -- economy-wise, you’re probably getting five times for the dollar that you do at 2:00 in the afternoon, you know, because you can really make some headway if it’s done at the proper time of day in the proper mode. I don’t want to dwell on that any further. You can ask a lot of questions. We’ve been around a long time and we have been involved in these scenarios.

MR. : Are you not currently bidding on these contracts? And since you obviously operate your C-130 aircrafts in other countries in the world, are there lessons that you have learned or things overseas that are done that might help us improve our system here?

WILLIAM GRANTHAM: Well, the only lesson I can state from overseas, in France and in Spain where we operate aircraft, they continue to do this early. In the south of France they have very high dollar real estate, what we'd all say -- call sort of around the Mediterranean. So, of course, they fight fire early in the morning like we used to do here. I mean, that was -- that's their continuing policy and they aggressively fight fire. They launch lots of equipment toward a small fire incident. And if the equipment is not needed, they turn it around and bring it home. They don't sit and try to evaluate the fire and then launch the equipment. When the fire bell rings, the equipment rolls.

MR. : Do you have a contract with the governments of France and Spain?

WILLIAM GRANTHAM: We don't have one with the government of France today. We have had one for approximately 10 years. We have one today, which just finished up a couple of days with the government of Spain.

MR. : Are there any changes in their contracting, or what's the length of those contracts?

WILLIAM GRANTHAM: Those contracts run approximately 90 days. They pay approximately 35 to 40 percent more than what a U.S. Forest Service contract pays. However, you're operating 7,000 miles from home, halfway around the world, so there are some added costs there. We also operate in the state of Alaska. We have contracts with the state of Alaska to fight fire.

MR. : Woody, would you give us any more ideas about how contracting might be corrected in this country then, with your experience of --

WILLIAM GRANTHAM: Yeah. To answer Mr. Hall's initial question, we have bid all of the Forest Service contracts here. Our company has been told continually for the last, oh, I'd say four or five contract cycles, 10 or 12 years, 15 years, generally it gets down to the fact that our price is too high. We explained to the Forest Service that we're exceeding the IPG-182 FAA maintenance inspection requirements. We're doing further inspections in the aircraft, we're doing more in-depth inspections, we're spending the money. The Forest Service has told us that that's over and above their requirements and they're not interested.

JIM HALL: Does the Forest Service have any expertise in their -- maybe that's not a fair question. I'm trying to see in the contracting process who is there looking after aviation safety.

WILLIAM GRANTHAM: They have personnel somewhat in those areas. I think some of the problem is, not their fault, but the fact that maybe there haven't been the right type of personnel in those positions. I think that one problem you have with the Forest Service, between the aviation arm and the contracting arm there is a -- I think at this point I would say the contracting arm is trying to totally control Forest Service aviation, and they're trying to basically do it by price.

JIM HALL: Is your observation that safety or cost efficiency is the most important mission of the contracting process?

WILLIAM GRANTHAM: I would say cost, not -- cost efficiency. I was told as late as a couple of months ago by their aviation maintenance inspector -- I called Paul Markowitz and I said, "Paul, I think all of us private contractors should have to have an extensive wing X-ray and a current total inspection of all of these air tankers," because of our type of flying and the job we're out there trying to do, just to give us everybody in the industry a comfort level. And I said, "I think it should be a requirement of future contracts." His answer to me was, "I don't think contracting wants to pay for that."

MR. : So there's a real disconnect between the people that run aviation and the people that do the contracting?

WILLIAM GRANTHAM: I believe there is --

MR. : If you have the two together --

WILLIAM GRANTHAM: -- in the cost analysis. Yes, sir, I believe there is.

JIM HALL: What about the adequacy of the FAA regulations? We just heard testimony of Mr. Powers reading a draft FAA report complimenting them on doing things that aren't required, that are pretty well required in a great deal of the aviation industry. Is there any particular reason that the regulation floor is so low in this particular area?

WILLIAM GRANTHAM: Well, I think what's happened over the past 35 years or so that I've been involved in it is that everybody has basically tried to turn their head. I think the FAA says, "Well, the Forest Service is running the airplane. It's public use." I think the Forest Service says, "Well, some moment it's public use, some moment it isn't." I think between all the agencies it's been left in a gray area where it's -- I think everybody is basically in denial.

MR. : Would you say these airplanes, the large air tankers, are orphans then in this whole fire-fighting business?

WILLIAM GRANTHAM: What do you mean orphans, sir?

MR. : They don't have anybody to take care of them. Helicopters are typically certified aircraft. The FAA monitors them very carefully. You have a special

certification air tanker business that's drastically different because they're ex-military aircraft for the most part, except for the DCs primarily.

WILLIAM GRANTHAM: No, I wouldn't say they're orphans in that respect. We have a very stringent FAA inspection program in these aircraft. And our shop gets facility checked probably twice or three or four times a year by the FAA. And our shop as well as Hawkins & Powers' shop, we're all complying with all of the requirements. And I don't think they've been -- the large air tankers I don't think are any more orphaned, so to speak, than the whole fire-fighting industry. I mean, it's a fact that it's just been an area where I think the FAA should be in control. And I think they are in control of these aircraft from the maintenance inspection program.

And these aircraft back to certification are certified for aerial fire-fighting. And as one of these -- that's what it says on our type data certificate for the C-130 and for the P-3 aircraft. And as these aircraft are tanked and go through --

MR. : Did you provide us a copy of your certification?

WILLIAM GRANTHAM: Yes, we can, just let me do that.

MR. : They're certified for use, Woody. Certain uses I understand.

WILLIAM GRANTHAM: That's correct.

MR. : But they don't go through the same kind of certification process that a commercial airliner or a business jet or any kind of airplane that serves a number of other different industries. Is that correct? I mean, you adapt them from a military use to this particular fire-fighting mission.

WILLIAM GRANTHAM: We adapt them from a military use or a civilian use to this fire-fighting mission. But, however, when the aircraft is equipped with the fire retardant tank we go through a certification, an additional certification process to show that the aircraft is safe to operate different load criteria, different speeds, different G loading (ph), all types of aspects of what this new addition to the aircraft could cause it to be subject to. So it goes through quite an extensive additional FAA certification and testing program with the retardant tank added to the aircraft.

MR. : So you get a supplemental type certificate to a special certification.

WILLIAM GRANTHAM: That's right.

MR. : Is that how it works?

WILLIAM GRANTHAM: Yes, sir, that's correct.

MR. : (Off mike)

MR. : I was just saying I think Mr. Powers still had some comments.

(Cross talk.)

MR. : Woody, if I give it back to Gene you'll never get it back. So why don't you do your quick closing statement and then we'll save the last part of the time for Gene and Duane to give their thoughts about where -- given the focus, looking to the future, and what your thoughts are on that, okay?

WILLIAM GRANTHAM: For the future, as far as I'm concerned, I mean, I think this industry has always tried to be professional and provide what the Forest Service has asked for. I agree with Mr. Powers and the instability of contracting. You never know from fire season to fire season whether you're going to have a job the next year or not. It makes it very, very hard to make a business wise, sensible investment into the industry.

I think as far as I'm concerned, I think the C-130 aircraft is probably the most ideally built aircraft of today to do this job because of its military history and its mission in the military. I think that the FAA should be in control of the airworthiness of all of these air tanker and helicopter equipment. I think the Forest Service should tend to basically forest management policies. I think that the dollars are not in the program to properly and safely be enabled to modernize and upgrade this industry that the agency will not allow the dollars to be there. And the agency does not properly allow for that.

And I think last but not least, actually the current fire-fighting method really needs to be reviewed to try to not do this fire, extreme weather conditions, middle of the day, turbulence fire-fighting mission. And the other thing you have to remember, these Forest Service lead plane people which generally lead the air tanker in, they're flying a utility category airplane that's a 5 or 6G aircraft and he gets bounced around a little and the guy who comes in behind him with a big old loaded heavy air tanker, 2 1/2G airplane, and there's a little bit of misconception there. Either the lead plane needs to have the equipment to determine what the turbulence factor is and the G loading factor, and also the large air tanker, or all air tankers and helicopters need to be equipped with proper equipment to monitor it themselves and be able to go back and monitor for some preflight.

MR. : Thank you for your comments, Woody, and if there are any additional ones aboard would welcome them. Are you flying your C-130s today?

WILLIAM GRANTHAM: Yes, sir.

MR. : Those 130As.

WILLIAM GRANTHAM: Yeah.

MR. : What, did you already -- wasn't there an FAA order on those?

WILLIAM GRANTHAM: The FAA order just came out about a week ago, the AD note did. Prior to that I had a -- I was personally flying our C-130 in the state of Alaska, fighting fire, when Mr. Powers had the C-130 accident. We at that time brought our aircraft from out in McGrath, Alaska, where I was fighting fire back in Anchorage, and had an FAA wing repair station come in and do a total wing x-ray of the aircraft, because I didn't want to fly out of course or didn't want it be operating any further. We had done that actually in the winter. We've done that every year.

MR. : Did they take the doublers (ph) off or --

WILLIAM GRANTHAM: We did not take the doublers off. We've looked at it, though, extensively, and there is new technique. And we're now working with Sandia Laboratory to be able to even use a further technique ability to be able to look into areas without taking the doublers off. But anyway, we've always done, we've exceeded the Forest Service requirement of inspections by about \$20,000 per C-130 every year, and that's -- they don't want to recognize that when it comes to contracting costs.

We have not found any problems in our C-130 wings and we continue to operate them. We operate some for the U.S. military and we just went through a large inspection on another one at our shop and there's not any problems.

MR. : Okay, well, thank you. I didn't want to get off on that subject too, but thought that -- well, I'll discuss that with you in the bank.

WILLIAM GRANTHAM: Sure.

MR. : Please proceed, sir.

MR. : Well, I wanted to -- maybe it was a little bit to help Bill Scott with one of the questions he was asking about, the restricted category certification process. He is somewhat correct -- well, completely correct, but I just wanted to add to it. These aircraft operate under Part 137. As I didn't have time to go through with our NASIP inspection when they came in went -- the FAA came in and went through everything.

One of the things that they investigated very thoroughly, and boy that's another thing that was way past due and we thank everybody for, but they investigated the certification process. The type of certificate, how you got it, what the restrictions are, and then the operation that you operate under. Part 137 basically. And the questions of the difference between public aircraft and/or Part 91 or 137 aircraft. And they found the same thing, that there are great discrepancies.

At this point the Forest Service somewhat treats you like a teabag. One minute you're in public aircraft cup and the next minute you're in the Part 137. They discovered many discrepancies of compliance, such as how and where you operate these airplanes.

But our company and Woody's, as he pointed out, have certificated -- we hold type certificates. We have designed, constructed, went through the complete process.

And I can say like two years ago -- I just got back from being in France, Italy, Greece, teaching those people how to operate these aircraft. He just got back from Thailand. That's where he was when the C-130 went, in Thailand, demonstrating and setting up training programs for those people and their whole fire-fighting situation. And one of the things in -- one of the aircraft there, a standard category DC-3, but it's been turbine converted. Bazler (ph) turbine conversion, a wonderful platform but it's an old aircraft that will be here for many years and a super tool. We designed a tank for that that will in 10 or 15 minutes convert it completely back and forth. But we went through all of the certification, cleared to the standard category type standards. And one of the things that we're putting in that tank right now is we're finalizing the certification of it, although its been in operation for quite a while. All the strain gauges and the things just like you're talking about. Monitoring things. We operate helicopters and as you pointed out or you mentioned, helicopters seem to have a little more stringent thing but there are many restricted category helicopters out there and they all come under 137 when they're working.

MR. : But they were certificated under the FAA in the first place?

MR. : Pardon?

MR. : -- but those helicopters --

MR. : There are surplus military helicopters out there.

MR. : There are surplus -- okay.

MR. : Almost a majority are the same area and the same thing.

MR. : Your big type one fire-fighting helicopter --

MR. : Yeah and the Hueys, the HU-1s. Those are all the same situation. We operate them too. There's a gap in -- somewhat, but actually there's not. By the time you get through the certification to accomplish these things -- I was going to get into the flight testing that you have to do and it's quite extensive.

MR. : Could you gentlemen then go ahead and address what you think needs to be done for moving this whole business into a successful future?

MR. : I think the important thing is, everyone wants to look towards the future. Twelve years ago we had the same situation, we're in a worst shape as an industry today than we were 12 years when this so-called modernization program that the Forest Service initiated took place. It has just totally disintegrated to a point where there is no modernization opportunities out there. So here we are looking ahead again. So we can

talk a lot about the need for the large capacities, for air tankers and the benefits of that but what do we do in the short term in our transition mode. This is where we're at right now.

I think the initiative is moving towards the future to get some answers. Hopefully this process will take care of that. Most importantly though, the political decision making and the running from uncomfortable situations through the politics process is driving current decision making. Such things as the sensationalism and the agony of these accidents this summer is something that administratively the Forest Service would like to distance themselves from. They want to run from that in a way that they don't have to deal with it. Now by doing that one of the solutions is, is to not get involved in the technical, the engineering, the facts around such an accident caused as with the PB4-Y2.

We have specific engineering solutions that are immediately available and in work. The tendency of the agencies would be, we don't want to contract for these aircraft because of the stigma of being an old aircraft. They don't want to consider whether it's actually continued safe under an airworthiness program or what could be done but if we don't do that then we have no availability when you take all those airplanes out of service and don't commit some immediate support to them to transition to where we need to be five years down the road. So most important, that takes dollars and commitment and management.

One of the things I want to point out as I close right now. The five topics. Safety is at the top and then give me the name of the last --

MR. : Strategic guidance?

MR. : Okay. Strategic guidance, that's a very confusing thing and I can't even remember the name of it but I know in my mind what it means. Strategic guidance is a well thought out, organized, managed program. You can't have safety, you can't have any of the other criteria that your panel is looking into without --

[TAPE CHANGE.]

JIM HALL (?): -- But I would like to ask again, specifically, you know, what changes and, you know, at some time if you could offer to this panel, you know, what specific changes would you recommend in both -- you know, the media world we live in, I am old enough to remember the days without television and there is no question that television has impacted everything in our society. Everything, but it's here. Now, you know, government has a responsibility and the two-edged sword of that is, in many cases, it brings to light things that need attention and need light.

But here what the panel is looking for is -- this is your industry and I take to heart what Mr. Powers said in his opening remarks. It is your employees, it is your kin, it's your company, it's your investments and your assets. Now, we are in a situation here that this panel has been asked to come up with some findings that hopefully will provide a future direction and we need the industry's assistance in how we can get there and specifics and so we would welcome that in writing or in whatever form you might want to provide at a later date.

AL HYDE: We'll take a break till 10:30. Thank you.

(Recess)

AL HYDE: Our next person speaking is Trent Kincaid (ph) with the Unifor (ph) Training Institute. Sir, thanks for being here.

TRENT KINCAID (?): Hello, gentlemen. Thanks for seeing us. As I said, we are Unifor (ph) Training Institute. We are basically a crew resource management company that specializes in safety from the ground up. Our company was founded several years ago and we branched out and we found that CRM issues keep cropping up over and over, and we have a particular bit of expertise in the CRM, crew resource management, department due to the nature of some of the people we have on our staff. We have a lot of ex-military, current commercial aviators. We have board members that include Captain Al Haynes, you know, Flight 232 in Sioux City. And as well as Bill Taggart, who happens to be a leading expert on crew resource management and air crew issues out of the University of Texas in Austin. He is --

JIM HALL: University of Texas?

(Cross talk, laughter.)

TRENT KINCAID: I don't claim to be a longhorn. I'm --

JIM HALL: Okay.

TRENT KINCAID: I'm a volunteer.

JIM HULL: Are you Tennessee?

TRENT KINCAID: I'm from Tennessee.

JIM HULL: You just went up in my estimation. So am I.

TRENT KINCAID: I bleed orange. But he is a leading expert for us. He's an executive vice president with our company as well. I set up a -- or I'm giving you all some folders. At the beginning of it, it tells who the company is and what we're about, and then I set up some slides. You can make notes on those on the side, I've left you

room there for that. We're going to address -- or what I hope to address here are some of the issues that you all brought up concerning your safety operational effectiveness, some of the costs and sustainability, particularly with respect to strategic guidance with you.

Overview. We have got -- we have done some work already with some U.S. Forest Service folks, Parker Fire Department and fire-fighting as well as aviation. We've done corporate aviation. Our program developers are from major airlines. So we do have that going for us as far as what we can offer for you all. Tennessee. Sorry, for you. And which gives us to our -- brings us to our safety puzzle. There's a whole lot that goes on and, as you know from your all's backgrounds, that human factor still accounts for 75 to 80 percent of the accidents that are going to occur out there. And without addressing that, there's just not going to be a safe operation there at all.

JIM HALL: Trent, you say you're presently under contract to the Forest Service?

TRENT KINCAID: We are not under contract, but we've given them some training. There's a building right over here. We've actually gone in there. Jim Cruzman (ph) brought us in to do --

JIM HALL: Was that out of the goodness of your heart or --

TRENT KINCAID: No, sir, we were actually paid for that.

JIM HALL: Who by?

TRENT KINCAID: That's a good question. I believe it was the Forest Service that actually paid for that. It was not aviation, it was for the -- it was first response.

JIM HALL: For ground safety?

TRENT KINCAID: Yes, sir.

JIM HALL: Okay.

TRENT KINCAID: And that's what we're really about. Not only are we just about the aviation aspect of it. We start from the ground with all the players that are involved, and include incident commanders and the first response teams and the communication that goes on there as well, some of the decision making.

MR. : And, Trent, excuse me for interrupting, but do you focus just on -- are your thoughts for the aviation community or more for the pilots? Or you also do work with communication with ground folks and inside organizations?

TRENT KINCAID: The training that we provide is CRM aviation, correct. We have an extensive background with other agencies as well to assist in the big picture, instead of just aviators. There's a lot more going on.

MR. : Right.

TRENT KINCAID: For instance, with your dispatcher. We like to bring in dispatchers to the training also.

MR. : And you do that, or you're just saying that that's what other people in the industry do?

TRENT KINCAID: No, that's what we do.

MR. : Okay.

TRENT KINCAID: That is what we do.

MR. : Bring in dispatchers, maintenance people?

TRENT KINCAID: Just like at many of the major airlines where they have maintenance folks, dispatchers, schedulers coming, give them some CRM training as well.

MR. : Do you do any work with -- I think United has -- what are they called? Zone controllers that are over particular groups of airplanes, but aren't pilots themselves. Do you ever work with dispatchers as a group that have to make decisions on allocations of --

TRENT KINCAID: We've done dispatchers, zone controllers. Our term for those are load planners. And our load planners do go through our CRM training. Not ours. I don't need to throw out our company, I -- but zone controllers at United Airlines, yes, they do.

MR. : Okay.

TRENT KINCAID: It just so happens that one of our program developers is there as well, so as one of theirs. We all know that crew resource management training works and the uniqueness of our program is our safety model with which we address it. And from the ground up we start with our threat situational awareness, identifying threats that are out there, making the assessments necessary. And through our -- a lot of our focus here with our -- where it says CRBA (ph) crew climate leadership. And the planning, execution and then the reviewing, monitoring and predicting of events as they occur, at least to a better decision for the commander and ultimately that leads to safety.

We use a lot of National Transportation Safety Board reports. We're currently -- Mr. Greg Fyfe (ph) I'm sure some of you all are aware of. He actually works with us on some of these issues. And from his perspective he can tell you why something happened, and he loves our company because we can tell you how to prevent it from happening in

the future. So we are a very preventative company by nature. Just that's our focus in our career source training.

Some of the accidents that are avoidable out there -- there are a lot of -- in this particular business during fighting fires it mirrors a lot of what we see in the military, from the military training we had in that -- have, in that a job needs to be done without -- as safely as possible. There are people on the ground relying on the people in the air and they need to make decisions based on that. The safest thing would be for them never to get airborne, but they've got a job to do so we help them do it as safely as they can in making the right decisions.

JIM HALL (?): Are you doing any risk assessment in all this?

TRENT KINCAID: The risk assessment occurs as a result of the communication process that goes on, where we -- collaborative leadership where he's getting as much input as he can finding out why he shouldn't be doing something or why he should, so that he can make the best decision. The risk assessment comes naturally.

JIM HALL: "He" being who?

TRENT KINCAID: The aircraft commander, the guy in the left seat who's having to make the tough decisions out there, and sometimes time critical decisions.

JIM HALL: But were you looking at the process in the Forest Service between the dispatcher and the crew and the lead plane --

TRENT KINCAID: The --

JIM HALL: -- in terms of that process?

TRENT KINCAID: About 80 percent of it --

JIM HALL: Is that (cross talk) really been focused on?

TRENT KINCAID: Eighty percent of it is what's going on in the cockpit and how guys are communicating and making communication with the folks around them, to include standard phraseology and that sort of thing, being clear and concise and understanding exactly what each other -- where each person in the cockpit is. And we teach people -- we don't just tell them "Don't let anybody do anything stupid." We say how you bring it up, as opposed to just saying it and facing the wrath possibly of someone. So we give them the tools. A better way to say this would be "Would you like flaps now?" or "Would you like this," along those lines so that the receiver accepts the message as well as the person giving the message, when he needs to give the message.

JIM HALL: But you're not doing this for the Forest Service. You're talking about your general program, right?

TRENT KINCAID: This is for -- we tailor our program for, for instance, Avarar (ph) Corporate Aviation. We have --

JIM HALL: Well, I'm -- you know, I'm interested in your program.

TRENT KINCAID: Okay.

JIM HALL: What I'm trying to just establish is have you utilized this program in the aviation area for the Forest Service?

TRENT KINCAID: No, sir. That's what we are trying to get -- that's what we are asking to do, is to do that.

JIM HALL: Asking who?

TRENT KINCAID: Your panel.

JIM HALL: Okay.

TRENT KINCAID: So that's primarily what our goal is, so that we can provide this training.

MR. : What sort of benefits would you see for the Forest Service aviation program from your training?

TRENT KINCAID: From our training the cost benefit of this kind of training for the amount of money that is spent on this, as opposed to automation -- some of the things that with aircraft that cost so much money. Crew resource management, dollar for dollar there can't be a better cost investment as far as the training goes with respect to that.

MR. : And who would you train? Who do you propose to train, the Forest Service --

TRENT KINCAID: We would like to train --

MR. : -- and the contractors, or what?

TRENT KINCAID: We would like to train them all if we can. We will train as many as you would like us to. We train -- our ultimate goal is in a dream world we would have everybody in the company get on the same page with crew resource management. Budgetary wise that's probably not exactly feasible to get everybody together, but the training does apply throughout and it's great training in the sense that the ground folks know what the pilots need in order to fly safely and what -- the information that they need and the information maybe they don't need, so they don't get path saturated.

MR. : Excuse me, have you evaluated much of what goes on currently in CRM for different industry players? We've heard different testimony that people invest in some training on their own. Do you know what they're doing or what the level of CRM is in the industry?

TRENT KINCAID: Without throwing out -- I don't want to say anything negative about some of the other training programs. However, our recurrent training program -- this is not just a one year thing. We have an initial obviously, and then the recurrent training, it continues to build on it so that when things from the training department of the Forest Service -- these are some of the deficiencies maybe that we've seen, where the pilots have reporting --

MR. : Yeah, but you don't know precisely where the Forest Service and the industry -- private industry is right now in the heavier tanker community?

TRENT KINCAID: I believe, and I -- please don't quote me on this, but the FAA requires crew resource management training for all agencies, or aviators 121 and 135 carriers and the like. Everybody does it. Not everybody does it as regularly as they should. It's sort of -- I think it's a requirement every three years, which it really should be more often.

MR. : And can you give us some comparison to, you know, the major airlines or other sorts of more -- I was going to say -- that perhaps spend more money on training. What is at the other end of the spectrum?

TRENT KINCAID: The other end of the spectrum -- for instance, before -- I'll just use United Airlines as an example. United Airlines, since they have instituted their CRM program, have not had a human factors related casualty since the Portland accident, which was in '78.

MR. : And can you estimate how many hours a pilot is in either CRM training, or just other sorts of --

TRENT KINCAID: CRM training -- for instance, typically there is a two-day immersion program into CRM. And a lot of folks who are coming in to aviation departments don't have any previous CRM training because -- depending upon where they come from, and not all of them have it. But as they progress and move throughout the ranks, they eventually are required to get it and we provide that for them. But CRM does work and the statistics show overwhelmingly that they do, and directly attributable to a lot of their CRM training.

We particularly focus on the communication process, making sure that everybody understands exactly what's going on. If somebody doesn't understand why someone is doing something, the question arises. We teach advocacy inquiry so that we can help the commander make the best decisions, the commander in this case being the aircraft

commander in the left seat of the aircraft. Situational awareness. There's a lot of things going on, particularly when they're fighting fires in the mountains. There are some issues there that are much more -- make it a much higher threat environment and increases the workload tremendously on pilots, and we address that.

Some of the resources that are out there. We make sure that every -- all the resources that are available to the pilot are taken into account and used, hopefully so he can make the best decision that he can. And finally the lessons that we've learned. The uniqueness of our company is that we have so many different backgrounds in our company, so that we can provide the experience and we're pilots teaching pilots, as opposed to someone else standing in front of a classroom teaching, who may not be a flyer, trying to teach somebody about how things should be done with respect to standard operating procedures. If this target isn't met, then we need to do this. If we don't, then we need to have a good reason why we are not.

MR. : Tran, the board has heard a lot about risk assessment and risk management. How does that relate to CRM in your world?

TRENT KINCAID: In our world the risk management is -- there are set standard operating procedures to keep us as safe as we possibly can be when we're fighting. And when we step outside those bounds we don't meet our targets: i.e. at this altitude we need to be doing this. If we are not, we need to acknowledge it and make a decision at that point can we still continue? Why aren't we doing it? Let's fix it and press on. If we can't fix it, we abort and then try again if we can. And then making sure we get all our ducks in a row, as opposed to just flying by the seat of our pants.

MR. : Would you explain this last chart you have, the lessons learned. You said eight out of 10 standard fire orders --

TRENT KINCAID: That is one that we actually learned from the Storm King Mountain project.

MR. : And what are these watch out alerts?

TRENT KINCAID: The 18 or 20 watch out alerts were some of the ones with respect to winds, some of where the lines were drawn, that sort of thing. And the point is we don't throw darts, but what we do is we need to understand why we ignored those. Is it the culture? If we have standard operating procedures that say this and we aren't adhering to that, we need to have a good reason why we are not doing that.

MR. : Have you looked at the aerial fire-fighting business enough to have that kind of data?

TRENT KINCAID: The data -- to be perfectly honest, it's kind of like -- the self-reporting systems aren't exactly in place for folks to tell us when they nearly die. They really aren't --

MR. : Why?

TRENT KINCAID: Once again, that's a culture. It's prevalent in a lot of different industries to include medical profession, and it used to be that way in a lot of the aviation industries. At United Airlines and American, some of these others, there's a self-reporting -- used to be NASA reports, now it's FSAP, flight safety assessment program, where a pilot who makes an error reports it, and it's non punitive, and hopefully the idea is say "This is what I did wrong" and training can address whether or not there is anything in the training program that could have prevented it, should have prevented it. If not, then it's addressed.

MR. : That sort of system doesn't exist in the aerial fire-fighting business? It is a reluctance to report safety incidents?

TRENT KINCAID: There is a reluctance amongst pilots to report incidents.

MR. : Why is that? Job security?

TRENT KINCAID: Job security and, quite frankly, FFA certificate action. So there is a reluctance. However, in conjunction with the FFA the proper program can -- the FFA has brought up on our self-reporting system, says if you will handle it, then we will step back and let you handle it. It actually creates an atmosphere where folks are talking and getting the word out, so that the next guy doesn't do the same dumb mistake that the guy did before.

MR. : Is the Forest Service amenable to that?

TRENT KINCAID: Pilots in general are amenable to that.

JIM HALL: Well, you know, I'm a great believer in CRM, I'm a great believer in recurrent training and I appreciate your presentation. Unfortunately, the government does not require this for public use aircraft and other hire craft. It requires the private commercial operators -- there's one standard and there is another standard in the government, which is one of my concerns. I was looking at your pricing list. Obviously this is training -- while it is good, it is also -- it costs money.

TRENT KINCAID: Yes, sir.

JIM HALL: And in order for this type of training to take place, there has to be money with inside government contracts to provide for it, both -- whether it be on the ground or in the air. But I'm very pleased to see your presentation and obviously my experience at the NTSB for seven years very well confirmed everything that you've been saying. So I appreciate you being here. I don't know if we have other questions?

JIM HULL (?): I just have one. You spoke of United Airlines and said they haven't had a human factors related accident since they introduced CRM?

TRENT KINCAID: Death related accident.

JIM HULL: Death related accident, okay. That seemed to infer that CRM is what eliminated those accidents. Is that what you're telling us?

TRENT KINCAID: Unequivocally I will say that CRM has contributed to -- has given the -- made the greatest contribution to United's excellent safety record. For instance, Al Haynes, who's on our board, Sioux City Flight 232, the first thing he said when he was interviewed in the hospital was -- when they said, you know, "Why didn't you die?" he said "I credit the CRM training I received, with an effective crew working relationship, that got that plane onto the ground and saved as many folks as it did."

JIM HULL: Okay. But you haven't made a distinction between the contribution, say, of TCASS, of improved radar, of all of that sort of thing, and what part of it is CRM and what part are those other things?

TRENT KINCAID: We do have -- if you look at the data -- not as far as United Airlines, no, sir. And I'm sorry if I'm throwing out United Airlines like I'm representing United Airlines and we train United Airlines. It just so happens that our pilots and our program developers worked -- and that's where we get a lot of our material from, a lot of the aviation, commercial aviation. You can see some decreases that these folks themselves have attributed, air reductions -- it's one of your slides there, and it lists, you know, 20, 30 sometimes 50 percent reduction errors amongst their pilots. And those are self-reported where they say, yes, it works.

AL HYDE: Any other questions? Okay.

Thank you, Tran. I appreciate --

TRENT KINCAID: Thank you, Mr. Hyde.

AL HYDE: The next (off mike.)

JIM HALL: Welcome, gentleman.

DALE ROBERTS: Good morning, gentlemen, how are you? My name is Dale Roberts. This is Mohammed Abouelheiga (ph). We're the owners of American AeroStructures, which is an aircraft engineering firm based out of Colorado Springs. For the last several years we have been involved with Neptune Aviation up in Montana and assisting them with engineering and certification questions --

JIM HALL: I'm sorry, I missed the name of that.

DALE ROBERTS: Neptune Aviation.

JIM HALL: Oh, Neptune. Okay.

DALE ROBERTS: Yes. We have assisted them over the last several years in performing engineering and certification services for them to modify and alter their present fleet of aircraft. We have also worked with them over the last several months on developing repairs to their extensive wing cracking problems, as well as helping with the Denver ACO, and to a lesser extent the Seattle ACO, in developing the proper FAA response to the airworthiness directive that came out for the P-2 fleet.

I myself have 20 years experience as a structures -- aircraft structures engineer. I am a designated engineering representative of the FAA. And several of those years of experience were with the Air Force, with the United States Air Force, as a modification officer. I want to make sure that you understand that I don't represent the FAA. DERs (ph) don't -- they're not employees of the FAA, but they do help with certification questions and obviously they're authorized by the FAA to approve engineering data. So I don't represent the FAA, nor do I represent Neptune. However, we thought it wise and proper to come and give the panel some of the conclusions based on the experience that we have gained working with the P2 fleet, working with these older aircraft, and as well as some of the certification questions that we've run across over the last years.

And a few months back after the two accidents that we've had over the past summer with the P-3 and with the PB-4Y, we had one of the pilots call our office and said "If we installed one of these repairs in our wing" -- because they've had some cracking and they've developed a repair for that particular crack -- "can you guarantee us that we're flying a safe aircraft?" And Mohammad took that call and I think the answer to that is the answer that we want to give you today as well: that there's no engineering basis to assume that the existing fleet is safe to fly today, much less fly into the future.

And I didn't say that the fleet is unsafe. I said there is no basis -- no engineering basis to assume it's safe, and there is a subtle difference there. And I'm not talking just about the P2 fleet. We're talking about all the older aircraft that were developed in the 1940s and early 1950s. I mean, we can talk particularly about the C-130. Obviously, with the preliminary results of the NTSB that came out, it confirmed our suspicions that we had a wing fatigue problem and obviously the result has verified that suspicion. So that the C-130, obviously the results of the NTSB, the preliminary results, also want to go back and reopen the 1996 case as well and I expect that we'll all find out that that will also be a wing fatigue problem as well.

The P2 issues -- obviously in the C-130 that resulted in the grounding of the entire forest fighting fleet, and then of course we just had the A.D. that recently came out. The P2 fleet, which is what we're extensively -- have an extensive background on, we know that this fleet has significant and severe wing problems. It has fleet-wide cracking -- universal fleet-wide cracking.

JIM HALL: You might pull that microphone and speak a little louder so we can compete with the --

(Cross talk.)

JIM HALL: Yeah, I kind of like the music, though.

(Laughter.)

DALE ROBERTS: Yeah, very good. We were involved with the -- a Tanker 11 - Neptune's Tanker 11, which developed a 13-inch wing crack. You gentlemen are probably aware that the preliminary results of the C-130 crack indicated that that crack was an 11-inch crack that they found. On the P2 we found a 13-inch crack. The pilot actually who discovered the crack had found it -- had seen the crack in the morning. He thought it was just an oil streak on the wing and so he went ahead and flew his missions for the day and came back and discovered that in fact it was a wing crack. And his estimation -- this is his estimation -- that the crack had actually grown five inches in that particular day. So it's just by the grace of God that that P2 did not have the same experience that the 130 had just a few weeks before.

And we're involved with Neptune. We developed an inspection program for Neptune, a much more severe inspection program than what they had in place, because of these extensive wing cracks. Like I said before, this is a universal fleet-wide problem. We would be surprised if a single P-2 did not have wing cracks. We believe that all the wing cracks -- all P-2s will have wing cracks because of the design of the wing. Obviously, like I said, we were involved with the --

JIM HALL: What was that wing originally designed for?

DALE ROBERTS: As far as load factors or --

JIM HALL: Yeah, and lift or --

MOHAMMED ABOUELHEIGA: It was -- if I may?

DALE ROBERTS: Go ahead, please.

MOHAMMED ABOUELHEIGA: It was designed for the 3G maneuver, positive maneuver factor at 60,500 pound gross weight. When you went to 80,000 pounds gross weight, it was designed to 2.4Gs -- excuse me, 2.3Gs. But we -- and we will get to that issue later. We have information from the pilots and from other sources to indicate that these 2.3 and 2.4Gs are being experienced on regular basis, rather than as a limit load, which is normally -- and I have a commercial airline business. I worked with Boeing for many years. The limit load factor is a once in a lifetime experience, while these limit load factors of what I mentioned, 2.3G, was either reached or exceeded on a regular basis. We can get back to that.

MR. : And, excuse me, is that from just the environment, the turbulence and everything? Or are we talking pilots maneuvering to those --

DALE ROBERTS (?): It's the maneuvering loads. It's the load that the pilots are pulling immediately as they drop their load.

MR. : Do the companies operating the P2 know of this 2.3 load limit? Is that -

MOHAMMED ABOUELHEIGA: Yes, they do. They have the reports. We have informed the operator we are working with. The issue is -- I know it's a bit loud. But back to that pilot case that Dale talked about. When the pilot called me, very concerned, that was immediately after the Privateer crashed. I asked him what was his mission like the day before, what he did. He said "I flew seven times. There was a fire fight in the canyon and four out of the seven missions that I flew, I exceeded" -- "I pulled maybe 2.3 maybe 2.4Gs." Four out of the seven. So when we put that in perspective, looked at the Tank 11 crack that Dale talked about, we could understand how you could crack -- or grow a crack five inches over one day, because of this high load factor.

JIM HULL (?): Is the aircraft instrumented? Is there a G meter on it, or how did he know?

DALE ROBERTS: There was a NASA study performed in 1970 that actually instrumented a particular P-2. This guy who had the crack develop said he experienced those --

MOHAMMED ABOUELHEIGA: I asked him that question as well and, like Mr. Powers before, indicated that he has flown these missions many times to the point where he knows roughly what G factor he can pull. But --

MR. : But it is an estimate rather than he recorded that?

MOHAMMED ABOUELHEIGA: That is very correct.

JIM HALL: Now, what's the NASA study?

DALE ROBERTS: The NASA was performed in 1970 strictly to find for these forest fighting aircraft, the P-2 fleet especially, what is a typical mission that they fly? So they used an aircraft, they put recording equipment on it to record the G level, and found that, yes, indeed, on typical missions and they did this over several months -- a typical mission does approach limit load and sometimes does exceed it.

JIM HALL: Would you still have that study, sir?

DALE ROBERTS: We do have a copy of that.

JIM HALL: Could you furnish that to the panel?

DALE ROBERTS: Certainly.

MR. : And that was on -- in the fire-fighting mission?

DALE ROBERTS: It was instrument, a fire-fighting P-2 aircraft.

MOHAMMED ABOUELHEIGA: It's a 1970. It's called VGH, the NASA VGH study, for -- I think it was over about 280 flights. You know, it's a good database and I took the load factor that the NASA study has come up and plotted them and drew a line where a typical mission would be, and the exceedances were very severe. Exceedances of a typical mission, what these airplanes were designed for.

JIM HULL (?): Was that a single access accelerometer or a three access?

MOHAMMED ABOUELHEIGA: I can't really answer that. That information is just a reduction of the test. I can't answer that question.

MR. : Maybe I'm slow, but help me figure this out. The pilots know the load limit, the once in a lifetime kind of load limit on the airplanes that they're flying and it's like --

DALE ROBERTS: They're looking at the maneuver limit load out of the flight manual. They know what that maneuver load is.

MR. : So I think it's a yes, right? They know that 2.3Gs is all I could pull with this kind of weight?

DALE ROBERTS: The 2.3 is based on a particular weight of the aircraft.

MR. : Sure, which is not uncommonly --

DALE ROBERTS: And as far as what they know -- we know that some do. I don't know if they all know it. We know that some do.

MOHAMMED ABOUELHEIGA: But, you know, we debated amongst ourselves and also with the operator whether we should limit the G factor. Let's say let's go down to 2G. Let's not allow them to go above 2G. But the question that I asked this pilot when I was talking to him was "What if I limit the G factor?" He said "What do you want me to do? I'm coming down, dropping, there's a ridge on the other side of the canyon. I have to pull 2.3 to 2.4G so that I don't slam into the ridge." That is -- I hope that answers your question.

MR. : In that estimate, I can see in a bank angle, you know, if you exceed -- if you hit 60 degrees you're pulling 2Gs, if it's a coordinated turn. So is that how they're getting this 2.3G estimate? I think I, as a pilot, would have a tough time telling is it 2Gs or is it 2.3Gs?

MOHAMMED ABOUELHEIGA: The 2G, if I may, was actually the number that we would debate amongst ourselves what if we just put a limit on the G factor that the --

MR. : No, I'm coming back to the pilot estimate.

MOHAMMED ABOUELHEIGA: Okay. The pilot estimate was 2.3/2.4Gs.

MR. : And he's talking about just a straight pullout, as opposed to a banked turnout?

MOHAMMED ABOUELHEIGA: No, a pullout.

MR. : So it was a banked turnout?

MOHAMMED ABOUELHEIGA: Yes.

MR. : So he knows he exceeded 60 degrees, and then the one over cosine beta says "I had to have hit at least that 2.3."

MOHAMMED ABOUELHEIGA: Mind you, it's not just the maneuver but the turbulence, as you will know about.

DALE ROBERTS: Turbulence is another factor, yes.

MOHAMMED ABOUELHEIGA: As aiding or increasing --

JIM HULL: You're telling us then, I think, that the fire-fighting mission requires the pilots to operate the aircraft outside the approved flight envelope?

DALE ROBERTS: He will, over the life of the aircraft, approach that limit load on a continuous basis and can at some times exceed the limit load, yes.

MR. : Has anybody asked the pilots about their asymmetric loading on the wing? I mean, I'm a little bit interested in rolling departures from dropping my retardant. But aren't I putting differential Gs on the different sides of the wings there as I roll and pullout that would -- even if I'm feeling 2Gs in the cockpit, aren't there -- isn't there a good chance that the airplane is experiencing more than 2Gs some place?

MOHAMMED ABOUELHEIGA: It's a possibility that transient loading could very

well --

MR. : But there aren't published asymmetrical G limits like there is this 2.3 that you quote.

DALE ROBERTS: No, there's not.

MR. : Okay.

DALE ROBERTS: And we should say that the data to the -- that this aircraft was designed to 1940s standards, and it doesn't have near the design information that you would in a modern aircraft, not as many load cases. They pull -- the limit load is 2.3Gs for a particular weight configuration.

P3 obviously has problems as well. The P3 has had extensive wing cracking over the last year and from our sources that we hear is that 80 percent of the P-3s have wing problems, substantial wing cracking. In addition to this, and we can talk about this a little bit later, the P3 is loaded with a 3,000 gallon tank. The FAA, top certificate agency, claims that the zero fuel weight of the aircraft is 71,500 pounds. When you install a 3,000 gallon tank onto a P3, you're zero fuel weight is going to be significantly more than 71,500 pounds, maybe even 83,000 pounds. So in certain situations you certainly could overtax the wing for that aircraft, which is not normally a problem if in fact someone has done the necessary engineering and substantiation to show that that aircraft can take it.

Our experience is that no one knows if that has ever taken place. There is no documentation that we've come across that shows that that's ever been the case. The FAA has not changed their types of certificate datasheet to suggest that that's the case. Also in the NAVAIR, the document that that is also listed zero fuel it is 71 to 72,000 pounds.

MR. : What happens when I get a special type certificate for my system that I've put onboard my 130 or P3? It doesn't ask those questions?

DALE ROBERTS: The way the situation is -- the way the certification process works now, and you gentlemen probably know this, it's under FAR 21.25. That authorizes the ACO, the aircraft certification officers, to grant type certificates to military surplus aircraft based on their military record. And so they get their type certificate datasheet strictly by saying we're going to operate and maintain this aircraft strictly in the same manner that the military did. So therefore common sense says it's a good aircraft. They don't go through line by line and say that this aircraft meets the standards as issued by the federal aviation regulations.

However, when you change your aircraft -- say you've got these aircraft flying out there for many years and you want to put a bigger tank on, or you want to increase the zero fuel weight, then you go back to the FAA and say I want a supplemental type

certificate. And at that time recently -- and I don't think this has always been the case. But recently you work out an agreement with the FAA, the Aircraft Certification Office, to say which regulations -- which paragraphs you're going to meet and which ones the aircraft just frankly can't meet because -- you're going to make the case that it's just as safe now as it used to be, so therefore the FAA can grant you a supplemental type certificate.

So many times when you get in these situations, the issue does come up but you work with it. It's no less safe than it used to be, so the FAA will find it acceptable. But that's on a case-by-case basis to be negotiated with the Aircraft Certification Office.

MR. : I'm a little worried about the distinction maybe between negotiated and demonstrated. Do you have to demonstrate it, or do you just have a little chat about it and come to an agreement?

DALE ROBERTS: It's -- well, negotiated means you prove to the ACO that you're not doing something unsafe, and that can be done either by engineering calculations or it can be done by tests. Or it can be done by common sense and say, you know, this is not going to change aircraft performance, it's not going to make the aircraft unsafe and so the ACO would either agree with you or not agree with you. And if they don't agree with you, you're generally forced to do it like the ACO suggests. And they're certainly not pushovers by any imagination.

So, and I mean, just to go down this list of aircraft again, the DC-6 this last summer also they found a one-foot long crack in it. So all these cracks -- I mean, just to trump up what Mr. Power said earlier, there's nothing unusual about the C-130 or the Privateer, all of these aircraft are in a similar situation. They all have a potential to have a catastrophic failure.

So I was reading in a publication not too long ago that there's Alan Knizter (ph) from the FAA, and I don't know what his position is, but he was quoted as saying that it's the FAA's policy that all these older aircraft or any aircraft are safe to fly and can be operated indefinitely if they're properly maintained. And I don't know whether I agree with that or not, but the fact is these aircraft are not properly maintained. And I'm not saying anything at all against the operators, they are maintaining -- from what we know and we work extensively with Neptune, they maintain these aircraft meticulously to the best of their ability very conscientiously. However, they don't have in place a comprehensive structural inspection document that's based on present day engineering standards for aircraft. They generally base their inspection programs on the military inspection program that they received from the military and that's part of the certification package that they received, that they agree to maintain the aircraft per the military standards.

So it's our position that you have all these aircraft out there with known wing problems, for instance, the P2 we can talk about extensively. We know exactly on the wing where these things are going to crack and it's very poor -- by today's standards a

very poor design fatigue details, very poor details that almost guarantee you'll have a crack. What we don't know is if there's other problems out there in the aircraft that are just ready to happen any minute now. That they've not historically been a problem but they can be a problem. In a commercial world for a commercial aircraft you develop a structural inspection document that has a systematic approach, examines every area of the aircraft and says this area needs to be inspected on this interval and under these conditions and it's comprehensive. It's based on engineering analysis, called damage tolerance analysis, and you can always -- following that plan you can always detect and repair a crack before it reaches a critical length. And that process, that damage tolerance process, is what we're missing out of these aircraft. That has never been done for these aircraft.

Like I mentioned before, these aircraft have some poor fatigue details, poor design details in the wing and it's really -- when these aircraft were developed, the engineering art of fatigue analysis and damage tolerance were not mature. In fact, damage tolerance is a recent development over the last 25 years. But the fatigue area was not fully mature yet, so these aircraft do have poor details, poor design details in them. They use materials in applications which would be totally unacceptable today. For instance, the lower skin of the aircraft which most of these -- well, I'm talking about the P2 fleet. The problems that they have will be experienced on the lower skin surface of the wing. That skin surface they used an aluminum alloy called 75ST (ph) or equivalent to a current day alloy of 7075 T6 (ph). Has very poor fatigue properties. Once a crack's initiated, the propagation rate of that crack will grow very quickly. It's something that you would not use in a fatigue critical area today.

MR. : Can I summarize in just plain language what I think I'm hearing you say? Somebody said sometimes there's these surplus military aircraft that are going to be available to use to fight fires. And the industry went to the FAA and said tell us what we need to do to maintain them so they're safe to fly and the FAA said here's some stuff.

DALE ROBERTS: No, the FAA said maintain them as the military maintained them.

MR. : Okay, but that's the stuff.

DALE ROBERTS: Yes.

MR. : Maintain them as -- and that's created a myth that the industry is doing what it says the agency that is responsible for their safety told them to do, and that's the best they can do. But the agency responsible for setting the safety standards hasn't set standards that are appropriate to the operations of the aircraft. Is that right?

DALE ROBERTS: That's close. Let me just tailor that a little bit. Like I said before, I'm not employed at FAA and -- although I am a designated engineering representative of the FAA. I don't think this is a written policy at FAA today or in the past when it really mattered, 15-20 years ago, but I have been told by ACO engineers --

ACO is Aircraft Certification Office -- engineers, that in the restricted category, historically the FAA took a hands-off policy and basically said you're responsible for these aircraft. You want to fly them in a restricted category, you're responsible for them. You're responsible for the safety of these aircraft. The FAA is really not in a position, other than to say we're giving you a TC based on the military record of these aircraft --

MR. : And unfortunately --

DALE ROBERTS: They don't make an independent assessment of the safety of the aircraft.

MR. : Unfortunately this was primarily of course for a private use. In this situation the aircraft is being contracted by the government for a public use.

DALE ROBERTS: FAR 21.25 doesn't specify the difference between the two. They just say that these military surplus aircraft can be used as forest -- in the restricted category of forest fighting. So, in our opinion, there's two or three factors that feed up into that, but that's the basic problem. FAA assumes the operator knows the limitations of the aircraft and is being responsible for those limitations. The operator, in my opinion, is looking at the FAA and saying if I've got a type certificate from the FAA, the FAA's guaranteeing me this is a safe design. And that's the disconnect.

MR. : Can I ask a point of clarification? You mentioned earlier that the FAA asserts that old aircraft can be flown if properly maintained, to which you responded. I guess my question is: is it impossible for industry to meet standards that would make them flyable or is it just uneconomical?

DALE ROBERTS: There is I think -- I wouldn't say it's impossible. I'm saying it's uneconomical right now. What you'd really have to do is do a top to bottom damage tolerance of the aircraft and at that time you may find it's impossible.

JIM HALL: What interests me is this NASA study. I'd really like to see that study, because obviously there was a knowledge, a governmental knowledge as a result of that study, I would assume, of the type of operations these aircraft were experiencing.

DALE ROBERTS: Yes, and we can provide that to you.

JIM HALL: Was the certification -- who initiated that NASA study? I guess get us the study but it's the very first I've heard of that.

MAHOMMED ABOUELHEIGA: If I have to guess, it was at the behest of the Forest Service that it was done. But what was done with that information thereafter, I don't know. There's no indication what was that information used for. Of course, obviously, when we look at the certification of these aircraft, that they are being certified now, these results did not get reflected because when the FAA grants a TC based on the

military background of this aircraft, it ignores completely the fact that these missions are much more severe.

JIM HALL: But this is the first time I heard that the government had in its hand, in one hand of its entities, the information that you described.

MAHOMMED ABOUELHEIGA: And quite frankly we stumbled upon the study by serendipity if you want. We were asked to do a certain evaluation of a re-engineering of P2 at the time and we started asking questions, what kind of -- we want to certify for 2.5G maneuver load factor and for a higher gross weight. And when we started looking into the background information, we stumbled upon that PGH study that I'm referring to.

JIM HULL (?): I have a question that probably would have to be answered by either the industry or the Forest Service or maybe the FAA. In the contracts for operating the fire-fighting aircraft, since the FAA as you tell us has said basically you're going to be responsible for the airworthiness -- continuing airworthiness of these airplanes, is there any consideration given to fund the companies to do that work or do they have to take it out of the operational revenue.

DALE ROBERTS: I won't be able to answer that.

JIM HULL (?): No, I didn't think so.

MAHOMMED ABOUELHEIGA: But if I may just add an anecdotal answer to that. When we have requested certain repairs that we knew for a fact would improve the structural integrity of those problem areas on the P2, we know that cost considerations were very limiting to the willingness -- despite the fact that, as Dale indicated, we think we are operating with very conscientious people, very caring people that love to have very safe airplanes but the cost constraints are almost brutal. And they were really a hindrance for them to carry out what they were fully convinced is the right thing to do.

JIM HALL: Can you give us any supporting information for that statement?

DALE ROBERTS: That supporting information would have to come from one of our customers but I think they would very much support that.

MR. JIM HALL: I think it would be helpful to the panel that if there is supporting information for that statement that the panel receive it.

DALE ROBERTS: Okay.

JIM HULL: And I would suggest, to take Jim's point a bit farther, it would be nice to know what you advise the customer or the operator what needed to be done and then they and you come up with a cost of what it would take to do it. And then it would be nice to know what would be the allowable funds from their Forest Service contract or whatever allowed to do that sort of thing and see where the gap is.

DALE ROBERTS: Let me be a little more specific on -- like I mentioned, we were working for Neptune Aviation at the time. Neptune, in the end, fully agreed with our assessment and they are doing the repairs as we advised them to. Their biggest concern was that the other operators of the P2 fleet would not be having to do those same repairs because they could -- it's easy to get around it. I mean, it's easy to find someone who's not really familiar with the problem to say it's okay to do a much simpler, less expensive repair. So their biggest concern not was that we had to spend enough money, they ended up spending the money. Their concern was well, our competitors don't have to so they're going to get a leg up on us.

The one thing we wanted to mention as well, and we did touch on this, we mentioned that the mission profile that these aircraft fly is significantly different than what they were used in the military. I mean, it's not a maritime patrol mission, it's not even a cargo mission. Not even a cargo mission on an unimproved strip. These are --

JIM HALL: I assume the wing was designed for that mission.

DALE ROBERTS: The wing was designed for -- the limiting case for the wing is due to that maneuver load. However, there are some other limiting cases. For instance, if you've got an overgrowth condition on the wing you can't land the aircraft when it's at max gross weight. You've got a minimum landing weight and that's just another -- another thing we wanted to bring up was in certain conditions, and this was mentioned to us that the state of California would, when you're flying a Forest Service mission for the state of California, that they do not want you to drop your load. You went out on a mission and you were recalled before you dropped your load, they wanted you to land with a full tank which meant, most likely, you were going to over gross the aircraft on landing. And that was a contractual basis. These contracts were almost forcing the operators to do this.

MAHOMMED ABOUELHEIGA: If I may add to the question Mr. Hall said. Yes, the wings were designed for these conditions as limit as a one-time flight time. But when you're getting to the limit load factor, 2.3 to 2.4Gs on a regular basis, you are going to crack much earlier, just as the rule of thumb. If you increase your stress level, i.e. your load by 20 percent, you reduce your life by a factor of 50 percent. So a normal airliner, the fatigue mission of -- of the operation mission let's call it -- it would experience gusts, vertical gusts of probably 1.35Gs in each operation, day in and day out, maybe 1.29 - 1.3Gs maneuver. Now, these aircraft were experiencing continuously 2.3, 2.4 -- like the pilot told me, probably four times on that given day. When I looked at the VGH mission, area VGH study by NASA they were exceeding the 2.3 -- on numerous occasions they've exceeded that.

So if you take those load factors as operational load factors, yes, you will crack at very low number cycle. We have done a preliminary fatigue analysis based on these VGH loads and we came up somewhere around 5,000 cycles you're going to have cracks in certain areas where we are seeing cracks, you know, in a very ubiquitous way. The

issue is if you maintain them can you fly them safely? You know, at some point the preponderance of likelihood of cracks initiating, we have aircraft that have about 10 cracks. One aircraft would have about 10 cracks, 10 locations of cracks. Every fastener hole is a good candidate for a crack. So having this high load level makes the likelihood of cracks initiation very high at many locations at the same time. At that point I don't know whether you really can fly it safely if you maintain it properly. I don't know what maintain probably means.

MR. : Put on a new wing.

(Laughter.)

DALE ROBERTS: One other issue that we wanted to bring up, and this is based off our experience when we started doing investigations and seeing what data was available so we could base our analysis on. For the TC, the type certificate and for the supplemental type certificate, the changes to the mods, historically there is very little data that the FAA has to substantiate these things. For instance, and like we mentioned before, you have the P3 aircraft which is fine with a 3,000 gallon tank today, even though the type certificate, the zero fuel weight as listed on the type certificate, suggests that it can't be done. So where's the substantiation? Who did it and where's the documentation? That's the type of thing that we have seen over and over that it doesn't ever -- and we could be wrong. I mean, it could be out there and we've just not found it even though we have a database of many and have found zero so far, the level of substantiation that's available is non-existent.

JIM HALL: Have you talked to that -- what is it, the Air Tanker interagency --

[TAPE CHANGE.]

DALE ROBERTS: -- with the Privateer, the P2 problem is just as severe in our opinion. But, no, we've not had any other --

JIM HALL: Interagency Air Tanker Board, I'm sorry.

DALE ROBERTS: Paul Markowitz, we have had discussions with him as well and once again, that discussion was to let him know the problems with P2. We have recommendations as well we'd like to present. We have short term recommendations and then we have long term recommendations. On the short term, we need to be -- it is a cliché, but proactive versus reactive.

Right now, the whole industry is set up with -- do these inspections, you find a crack, a crack that you know is going to be there sooner or later and you repair it. That's the system we have in place now, even with the ADs that have recently come out, that's the system we have in place. We believe a proactive response would be to develop a

comprehensive structural inspection program based on damage tolerance analysis for the entire aircraft and for the entire fleet of aircraft and not just in the areas of the wing for we know they have problems but other areas out there that are lurking, where we just haven't had a failure yet, much like the 130.

That crack, just like Mr. Powers said, we go back to the -- I'm going off of what the preliminary investigation report said. That problem no doubt occurred but since no one knew about it and no one knew to look underneath that doubler for that crack, it was never explored. It was never found. Of course, now everybody, now that it's happened once, everybody knows to look for it out there.

So that's the problem with being reactive versus proactive. The other thing, in the short term, is we have areas and we're going to speak from the P2 point of view, since that's the structure we know the best. There are structural areas of the P2 that are guaranteed are going to crack. Poor fatigue details, poor metal and the metal is frankly worn out with the number of cycles it's been through. Instead of sitting and waiting for the crack to develop, let's go in, put new metal in so that the crack doesn't form, to start off with. It's not to say you don't need to continue inspecting but is you try to correct the problem that leads to the crack and not wait for the crack to form. And that's why we complement Neptune as they have agreed to do that.

And then the -- lastly, whoever flies P3s, have them substantiate the 3,000 gallon capacity. If the aircraft is really not ready to put 3,000 gallons or it can't handle a 3,000 gallon tank, have some engineer show that it can or cannot carry 3,000 gallon tanks. That's a minor recommendation. That's something that is --

JIM HALL: For that aircraft?

DALE ROBERTS: For that aircraft.

JIM HALL: You're not talking about the fleet?

DALE ROBERTS: That's correct. Well, for the fleet of P3s because they all fly 3,000 gallon tanks. More importantly, we want to talk what we recommend for the medium and long term. We believe it's imperative to replace the fleet and I think that's probably not anything new. I'm sure he's heard that from many different sources, that the fleet needs to be replaced with something more modern. Obviously, and this is not our field of expertise but we have gained some knowledge of the industry over the years, the current 3-year contract doesn't allow for an operator to put a significant capital investment into a fleet of aircraft with any expectation he's ever going to get his money back. We know that there's aircraft out there specifically designed for the fire-fighting role. But those aircraft range over \$20 million and there's been a recent aircraft proposed to do that role and they propose something over 15 million.

Like I said, it's not my expertise but I would venture to guess it would take a lot of years to pay back \$20 million, contracting for the Forest Service. What we

recommend instead is to let's replace the fleet of aircraft with aircraft that are out there today, used aircraft but they won't have the same problems as these current aircraft. So, what that really drives you to is what we think are three prime candidates. Obviously, you have the C-130E which is later model of the A model. The E, most of these fatigue models that are on A, many of them have been addressed. The problem with the E model is that to obtain one, you're going to get that military surplus from the United States military or from a foreign military. And there's not very many available today. There's no reason to expect that in the foreseeable future, the U.S. military is going to give up the 130-Es.

We think better candidates are the 737-200 and the DC-9/30. These aircraft can - you can install a 3,000 gallon system onto these aircraft and the price of these used aircraft today is pretty reasonable. I mean, for instance -- I know these may be too detailed -- but you can find 37-200s on sale, used aircraft, for less than a million dollars and in fact, we know of four, five or six of them for sale for less than a million dollars. So the knack is to have some operator or the Forest Service pay to develop engineering to put in a 3000 gallon system on a DC-9 or a 37 and certify it. Not certified in a restricted category, but certify the thing.

Next recommendation -- oh, let me just back up. Right now, I know the operators are loathe to get into a new system and spend all the money that's required to develop a new system on a new aircraft when they can fly your P-2s or P3s at a much cheaper expense. So to justify that to the operator, and this is what our friends have told us, is you need a change of contract from three years to a minimum five years so they can be somewhat more confident that they can get a return on their capital investment. You don't put \$3 million on an airplane and you get stuck after three years and you got an aircraft that's not worth anything.

So next recommendation for the medium and long term is improve the FAA oversight responsibility for restricted category aircraft. In essence, it's to put some teeth into the regulations so that there's no ambiguity that when you get a TC from the FAA, the FAA has made a determination that that aircraft is safe to fly in that environment. Part of that would be considering the expected mission of a tanker aircraft with the -- if you're following that same line with military surplus aircraft -- with the mission that it used to have in the military and making sure that they're equivalent missions. You don't come out and, like we've seen today, have a mission that's much more demanding on the aircraft than what it had in the military.

And then lastly, on these aircraft as well, the engineering that was done when these aircraft were designed, let's talk about the P2 in particular. That level of engineering was much less than what's required in modern aircraft. They don't do extensive fatigue studies. They don't do damage tolerance studies. The aircraft is just not built to today's standards. And then lastly, and this is when the 130 AD came out and is recommended for the 130. What we said before, all these aircraft, each model needs to each have a comprehensive structural inspection program based on damage tolerance,

based on a level of engineering and not based on the inspection program that came from the military.

JIM HALL: Now is that a long term, a short term or --

DALE ROBERTS: I'm saying it's a medium term meaning --

JIM HALL: It's all medium?

DALE ROBERTS: Meaning it's going to take some time to get changes to the FAA. All that would have to be coordinated through the transport office up to Washington. So I'm saying that's going to take some time to get that negotiated and thrashed out and approved. So --

JIM HALL: Any long term or did I lose something --

DALE ROBERTS: Long term. It was medium or long term.

JIM HALL: I was trying to follow short term, medium and long.

DALE ROBERTS: Medium and long term, we're saying is equivalent. What we don't want to see is you gentlemen thinking that these aircraft are going to be here in 10 years from now. And I know when you start seeing the ADs come out, the line of thinking is going to be, "We got an AD up. Now these old aircraft are safe to fly again."

JIM HULL: I have an aging structure. I'm just concerned about being here 10 years from now myself.

DALE ROBERTS: Very good.

MR. AL HYDE: Any other questions for the panel? I want to apologize for having to compete with the Salvation Army this morning for this morning's session. (Laughs.) Let me guarantee -- we're going to break for lunch now. I know it's a little early. I guarantee that they'll be in a different place or we'll be in a different place at 1:30. We'll see you then. Thank you very much.

(Lunch break.)

MR. : We're going to start. We have about five people yet to speak. We're going to go right through them and give them each their allotted time and sit around and talk with the panel. Introduce yourself and just a very quick sentence or two about backgrounds so the panel knows what you are and what role and perspective you have on aviation.

IVAN PUPUDILY: All right. You bet. Thanks.

My name's Ivan Pupulidy, U.S. Forest Service pilot. My background is as follows. I graduated with a degree in geology after attending two colleges, Virginia Military Institute and New Mexico State University. Following that I worked as a field geologist.

MR. : Excuse me, you said your name really quickly and I didn't get it.

IVAN PUPUDILY: Oh, I'm sorry. Ivan Pupulidy. Following my term as a field geologist and exploration geologist, I took a position with the U.S. Coast Guard as a pilot. Attended Navy Flight School. Flew Falcon jets for five years and then was competitively selected for a program as an engineering officer pilot. The Coast Guard has a fixer and flyer combination so our pilots and our mechanics are the people who actually fly the airplanes and repair the airplanes.

Following my term with the Forest Service, I spent approximately five years as a maintenance officer prior to that as an operational law enforcement pilot in Falcon jets, I left the Forest Service and joined the U.S. -- I mean, excuse me, left the Coast Guard and joined the U.S. Forest Service.

On joining the U.S. Forest Service I recognized some things that were very common in my training to the Forest Service and to the Coast Guard. Particularly what I noticed is that the mission has got some very significant and great similarities. I continued working as an engineering officer and as a pilot for Channel Islands International Guard and I'm currently employed by them as well on a part time basis as a guardsman.

Currently in the Forest Service I hold the following designations. I'm a qualified lead plane pilot flying BE-58P Barons and King Airs. Whilst a lead plane check airman, a lead plane instructor pilot, an instrument instructor and an instrument check airman for the Forest Service. So basically I do -- I wear a lot of hats for that organization. In addition to that I manage the late fixed wing program for this region, region two and I also do heavy air tanker pilot inspection, not the tanker but the pilot inspection.

I'd like to address a couple of things that have come in the course of the discussion this morning. This year, as you're well aware, the reason that we're all sitting here is because it has been a horrific year for the tanker industry. We've lost friends, we've lost family. And I'd like to address why we're there. The reason that we're there, out there with our retardant and with our tankers is to try and slow the progress of the fire down and give the guys on the ground a chance to catch that fire. As such we are an initial attack asset. As an initial attack asset our quick and rapid response to these critical areas is key to our success. Basically it's the difference between a three acre fire and a 3,000 acre fire, our immediacy on scene.

Now, with that in mind, I also would like to say that this is not an emergent environment. Trees grow back. Houses grow back frequently faster than the trees do and we need to keep in mind that it is not an emergent situation. So, to that end, I am basically, when I'm out there in my capacity as a lead plane pilot, the no guy. Basically, if the air attack or the guy on the ground asks for a drop, I'm the guy that says no, you can't do it and I go into it saying no just like a pilot running down a runway says, abort, abort, abort, until such time as he has to fly. In my case I'm aborting that drop run until I've assessed that that drop run is safe. I also look at that point for the effectiveness of the drop run to ascertain if the strategy and the goals that the ground firefighter is trying to meet will be met by that drop.

Unfortunately, in the Forest Service, we are up against a cultural problem which impedes our ability to perform effectively. Gifford Pinchot, when he designed the Forest Service, he designed the organization to be plainer in structure so that even the lowliest forester out there in the field would have autonomy. Well that works great for the forester out there in the field. With an aviation structure, it comprises everything that we do from standardization, standardized training, mission training, mission effectiveness, every aspect of what we do is compromised because of this initial plan and this initial premise which built the culture of the Forest Service.

This disrupts our flight programs to the point where we don't have two Barons that look the same. It disrupts our flight programs to the point where we don't have two pilots that do things the same way. This is very irksome for a guy with a military background. In addition to that our aircraft maintenance, our aircraft selection process, everything that we do is subject to an individual whim in some cases, or a regional whim in some cases and not directed by a national office as it should be.

This leads into the primary goal of my talk today. I've broken this talk into two parts. I'm going to give another discussion with you tomorrow. However, one of the major points that I would like to make today deals with standardization. Standardization of not only aerial supervision assets but aerial tankers. Let me preface by saying, when I'm a lead plane pilot and I hear a certain tanker come over the fire, I'm either filled with glee or dread, depending on that individual. In other words, I'm not trying to establish a limitation on my drop run based on the limitations of an aircraft now, now I'm trying to set up the criteria for my drop run based on the limitations of an individual pilot and there are 40 plus of them out there. It's an overwhelming task for one person to learn the wants and desires of 40 other people out there and it's unrealistic.

The agency, when I first came on board, it made no attempt to standardize lead planes or a limited attempt. When I came on board, a draft, in fact the initial draft of the ILOG was done on a computer, a personal computer owned by a friend of mine up in Oregon and then subsequent to that, the second draft was done on my own computer.

Tom Albert, a retired Forest Service pilot, worked very hard putting the ILOG together, this is the interagency lead plane operational guide. And he -- not only him but several people worked together concurrently to try and put together some semblance of

standardization. Unfortunately, standardization is a two-pronged sword. Those of you with military background have always heard the term “stan-eval.” Well, stan and eval are closely related to one another. Unfortunately, the eval side is non-existent in the Forest Service. However, on the brighter side, at least the lead plane part of our organization is making an attempt to go in the direction of standardization.

The air tanker community, the air tactical group supervisor community, have made stabs at it but there’s nothing tangible and nothing concrete. I know this from my experience as a tanker inspector, tanker pilot inspector, as well as having been out in front of these guys and seeing how they fly. There is a recurrent training requirement for the tankers which is met individually at bases distant from the Forest Service and is loosely at best supervised. Some companies have offered to train with us. That opportunity, for the first time that I know of, is coming up this year, in this region, in training that I set up as an acting regional training officer in this region.

At this point in time, to give you an idea how extreme this situation is, an air tactical group supervisor who is responsible for the overall tactics of the fire, need not have gone over a fire for years at a time yet will be dispatched as part of a team or as an individual ATGS to a fire, with no recurrent training, no refresher training. He simply goes out and starts doing what he did years ago, whether that is in keeping with current philosophy or not.

What this does is, this puts a hole in our project or our program that is so large you could drive a truck through it. In essence, if we develop a program to try and put in some standardizations or some limits on how we’re going to lead tankers or the kinds of runs we’re going to put tankers on to expose them minimally to risk, we could seriously have somebody who missed the entire briefing and never got the memo, come over the fire and make an attempt to direct a tanker into that situation. The front line defense for that is the lead plane program. We are the guys who stick our noses in first and we feel like little Johnny in the cave, let’s see if he comes out the bottom, if he does maybe we’ll follow him in there. And that’s frequently the case. We go into the darkest holes, we come out the bottom and we say it’s either good or it’s bad.

Now, to that end, the final point that I’d like to make today deals with the equipment that we’ve been blessed with in this organization. Having the right tool for the right job is critically important. Right now we do not have the right tool for the right job. I have an aircraft that I flew this year -- BE-58P -- that literally made 50 percent availability time this year. It means 50 percent of the time it was down for maintenance. It has very poor visibility downward. A large part of my job is to ensure that the line is clear of obstructions and to ensure that the line is clear of personnel and in order to that I have to go to excessive angles of bank in order to look straight down along the line, literally trying to move the nacelle out of the way long enough to look downward to ensure that the line is in fact clear.

In addition to that, should I suffer an engine failure any place in Colorado, New Mexico, Arizona or Utah, the likelihood of me returning to a paved field is very, very,

very slim. The airplane will not maintain altitude above terrain single engine in any of the four states that I mentioned. Recovery from a situation such as a steep run or a run in high density altitude or high terrain is therefore very dangerous for us. In addition to that, the platform is usually not peopled by one pilot but rather by two because I'm frequently instructing. We're woefully behind in the number of lead planes that we have that are actually qualified and on line right now.

So I found myself instructing a large part of the year. And then add to that the fact that I now have a platform that does not adapt well to additional technology, not only am I weight limited but you couldn't cram another instrument on my instrument panel. There's just simply no room. So as a result of that I can't provide the line firefighter with valuable information that had I had a platform that was strong enough to do that and carry two other people perhaps, perhaps a sensor operator, perhaps a flier (ph), where I could do real time drop assessment to improve that effectiveness over the fire. I'm denied that capability by the limits of the tool that I've got.

MR. : Excuse me.

IVAN PUPULIDY: Yes, sir.

MR. : Do you have any idea of what equipment you'd like to have?

IVAN PUPULIDY: Yes, I do.

(Laughter.)

Funny you should ask. There are actually aircraft out there with no visible means of propulsion -- and I already feel the knives in the middle of my back but I would recommend seriously that what we do -- and I've got a briefing paper that I'm going to provide you with tomorrow the details of this. But the platform that I would recommend in fact is probably a citation jet or type where the wing is moved aft, the engines are mounted nearly center line and have the thrust capable for getting us out of a hole and yet we still have a platform that's maneuverable enough that we can get in and out of tight situations ahead of the tanker.

Remember that, with a lead plane our whole purpose is to mitigate that risk and remove it from a heavily-laden aircraft and put it on to a lighter more responsive aircraft. Our agency has decided that we need a multiple purpose aircraft. They've determined that we need cabin class so that limits us as to what we should use out there or what we can use out there. Unfortunately, most of the aircraft that are designed for maneuverability in tight places for high G loading are generally single aircraft, single engine low wing such as JPATS, T34 Charlie, Pilatus PC-9.

However our organization has said it's going to be a cabin class. If it's going to be a cabin class, let's make it a cabin class that can sustain long flights. Can get there before the tankers, because right now I watch tankers pass me on the way to the fire and

then they sit there and they either circle or they go into a dangerous situation without me. I'm not capable of having additional high tech equipment on board the aircraft, as I said. And my survivability in the event of an engine failure is very, very low.

MR. : Why did they dictate a cabin class?

IVAN PUPULIDY: I'm not sure why they did that, sir.

JIM HULL: Is that in a regulation or somewhere?

IVAN PUPULIDY: It was about five years ago we did a study called the Term Study and then another study called the TMOT Study. These studies discussed tactical aircraft. At the end of these two studies the organization, the Forest Service, made a determination that cabin class was the way they wished to go. My understanding -- now, I'm just a field guy -- but my understanding is that that was based on the need to do point to point flights off season with personnel. That's pretty limited right now as far as what we do. I think I've done three or four of those.

JIM HULL: Didn't they have the Baron at the time they did the study?

IVAN PUPULIDY: Yes sir. They did. They're considering that cabin class.

JIM HULL: So if they come up with another conclusion they'd have to change all the airplanes that's out?

MR. : Ivan, do you have any suggestions, maybe like you had suggestions about the airframe for where to do standardization or how to do standardization of pilots over the fire?

IVAN PUPULIDY: Yes, sir. Part of this is going to be in the discussion that I have planned for tomorrow. If you could just table it for that, I would certainly appreciate it. What I'd like to leave you with today is the importance of the lead plane. Basically, the mission that we have has to built to the limits of the aircraft, not to the limits of individuals. When I say that I mean when we go out to a mission on a mission fire, we should take a look at exactly what the profiles are and exactly what we're asking the tanker behind us to do.

The lead plane community, at large, is not standardized in that approach. We have a lot of different individuals out there with different agendas unfortunately. That detracts from our program greatly. For the most however we are all pulling in the same direction. That direction is as follows: What we do when we get on scene is we develop our drop run that limits the bank angle, the G loading and the exposure of the tanker. My personal limits when I go into this, and again there's nothing written down, so here's personal limits because I will make the entire run clean at 140 knots, no drag devices in less than 30 degrees of angle of bank.

If I can do that all the way through the run, then I know that I'm not going to be putting excessive loads on the tanker when he comes in behind me. So at that point I can put out drag devices and I can maintain a slower speed and so can he. Quality control of the mission over the fire is primarily in the hands of the lead plane. If I had my way, if I could wave a magic wand tomorrow, no tanker would go out without a qualified lead plane pilot who flew to these standards. The lead plane is the only aircraft that we have out there that can safely at this point assess what's going on over that fire and make a determination as to whether the run is safe or not.

JIM HULL: Is there somewhere in writing the mission of lead plane?

IVAN PUPULIDY: Yes, sir. It's in the Interagency Lead Plane Operations Guide and if you don't have a copy, I can certainly provide you with one.

MR. : Ivan, are you suggesting that the air tankers shouldn't be initial attack qualified?

IVAN PUPULIDY: No. I'm not suggesting that at all. The initial attack qualification is fine, however I am suggesting that a tanker shouldn't go out without a lead plane and there's a substantial difference in that.

JIM HULL: Is there a regulation on that?

IVAN PUPULIDY : Yes, sir. There is.

JIM HULL: The lead plane's got to be there?

IVAN PUPULIDY: The lead plane has to be there. There's actually a lengthy dissertation on it in the ILOG. It discusses how many tankers or how many other aircraft or mix of aircraft have to be over the fire. In those parameters, then a lead plane must be launched. It's two or more tankers.

JIM HULL: Maybe I'm reading into what you were saying, but you said sometimes the tanker passed you --

IVAN PUPULIDY: Frequently.

JIM HULL: -- and then it -- you kind of sounded like they might start the run without you getting there.

IVAN PUPULIDY: Frequently, they do. Yes, sir.

JIM HULL: And that's not supposed to happen, correct?

IVAN PUPULIDY: Generally, what they'll do is they'll call back and they'll say, look I've looked at the route from up above and its okay. I think I can make it and

then they go in and stick their nose in and do it. Remember our whole purpose is to mitigate that risk. If we're not there, if we can't beat the tanker to the fire, there's not opportunity for us to mitigate that risk. Then you've got a heavily laden aircraft flying 150 feet off the ground trying to determine what the exit looks like.

MR. : Ivan, I've got a misunderstanding in my mind, can you clear it up? What is initial attack qualified mean?

IVAN PUPULIDY: An initial attack qualified captain of an air tanker means that he can take his tanker, go out and fly on a fire without a lead or an air attack. He can go out and initial attack the fire. There's a big difference between that and a team of people going out to IA a fire. When we talk about IA or initial attacking a fire, we're talking about a non-campaign fire. This is a non-extended attack fire. So a fire that just cropped up, we're going to go out there and we're going to pounce it. We're going to hit it with everything we've got. We're going to hit it really fast. This is where tankers are most effective. Because, basically, if we can find it when it's small and keep it from getting big, we've saved countless amount of hours, countless amount of exposure, and obviously countless number of dollars.

In this application, the tankers are extremely effective. When we start looking at extended attack fires, where we're looking at huge ridge lines and many, many days of activity of tanker operations, that's when our tanker operations start to fall by the wayside and we have to start using tanker operations to support ground operations. This year we saw in this state in particular that without ground troops tankers were completely ineffective. But with ground troops on extended attack fires we were very, very effective.

Now, the flipside of that is the IA, the initial attack. On initial attack fires if we could get launched and get on the fire quickly shortly after it's reported, with the tankers, frequently we ended up extinguishing the fire.

JIM HULL: You're saying an airplane tanker can extinguish a fire?

IVAN PUPULIDY: It can.

JIM HULL: There's some fires that it can?

IVAN PUPULIDY: Yes, sir. Depending on the fuel type and depending on the conditions, a tanker can extinguish the fire, although that's not what its design is to do. Its design is to use retardant to retard the spread of the fire and give ground firefighters the opportunity to catch the fire.

MR. : Can you go back, Ivan, and say what you said about --

IVAN PUPULIDY: Yes, sir.

MR. : -- you don't think air tankers should be employed without a lead pilot. I think I misunderstood.

IVAN PUPULIDY: Yes, sir. Basically what we're looking at every time we send a tanker out to a fire without a lead plane is we're putting the risk on the tanker pilot on that crew to assess the drop low level. When you assess a drop low level you don't necessarily drop. You generally fly the line to determine if the line is safe. In that process you're flying low level to determine if the line is safe.

JIM HULL: To state it another way, the tanker -- you're supposed to be part of the safety net for the air tanker?

IVAN PUPULIDY: Yes, sir.

JIM HULL: And when you're not there, that part of the safety net is not there.

IVAN PUPULIDY: That is correct, sir.

JIM HULL: And so do you have -- is it standard operating procedures, I guess, if the tanker gets there first and they call back to you and say, I've looked at, for them to go ahead, or is that a violation of the procedures?

IVAN PUPULIDY: It's not a violation. In fact, that is standard operating procedures. Frequently, however, depending upon the lead plane, the tankers will opt to do it without the lead plane. Or dependent upon the run, the tankers will opt to do it without the lead plane. Frequently, however, this year, with the turbulence that we've had and the excessive fire behavior, the tankers to my knowledge -- to my experience this year waited for me on each and every occasion. They did not stick their noses down low.

JIM HULL: This is where we heard when we were in another city about the helicopters not being able to leave without the helicopter manager having to be there.

IVAN PUPULIDY: Helicopter manager. Yes, sir.

JIM HULL: But the tankers can go ahead and start their runs without the lead tanker -- I mean the lead plane.

IVAN PUPULIDY: That's correct with one exception, and that exception is MAFS, the Module Airborne Fire-fighting System, the Air Force units. They must have a lead plane there prior to commencing runs. And I'm not saying that this is the reason that MAFS has a 100 percent safety record over fire, but it may be a contributing factor.

JIM HULL: Well, that's what procedures are for. Thank you.

MR. : But there's a number of other factors I think I ought to point out or maybe you can for us. The MAFS don't drop as high.

IVAN PUPULIDY: No, that's not correct, sir.

MR. : I mean not as low or not?

IVAN PUPULIDY: We fly MAFS, we lead MAFS exactly the same as conventional tankers.

MR. : Same altitude, everything.

IVAN PUPULIDY: Yes, sir.

MR. : Speed?

IVAN PUPULIDY: Yes, sir. There's a --

MR. : Okay.

IVAN PUPULIDY: Basically when a tanker comes over a fire, the first thing is basically a bullet statement that's given to them over ADIS (ph), whether it's a MAFS platform or a civilian tanker. Basically I'd say, for example, if tanker 2 -- let's call it 2-3 was calling in. "Tanker 2-3, lead 2-3, come on in 5,500. Altimeter 3-0-0-3 covers level 4 full load." So I've given him basically what I'm looking for. He'll roger that and then I'll come back with, "Come up on the east side of the fire and I'll come out and pick you up, or come up on the east side of the fire, look for me, I'll be down low." We'll gain visual contact with one another and then we start the dance. I'll give him a show-me run and we'll go to work. That's generally the way it works.

MR. : Do you have radar altimeters on your planes or not?

IVAN PUPULIDY: No, sir, I do not have radar altimeter on the aircraft. I do have a TCAS now and that is a wonderful piece of gear. I've often wanted a radalt, having a lot of experience with them.

JIM HULL: And I'm assuming they're not equipped with flight data recorders or cockpit voice recorders.

IVAN PUPULIDY: No, sir. No, I have a makeshift cockpit voice recorder that I put in my lead plane. I put a cassette deck in there and I frequently tape the conversations inside the cockpit.

MR. (?): Is that just so you can reconstruct the mission?

IVAN PUPULIDY: Yes, sir, exactly. Reconstruct the mission for training.

MR. : One last question. I'll make it a combined question, Ivan.

MR. : You're a lot of help.

JIM HALL: I asked three.

MR. : Percentage of your flights in moderate turbulence?

IVAN PUPULIDY: Percentage of my flights in moderate turbulence. Moderate or worse? Moderate to severe?

MR. : I was going to ask -- I was going to go to severe next, so you go moderate then I'll severe.

IVAN PUPULIDY: All right. Percentage in moderate would probably be around 30 percent.

MR. : Severe?

IVAN PUPULIDY: And severe would probably be the rest.

MR. : Seventy percent?

IVAN PUPULIDY: Yes, sir. No, no, not realistically. About 30 percent in severe. And at those times we call off the show. So, for example, I'll give you a classic. I had one in the Angeles National Forest just last week. Flew the mission, waiting for the tankers to arrive. Tankers hadn't taken off out of the tanker bays. Flew the run for an hour waiting for the tankers basically to be dispatched, there was a dispatch mistake. But during that hour time I made the run numerous times and noticed the turbulence over the run was increasing every time I made the run, until finally I said, "Look, if we don't have -- if the tankers aren't airborne now we're canceling the show," and they were not, so we canceled it.

MR. : Number of times in a -- this is my third in my three-part questions, sir.

JIM HALL: I know, but I'm getting one more turn.

MR. : Number of times you exceed 2 Gs on an average sortie?

IVAN PUPULIDY: It would be hard for me to tell. I don't have a G-meter on board the airplane.

MR. : Well, like two or 12. I'm just trying to get an order of magnitude.

IVAN PUPULIDY: I'd say for me I probably rarely exceed 2 Gs. The profile that I try to fly with, the tankers, is such that I avoid that situation. If I get into the bottom of a run and I'm going over 30 degrees angle of bank and over 140 knots, I'm

calling the run off before I get into that situation. So I just tell the ground folks we need to rethink the strategy. We need to rework this thing, move it further up the hill, find a fuel break, do something indirect at that point. So I would have to say though that I'm probably the most conservative or one of the most conservative out there as far as that's concerned.

MR. : Good for you.

JIM HULL: I've just one because unfortunately I'm not going to be with you tomorrow.

IVAN PUPULIDY: Oh, that's a shame.

JIM HULL: But you have a unique situation in your experience in that you have flown public use aircraft in both the Coast Guard and in the Forest Service.

IVAN PUPULIDY: Yes, sir.

MR. HULL: And maybe you could provide me some contrast with adherence to procedures, funding, maintenance between those two organizations that are both funded by the taxpayers.

IVAN PUPULIDY: Since you're not going to be here tomorrow, let me shift gears. You're going to have to give me a couple of extra minutes.

MR. : The others are all here.

MR. HULL: They're all here.

IVAN PUPULIDY: I know. But I need to get this to Mr. Hall.

All right, sir. Let me start out by saying I am deeply concerned about the trend --

(Audio break)

MR. : -- comment about compare and contrast the Forest Service to the Coast Guard. The Forest Service and Coast Guard missions are almost identical in the type of severity, the type of terrain that we fly in, the type of environment that we fly in overall, having flown rescues in Alaska over land, rescues and hurricanes. I've been there, done that, got the T-shirt.

There is a huge difference, however, in how the aircraft are maintained. For example, and I'll start with just maintenance, the Air Force just as of January 15th, 2002 issued a TCTO on C-130 aircraft with 7075-T6 aluminum. Basically what they did was they did continuity tests or conductivity tests on the aircraft to determine what type of metal was inside the aircraft. And in the aft sections that contained 7075-T6, they

determined that that metal was not a suitable type to be in hat sections and literally grounded 57 aircraft as a result of it. One of which was one of the aircraft that I had flown at Channel Islands Air National Guard, a 1962 model C-130.

The attitude that the Air Force took to that and the military takes toward maintenance is a proactive step. We're not going to wait for cracks to develop, we're going to fix the problem before it happens. So as a result of that proactive maintenance, these aircraft were first limited operationally and then scheduled for major overhaul for all of those component parts to be removed and replaced with 7075-T3.

That's a significant difference to how the civilian sector has been forced to address their problem. The civilian sector has been limited by money, limited by several other issues and has been unable to take that type of proactive step to try and fix the situation. As a result of that and the basic philosophy that is out there, in other words that emergent philosophy that I alluded to, we have a tendency to go full forward mission first and not step back and take a proactive approach to either mission or training or maintenance.

With that in mind, I'll give you my recommendation tomorrow. I imagine you can probably pick that up from the rest of the panel. However, training for aircraft limits, training for mission design, training to fly a standard set pattern and evaluation system within the organization is an absolute must. If I could take this program and change it to any program out there, I would say just copy what the Coast Guard's doing and just do that, because it works with certain applications obviously for wild land fire fighting for continuity of the over and that sort of thing.

Again, I'd like to reiterate that the lead plane becomes a first line defense in that operation. This would require a definite tactical change and an absolute philosophical shift in culture without a doubt. I think that as a result of the culture that we're immersed in and as a result of the upbringing of many of the pilots within our organization, that there's a limited level of understanding as to the dangers that we're actually involved with. When you grow up in an airplane and you're accustomed to flying 100 feet off the ground, dropping chemicals out of the bottom of the aircraft, flying 150 feet off the ground starts looking pretty good. (Laughter.)

And then when you add a couple of extra engines it starts looking even better. But the bottom line is we're still basically doing that same mission without a really designed system of standardization of how we're going to enter the fire, how we're going to leave the fire. We do it by convention and each lead plane pilot and each tanker pilot learns that convention and we basically do the dance because we learnt how to do the dance as opposed to designing the mission and then flying to that standard.

As a result of that, some of the things that the metallurgists and engineers said to you earlier come into play. We end up with higher angles of bank, excessive rates of climb or descent and as a result higher G loading on the aircraft and greater risk to all the pilots involved. And I think that's a major contributing factor to what's happened this

year and what could possibly happen next year. Most of the training that we conduct we conduct over the fire. This is a huge travesty. As a result of this, we can't simply sit there with a trainee and express to him exactly what we want him to do tactically because now we have the impressed need to get a tanker dropped and clear of the fire because we've got a guy loitering over the top of us at \$75 a minute. Something we think about.

As a result of that our tactics are compromised and our training is compromised. We end up learning the same lessons over and over and over again, sometimes year to year, sometimes fire to fire. And, as I said earlier, part of that program then entails learning what each individual tanker pilot wants and that's just completely unacceptable. When MAFS comes over the fire, it's a completely different story. Tell the MAFS pilot where you want him to be, he's there. Tell him what you want him to do, he does it. you match the speeds that he asks for, usually 140, 130, 120, unless it's a gusty wind situation in which case he asks for a greater speed. And it's pre-programmed. I don't have to know what a MAFS pilot wants out of Channel Islands more than I have to know what a MAFS pilot wants out of Charlotte, North Carolina. They all want the same thing.

In summary or in conclusion on that point, I think following the model the Coast Guard established for this type of operation -- it's all right there. It's all right there in black and white. I think that, at a minimum, whatever platform is decided for lead plane, whatever platform is decided for the air tanker community, there should be a simulator available that we can put everybody in and actually do a fire simulation. And I think that the military simulators, in my experience -- I'm sure there're are civilian ones that are adequate also. But in my experience the military simulators are the ones that you can't fool. The civilian ones that I've been in, I've been able to fool.

MR. : Really are at the end of this.

JIM HULL: Just a comment. Ivan, I really appreciate your testimony. I know the whole panel does and I appreciate your contrast between the Coast Guard and between the Forest Service.

IVAN PUPULIDY : Yes, sir.

JIM HULL: I personally believe from my experience at the NTSB, the government owns one level of safety for every individual they put in harms way and I hope that may be one of the things that we'll be able to address in our work here.

IVAN PUPULIDY: Yes, sir. Understand that the reason that I bring this up is because I really care deeply for the people that I fly with and that I want to see them around for a long period of time. And that's why I bring it up.

MR. : (Off mike.)

IVAN PUPULIDY: Yes, sir. Thanks.

(Cross talk.)

RON MEYER: I'm Ron Meyer. I'm the Bureau of Land Management, State Aviation Manager, here in Lakewood. State Aviation Manager for Colorado.

MR. : Thank you for being with us, sir.

RON MEYER: You're welcome. And the reason is I'm here, as far as the air tanker program, the Fire Aviation Program goes, I'm on the administrative side of the program rather than the operational side such as Ivan is. I'm an aircraft contracting officer's representative or contract manager. I currently have three contracts, one air tanker at Grand Junction, one airplane contract at Grand Junction which is an air attack aircraft, which is different from the lead plane, and then we have helicopter based at Rifle, Colorado. And all three of these are, basically, out there for support of the ground wildland firefighter.

I've been at corps since 1989. Past ground fire experience, I've been a division group supervisor, a type 2 safety officer and a fire behavior analyst in the Great Basin fuels and my aviation background, which is all military until I got into this, was as an aviation crash fireman. So I kind of look at aviation from a different point of view. There were several comments made about the contracting, the current contracts, and in regard to contracting, one of the things I've noticed over the years is the end user, which is the firefighter or the contract manager or the fire management officer, has very little input into the terms and conditions and the equipment of the contract. And this is other than the aircraft and the technical equipment.

We get into such things as duty days and days off. For example, I was discussing with Mr. Hull that the contracts originally that we operated were 12 days on duty and then two days off so the air crew actually got a day off of rest along with doing their laundry and banking and everything else. Now you have to work six days. You got one day off. It's really not a day of a rest. It's kind of a safety concern with us and two of the reasons I've heard of is, one, a mandatory day off for the aircraft for maintenance which I think is happening more and more. In the past it never used to happen at least on the contracts I administered and another I was told it made it a lot easier for the dispatchers to track the air tankers because they knew they were always off on the same day of the week. And I always wondered, you know, what convenience to a dispatcher had to do with air crew rest and safety. But I lost that one.

One of the things that again came up is that the government has a tendency to want the best but we seem to be reluctant to pay for what the contractor actually has to offer. We've got some aircraft on contract that exceed the contract specifications significantly with Stormscopes Traffic Awareness System, same contractor has another aircraft has additional radios beyond what is required plus TCAS and so on. And I agree with the comment that the length of the contract should be extended and I think they're slowly working to that. Now our current air tanker contract is one year with two options

to renew. Our airplane and helicopter contracts are one year with three options to renew. So they become four year contracts essentially as long as the contractor performs.

JIM HALL: Without the benefit of any guarantee that you got a contract?

RON MEYER: Right. Right. You know it's a crapshoot for those people. Some short term fixes. As Mr. Powers and others have mentioned, the air tanker contractors are a sole source of a critical service and then on the other hand the government is their sole customer, so we're in this together. A short, short term fix, I would think, and this would be I'm looking at next fire season, is making funding available, I think, to the contractors for repair and maintenance based on the inspections -- FAA mandated inspections -- be on to the existing aircraft. I was thinking something similar to the loan program that has been set up for the airlines since 9/11. And, again, that type of program could be backed by a long term air tanker contract, or tanker service contractor.

Some midterm fixes in my mind would be to continue the funding for aircraft inspection, maintenance and repair, and at the same time, or actually tomorrow, begin in concert with the air tanker industry, the wildland fire community and Congress and airframe manufacturers to develop an airframe that's an aircraft that is designed specifically for fire-fighting. A heavy air tanker based possibly on a C-130 airframe. That's really the only turboprop production line that's open right at this time for large aircraft.

And then concurrently we need to maximize the other fire-fighting aircraft. There's only two others available for use in the United States which are made for fire-fighting, and that's the Canada air series, the 215, 215T and 415. And in the single engine air tanker, and there's only one of those, and that's the Air Tractor 802, and it's having its problems with structural -- with cracks and rudder cables and things like that. And that's really about all I really want to say. I think we need to develop a new airframe that's designed I could say specifically as an air tanker.

JIM HALL: Was there ever a time where the end user had input into the process?

RON MEYER: Occasionally they might ask us what day of the week you wanted to have your air tanker off, but even that is fixed now by contract.

JIM HALL: So there's no structured way for the contracting operation to benefit from the actual experience, the people that work for the government that have to minister these contracts.

RON MEYER: It'll come up on the biannual meetings between the air attack, the lead plane pilots and the air tanker pilots. Usually there's some contracting representatives there. Some of the things might come up. A lot of that is equipment oriented issues. One we went through that was hashed over for years was the wearing of flight helmets in the air tankers, military SPH-4C helmet or equivalent, and finally that

was waived and pilots didn't have to wear Nomex flight suits or shirts and trousers and boots and so on. And that was hashed out.

And one of the things that has come up on this last contract cycle, we found out the contracts had already been -- or the invitation for proposals had already been let, and we'd wanted to have the contracting people consider and discuss with the air tanker industry the possibility of requiring a mechanic at the base with each aircraft. Some of the contractors provide them, they all will get mechanics, you know, they're required by contract to have a mechanic at the base. And a certain number of hours after a call from a mechanic. But we figured, you know, the way these aircraft are being used now, it would be --

JIM HALL: Is that at the base that -- the remote bases.

RON MEYER: Like at Grand Junction. And that way they --

JIM HALL: Are the conditions at those bases adequate to perform maintenance?

RON MEYER: Grand Junction is the only one I can speak for, but we've got -- there's two FBOs there on the ramp itself, we've got compressed air available, there's lighting on the ramp, there's power on the ramp. We have portable power generators and so on if they do need it. And the airport itself has facilities where they can move off of our ramp to what they call heavy metal for long-term parking or maintenance or whatever.

MR. : Ron, contractually how best to ensure that money allocated in a contract for inspections or maintenance is actually accomplished?

RON MEYER: I really don't know. The contractors bid a daily availability. The contract at Grand Junction, for example, is a 123 working day contract. And normally they'll start work on May 12th. They're off every Tuesday. And the last day of the mandatory use period is -- well, this year it would have been October 2. And the contract bids a -- like I say, they bid a daily availability, and that's to include their salary, their insurance, all their maintenance costs, inspection costs, that sort of thing. And then we also pay an hourly flight rate when they are airborne.

MR. : I understood that, but how to do you ensure that if in the contract a certain inspection program --

RON MEYER: That would be up to the air tanker inspectors that inspect the aircraft prior to going to work on the contract. Those are the Forest Service inspectors.

MR. : The Forest Service inspectors then would be expected to --

RON MEYER: Right, they're the ones that issued the air tanker -- what they call the air tanker card or aircraft data card that states --

MR. : But that's really just a contract compliance thing.

RON MEYER: You're right.

MR. : It doesn't mean that the aircraft is airworthy.

RON MEYER: No.

MR. : That's not the inspection there.

RON MEYER: We depend on the FAA, you know, to enforce those regulations. We don't enforce any FAA regulations. And by contract clause they're required, you know, to be Part 137 and compliant with FAA regulations.

MR. : You mentioned having a mechanic out on site. Do I understand that the heavy air tankers go out, and if they do require a mechanic, a mechanic can be anybody -- they don't use a crude, cheap concept, or one mechanic sticks with one airplane?

RON MEYER: Normally the contractors will fly in a mechanic if they don't have one on the home base or the designated base where the aircraft works from. They'll fly them in, and I'll never delved into the fact whether they have one or two mechanics that might be specialized in P-2Vs, for example, or BB4Y2s, or whatever. We had one contract where we didn't require it, but they did provide a mechanic, and they also had a quick engine change kit for the jet and a RESIP (ph) quick engine change kit that they kept at Grand Junction.

And then when the aircraft was dispatched, operating off another base, another air tanker base, the mechanic had a service truck. And in this particular case he would start gypsying across the country, following the air tanker. And the only thing the government agreed to do was pay the guys per day, and we didn't pay anything extra for the mechanic services or anything else.

MR. : Are mechanics prevented from flying on the aircraft when that aircraft --

RON MEYER: They can fly aboard the aircraft usually when it's being propositioned from one base to another. And the contractor has to provide the contracting officer up in Boise with a list of mechanics or other people who are approved to fly aboard that aircraft. And like I say, if they moved say from Grand Junction Pocatello, Idaho and they have a mechanic and they want to take him with them, you know, he can fly aboard the aircraft.

AL HYDE: Any other questions?

MR. : Thank you very much. Very helpful. And thank you for your public service.

AL HYDE: (Off mike.)

KYLE CARMICHAEL: I'm Kyle Carmichael, tanker base manager from Grand Junction, Colorado. Background project inspector on the contracts that Mr. Meyer had mentioned. Air tanker contract, air attack contract and retardant contract, also a project inspector on those.

MARK MICHELSEN: Okay. My name is Mark Michelsen. I'm the air tanker base manager at the Jeffco tanker base, located just north of here in Broomfield, Colorado. As well I'm a contracting officer's representative for the national air tanker contract and I'm also a project inspector for the national retardant contract as well.

JIM HULL: Are you both Forest Service employees?

KYLE CARMICHAEL: I'm BLM.

MARK MICHELSEN: And I'm U.S. Forest Service.

JIM HULL: Okay, good.

MARK MICHELSEN: And just going through if you want -- I'll talk about just a little bit of background. For myself I've got six years in the U.S. Coast Guard, and I actually did serve with Ivan Pupulidy for a number of years, both in Kodiak and California as well. Primary background is search and rescue and telecommunications as well as federal law enforcement. I have approximately 14 years in fire-fighting as well as -- regular structural fire-fighting, wildland fire-fighting and emergency medical services, as both EMT, flight medic and as well as the board of directors on certain search and rescue organizations.

I have been a wildland firefighter now for about coming on seven years as a wildland firefighter for the Department of State and Lands in Montana, both as a firefighter and an engine boss and also as an initial attack IC. Currently I've been the air tanker base manager working at Jeffco for the past four years.

KYLE CARMICHAEL: Some of the issues that are not really issues but concerns that we are looking at, base operations kind of getting into a standardization of the bases throughout the country. We've looked at -- its been mentioned to you that one base will do one thing or one a little differently than another base, use tanker pilots, will go from one base to another, work with different rules per se how the base works. They're still working under the guide, the interagency air tanker base guide but how that's interpreted and how it's enforced is a difference, something we'd like to look at. Maintenance of the bases and the upgrade of the equipment for these bases.

MARK MICHELSEN: Yeah. Also, in regards to the interagency air tanker base guide, is like, talking more about backing up Kyle. Basically, it's designed to meet a

national standard for all the tanker bases. So, that way, I could go to Kyle's base, Kyle could come to my base or we could go to any base throughout the country and everybody has a set specific way of doing it, so anybody could back anybody up as needed.

We've been trying to, actually, work on having this standard approved since the early 1990s and actually I think they started toward the later end of the '80s trying to get this approved. At this point we're still waiting on approval for this standard and it was supposed to be approved last summer but it got put off again for another year and at this point I haven't heard if its been approved or not.

The people that are actually looking at it is the National Wildland Coordinating Group out of Boise, who actually looks at all the course information, you know, the new specific courses that they're --

[TAPE CHANGE.]

JIM HALL: -- maybe you all could take your two bases and give me an example of what's different or what would be the same if you had standard, particularly as it might apply to safety. You mentioned -- the reason I ask that question is you mentioned there are differences and we're trying to get a standardization since the late '80s and I was just trying to get in my mind an example of how they're operating differently.

KYLE CARMICHAEL: One difference is we're working on a different, basically a different set of rules. The BLM has their set of rules, how they operate the whole fire operation. The Forest Service also has their different set of rules. We're still in a meeting with --

JIM HALL: Are the fires different?

KYLE CARMICHAEL: No, fires aren't different. The fires stay the same.

JIM HALL: I thought maybe I was missing something --

KYLE CARMICHAEL: No. We're also dealing with tankers that are contracted on the BLM and tankers that are contracted on the Forest Service and so when we have a Forest Service tanker we have a different set of rules that we have to work with as opposed to BLM air tanker that we have a different set of rules for but it comes down to the tanker base operation. What the managers do, which is what the SIADIBY (ph) will somewhat do, you know, the managers will perform their job pretty much straight across the board but then you get into different interpretations of what is going to be cut off, you know, how you provide lunches and this type of deal. But there are definitely two different sets of rules.

JIM HALL: Is there anybody else other than the Forest Service and BLM operate these tanker bases or is that --

KYLE CARMICHAEL: There's also CDF out of California and they have their set of rules and BIA and also the National Park when they're using their helicopters.

One issue, another issue that we'd like to maybe address or bring up to the table is the mechanics from the contractors, what if our current contractor is not a work rest guideline for the mechanics that work on the aircraft. So there'll be mechanics that will work 24, 48 hours straight, trying to get an aircraft back into service without a break and once that aircraft is unavailable then it's money away from the contractor. And these mechanics are working in 100, 110 degree heat, all day, trying to get this airplane back into service, back into contract status.

MARK MICHELSEN: Or at times, yeah, they can work all night long. In regards to what Gene Powers was saying earlier, the problem with like the -- kind of like, hole in the wall kind of basis and places that are round and about and one of the things regarding that, for mechanics to meet the national standard is, I can vouch for my base, we have the availability to provide them lighting, power and anything that they need as far as equipment I can generally get, luckily, because we have a big shop that's next door. We have the National Center of Atmospheric Research that operates a C-130 and if they ever need any extra pieces of mechanical equipment or things we don't normally have on the base, I have the availability to do that.

And with that, with upgrading the national standard for some of these smaller bases and allowing for some of these smaller bases to at least have a budget to go through and upgrade, so that way they can have electrical power, they can have portable lighting instead of some nights, some of these mechanics are having to work all night long just with headlamps. So where I can see where it's going to be difficult, it's going to be not only stressing on the mechanics because, you know, limited visibility, you're going -- they're working all night long, some of them might not get, you know, a lot of sleep regarding the rest guidelines and that's something that we would like to address as far as the air tanker bases, on things that we could do to improve with our operations, not only help the mechanics but help the whole air tanker program as well.

MR. : When you say headlamps, what are you talking about?

MARK MICHELSEN: Oh, like regular turn on headlamps.

KYLE CARMICHAEL: Little petzl headlamps that run off of double A batteries or C batteries.

MARK MICHELSEN: Okay. That covers that. Okay. A couple of the things we were going to talk about as far as like the overall base operations and training with base operations. One of the big things that we've been touching on is the training and the availability of such. Right now NWCG, which is Wildland Coordinating Group, is not

allowing some of the programs to be given a specific standard. They used to have specific courses related to air tanker base management and to -- for being a mix master to qualify that makes different retardants and with that is -- as a mix master you want to make sure that the retardants and everything that's mixed that goes on that aircraft are properly mixed because what happens is, if it's not properly mixed and it goes out on the aircraft, the overall load and the density that goes on that aircraft is going to change the whole performance on how it operates. So that's another thing that's a big factor.

The course that they did have, at this point, they don't really recognize it but there's a few of us out there that still try to maintain the standard of the mixmaster course and try to keep providing this training for other people that are out in the field.

KYLE CARMICHAEL: And on that side, there was an incident in Utah, Fillmore, Utah where a single engine air tanker was overloaded, the product wasn't mixed properly and apparently it took off and could not remain in altitude and ended up ground looping. Fortunately, the pilot was not injured but the aircraft was destroyed.

MARK MICHELSEN: And a lot of the training that we do receive as base managers, I'm -- this is kind of more of a guesstimate estimate -- but 70 percent of our training is on the job training as well as knowledge and timely experience that you just get after doing it season after season after season. You pick up more things, you learn more things and if we go out on assignments to different bases, we can learn other things that other bases have done and try to incorporate that into our program to make each individual programs better than what they are.

One of the other things we're looking at now with a lot of these other smaller bases is maintenance. Maintenance is a big issue at a lot of tanker bases, especially this year. I can vouch for my base at Jeffco. Our operational tempo was up almost 900 percent compared to normal. A normal year that we've had in this area, we've maybe pumped between 74,000 and 80,000 gallons. This year, we've done 1.3 million and most of that has been on the front range and/or the central section of Wyoming, to just give you an idea of how it changes. So a lot of these bases have, you know, older equipment, have stuff that needs to be replaced and a lot of them, if they are attached to a forest, don't have some of the budgets and some of the extra money to upgrade some of the equipment that's needed.

For example, the Pueblo tanker base which is located just to the south in Pueblo on the Pike-San Isabel Forest, one of the things Jeffco used to do, before I moved from a regional level to the forest level, is provide support for -- they have a portable tanker base. But at the same time, they didn't have the amount of money to get some of the equipment. So half of the equipment and everything that I had to back up for my base, I loaned to Pueblo so they can run an effective operation and they pumped out almost 800,000 gallons out of a portable base this year and 60 percent of the equipment that they used down there came from my base. So that's another thing that we'd want to look at for personnel and/or other small bases, if we can possibly do that.

One of the things we're looking --

BILL SCOTT: Excuse me, Mark.

MARK MICHELSEN: Yes, I'm sorry. Go ahead, Mr. Scott.

BILL SCOTT: My understanding is that a fair bit of money has been poured into these bases around the nation over the last few years.

MARK MICHELSEN: Yeah. I'll go ahead and update that. There have been specific bases now that have been upgraded and for example, Rapids City has been upgraded. Durango has just got done last year and has been upgraded and right now, Jeffco is finally getting upgraded as well. There are still a few bases out there that have not been upgraded as far as, you know, overall equipment and/or facilities. But they are slowly working towards it.

BILL SCOTT: So is it correct to say there is money allocated to do that? Or are you going year to year?

MARK MICHELSEN: It depends -- honestly, from what we see, it's from year to year. We actually almost lost the funding to go through and rebuild Jeffco this year. The money that we had allotted was actually being -- was going to be taken to pay for some of the fires and some of the initial fire costs in the front range but we were able to keep that funding so we could get our base upgraded to the standard where it should be.

BILL SCOTT: So in a big fire year, Forest Service wide, the way they pay for all the extra work of fighting fires is to draw from existing accounts or do they get a supplemental?

MARK MICHELSEN: That's a big open-ended question.

MR. : Yes, it is.

MARK MICHELSEN: As far as some of the appropriations that would come from that, that's kind of above and beyond what my level and my scope is as far as the operations -- there was initially when they did the NAT study, the National Air Tanker study back in 1996 -- is that correct? -- well, they would go through and they looked at different bases and amounts of money allotted, there was actually a time when they had Title 4 funds that were set to go through and rebuild a lot of these bases. But at this point, Title 4 funds no longer exist from the last understanding that I had. So --

KYLE CARMICHAEL: I'll explain that to you later.

(Laughs.)

Okay, is there anything else? We thank you for letting us talk, thank you.

MARK MICHELSEN: Thank you very much, gentlemen.

JIM HULL: Well, wait a minute.

MARK MICHELSEN: Oh, oh. Questions.

JIM HULL: Is there anything else we got, Earl --

EARL (?): I'm fine.

JIM HALL: Can I ask some quick questions?

MARK MICHELSEN: Sure.

JIM HALL: After 9/11, there are concerns about security. Where do you stand on security for the base, security for the retardant --

MARK MICHELSEN: That's a very good point. Actually, I put that here as number six. I'm kind of surprised that I missed that. So I apologize, gentlemen.

One of the things that has come to light with a lot of the tanker bases is some of the heli bases that you want to secure or instate new standards for security at tanker bases as well as some of the heli bases. Right now, we're trying to meet the standards, you know, as best as we can budget-wise because a lot of us, we don't have big, deep pockets as far as budgets for some of the security but we are looking into it, especially now that we will be rebuilding Jeffco, trying to put in some of these new security areas. One of the things we would like to know is if it's possible for some of the security requirements we have to follow as far as homeland security requests is where can we get some of the funding and where would the funding come from in order for all the tanker bases in the country, not only just for Forest Service, you know, for BIA, for BLM, for the Parks Service on where we can get that extra funding to meet those security standards.

KYLE CARMICHAEL: One thing is it hasn't been totally defined on the total security of the base how are we going to secure the retardant tanks and the aircraft. The aircraft have been pretty much left up for the contractor to secure or disable for the night. We have a basic base protection. Retardant tanks are being locked up at night and such but as far as an overall definition how it's going to be done, we have not seen that.

JIM HALL: And these air tanker base operations, are they 12 months a year? Do they shut the base down at some point?

MARK MICHELSEN: Yeah. Basically, we start open early in the spring, basically getting all the operations ready to go and go basically till fall and it's going to be weather dependent as well. But most of the time, the bases themselves are open

seasonally but there are employees that we do round the base doing maintenance and stuff right throughout the year.

JIM HULL: But you all are there for the whole time?

KYLE CARMICHAEL: No. My position, I'm a 8-month employee. I come out in the first part of May and I'll finish up here in November and in the winter time, I'll ski patrol or do something else. Then I'll come back on in May. So I run a cycle where Mark's position is a year round.

MARK MICHELSEN: Yeah, I am full time permanent.

AL HYDE: Thank you, gentlemen.

JIM HULL: Thanks very much, guys.

BOB DETTMANN: Good afternoon. My name is Bob Dettmann, D-e-t-t-m-a-n-n. I'm a forester with U.S. Forest Service. I work here in the Denver office, the regional office. I'm a 33-year firefighter. I started on a hot shot crew. I started in California, was a smoke jumper, managed a regional helicopter here in Colorado. I've worked with teams both Type 1, Type 2 teams, Type 3 initial attack for about the last 25 years and currently work as an air tactical group supervisor.

MR. : For the Forest Service?

BOB DETTMANN: For the Forest Service, yeah. And I think, you know, my focus where -- you spoke to aviators who have become firemen. I'm a fireman who's learned the aviation operations end of things both starting as a hotshot and smoke jumper (ph) and then on through. My focus, of course, is firefighter safety and in my capacity as air tactical group supervisor my role is to provide the management and tactical and logistical support to that firefighter on the ground. I supervise the lead plane, helicopter coordinator and work directly with the air tankers and the helicopter pilots over the fire.

That role also includes providing lookout for the firefighter on the ground, predicting fire behavior and providing some tactical suggestions and information to the IC on the ground. I would say that in my 33 years of doing this, I can see that the fires are significantly different that we have now. They're larger. They're more intense. Quicker responses are different. We've also added the fact that the West is filling up and we have a large urban interface component to this matrix and so the job is much more complex than it had been in the past and I think as we address the role of aviation, the firefighter on the ground has come to expect a lot more from those aviation resources than they had in the past in the well.

Consequently, we're seeing a lot more flying, both fixed wing and rotor wing, and asking the equipment and the people that fly those airplanes to do a lot more than they

had in the past. And I'm not sure that our management systems have progressed at an equal speed with that expectation from the firefighter on the ground.

EARL McKINNEY: Bob, can you just before you go on to your next point, give us a couple of for instances where management has not progressed? I'm sort of tracking with you on the fire -- has risk changed -- management hasn't kept up.

BOB DETTMANN: Well, I think the Gene and Woody spoke to some of that this morning. Our contracting procedures are, basically, not all that different than they were probably 30 years ago. You know, there's a industry, they bid a contract and they provide, deliver a product and I think in the helicopter side of things that we've gone to some things like performance based contracts where we can pay for that safety component, where there's an opportunity for a company for us to do the best value, for example, not just the lowest bid.

EARL McKINNEY: So that's sort of a counter-example -- management of helicopters --

BOB DETTMANN: I think so. Yes.

MR. : Probably the best example of how the Forest Service has changed to keep up?

BOB DETTMANN: Yeah, and we have examples of that in our service contracting on the forestry side as well of best value where the contracting proponent submits a proposal and says, we'll provide you this service at this price and you evaluate the performance that you're looking for -- an end product that you're looking. And in this case what we would be looking for are the top three items, the top three bullets: safety, operational effectiveness and costs as, for example, as components or elements that we would evaluate a performance based contract. So that's an example of how I think we, management wise, could progress in this arena. Keep pace with the factors that influence risk management in the aviation arena.

EARL McKINNEY: So why have contractors in some areas learned how to do this best value but the aviation contracts in some areas don't seem to have?

BOB DETTMANN: I don't know. I can't answer that.

MR. : What would constitute a best value contract in the heavy air tankers, for instance?

BOB DETTMANN: I would say, as we look into the future, I would say that it would probably be participation in more public/private training where when I'm over a fire and I've got the lead plane and the helicopter coordinator and helicopters and air tankers circling, we have to form a team but we've never met. We've never talked to each others. We've never trained together. But in that short period of time, or that

period of time over that fire, there's an expectation that we form a team that I would say in a matter of moments orients itself to an unfolding situation, decides what to do, takes action, evaluates that action and then reorients to an unfolding situation without ever having any formal training as a team.

MR. : And no standardization across the country?

BOB DETTMANN: And no standardization across the country for that. I think he made a good point. Standardized, predictable, reliable, consistent behaviors over that fire are critical to running a safe operation and providing that firefighter on the ground the service that they need and that they expect with even a greater expectation. Let's see, I think that's a good example of that performance based. If we have an expectation for a safety program that exceeds what we currently have as a standard, why pay for the minimum if a company wants to step out and do a better job? Let's pay for it. Let's evaluate it and see if there is a value for the taxpayer in doing that. That's the basis, I think, or the principles of a performance based contract.

MR. EARL (?): Who has expertise to evaluate that that money was well spent? It seems like I could entertain 10, 15 different great ideas of let's do some crew resource management at tanker base. Why? It sounds good on paper.

BOB DETTMANN: Yeah. I don't have an answer for you there.

JIM HALL: Let me tell you there are some standards already with other government organizations that exceed the Coast Guard standards that you could begin looking at. I mean the Forest Service standard.

BOB DETTMANN: I just think that we're playing to the lowest common denominator with just a low bid whereas a company wants to innovate their equipment, wants to innovate their safety program or combine training, be innovative enough to participate in a combined training for crew resource management of that fire environment.

EARL McKINNEY: Can I suggest though that one of the -- sorry.

BOB DETTMANN: No. Go ahead.

EARL McKINNEY: One of the things that strikes me about that whole helicopter program is the quantification of all the effectiveness measures that they've gone through and if we hold that up to be an example of how the helicopter program has moved ahead and changed their management operational process to keep up with this changing fire, how do I do that with crew training. You don't seem to be -- you know I need to lift x amount of weight at this amount of altitude and I need to glide this distance --

BOB DETTMANN: I think it has to do with just standardizing our procedures and processes. Some of the stuff that came out of the accident two years ago in

California where we now have a fire traffic area, you know, we were already in some places doing that but it wasn't really standardized. Now it's standardized and we have some standardized procedures and we brief incoming air tanker crews on that at the bases. Standardization on this fire. This is how we're going to operate in this fire traffic area. We've accepted this procedure, this process, those sorts of things that deal with decision making process. Also stuff that deals with that decision making process that I talked about.

EARL McKINNEY: But you see, my sense of it's hard to improve a management oversight process if you don't collect any data any place.

BOB DETTMANN: Oh yeah. I'd say we have to have new cost centers and data collection points. There has to be feedback on that -- is it effective, is it not effective. Safecom system could be a measure. How much downtime there was the previous year. How many safecomms did this company or this group have, et cetera, provides feedback to that performance based system.

MR. : I agree wholeheartedly with this approach. I'm just afraid the Forest Service doesn't know as much as they know about maintenance oversight of aircraft, you know. So how do they get in the business of doing that quality assurance when they can't already do it very well on established problems we have wing --

BOB DETTMANN: Well, yeah, I'm, you know. I don't have that answer for you.

MR. : I was hoping maybe somebody, okay.

BOB DETTMANN: Yeah. No, I'm sorry, I don't, you know. But I do -- the focus that I want to bring here is that this program provides a service to the firefighter on the ground and that that role and that expectation from that firefighter on the ground is growing because we have a greater and greater reliance on aviation as these fires become more complex in the urban interface and our field situation deteriorates.

MR. : Bob, a different sort of -- like I've got the lead mike here. One concern that you could look at over the last 10 years is to say we've killed a number of firefighters on the ground. So let's pull those guys back and not employ them quite as close to the fire, keep them safe and let's shift the risk to the aviation community. Maybe not explicitly but we've got to fight these fires so let's offload that to the contractors that have agreed to do it and some other people and we'll keep our ground forces a little bit further away from the action. Is that a safe perception of transition?

BOB DETTMANN: I wouldn't, I would say that it was implicitly that decision. I think it comes out that way especially if you've got limited resources on the ground. You've got three crews on the scene and you've ordered 10 and the fire is running away from you, so you're going to try and do what you can, tactically, to try and slow the fire

down to get those folks some traction or a toe hole. And this is usually in a situation where it's an escape fire, beyond the extending attack period for example.

Initial attack, I still think that the program does a good job. That's what the air tanker program is really designed to do. It does it effectively. We can go and initial attack a lot of fires and do a lot of good while they're small but everybody gets behind the power curve when that thing escapes initial attack and they go into an extended or into a large fire situation. That's where the firefighter on the ground is most at risk and consequently you're right. We do end up trying to hold things off with the aviation resources until we get caught up with the ground folks.

MR. : From your experience then?

MR. : Bob, I was just trying to think of fires that do escape. What percent would you say are due to ineffective fire management decision making? What percent are due to weather? What percent are due to lack of financing?

BOB DETTMANN: Oh, I don't -- I'd say -- that's a tough one, you know, two percent do get away, 98 percent we do get and the last two percent is a combination of all those things. This year, of course, weather was it, you know, the drought. The fuels conditions on the ground and the drought conditions that we had and the limited number of resources that we had available in this drought condition caused that escape.

JIM HULL: Do we not have enough assets for the situation?

BOB DETTMANN: Not always, no. Initial attack resources were spread thin. Folks were sticking to their work rest guidelines that came out of safety investigations in the past and you just don't have the resources available to go get all the fires. I know that in Southwestern Colorado this year, it wasn't unusual for me to have two or three air tankers in the air just hitting maybe 20 fires a day in the afternoon in about a two or three hour period and then trying to coordinate the -- you know, getting those staffed at that point. Some of them we didn't staff and we would just monitor, we'd put retardant on it and I'd fly over them every, you know, couple of hours to see how they were doing and some of them we never did staff.

JIM HULL: Can you put a fire out without air resources?

BOB DETTMANN: I'm going to say no.

JIM HULL: I want to be sure you voted because we've been trying --

BOB DETTMANN: I'm going to disagree with Pop on that one. I have seen it done. It was also in combination with some weather events that came rolling through too. We don't drop Pulaskis from the sky.

JIM HULL: -- vote you on the no category, then.

MR. : Bob, my last question is, if, put a big if on it, if the Forest Service has misallocated resources toward initial attack how would it learn that it did so?

BOB DETTMANN: Probably in a fire review. Each one of these fires that does have an escape has a review and -- do a better job of other ones but I think the ones that are really serious about it take a look at that and say, you know, why did this happen? You know, at what point did this fire escape and for what reason?

MR. : Can I comment on the standardization of those reports? Is there some data I could plan in the next two or three years?

MR. : Yeah, I think, yeah, there is in the fire line handbook, I believe there is a format for reviews, yeah. And of course, we're getting into more sophisticated systems too, fire use, fire management, making decisions on whether to take initial attack on a fire or if it's one we're going to let unfold its natural role, you know, those are --

JIM HULL: Who does the fire review and what happens to the document once it's created?

BOB DETTMANN: The documentation becomes part of the fire report and it's in the files. The administrative officer for that unit keeps that. There's recommendations --

JIM HULL: Does that go to the contracting officers or in Boise? Do you know --

BOB DETTMANN: Not usually. Usually those are documents that are internal to the unit that are part of that administrative unit's files.

JIM HULL: Too candid to get outside the unit?

BOB DETTMANN: No, no, I think, you know, they're public, it's public information.

JIM HULL: Okay.

BOB DETTMANN: And they, you know, the good ones are very candid. There's a good discussion between the dispatch community, the fire-fighting community, the aviation, the administration -- the local political officials, county commissioners, et cetera.

JIM HULL: Who convenes that or is there a process?

BOB DETTMANN: Yeah, there's a process at the end of the fire. Now not on every fire of course but these are primarily on escapers. And it occurs at the end of the fire. There's a formal closeout with the administrative officer and at that closeout these

recommendations are exchanged both to improve the performance of the team and performance of the administrative unit that's hosting the event.

JIM HULL: I assume that's circulated to everyone and it's --

BOB DETTMANN: It's made available to everyone, yeah.

EARL McKINNEY: Made available only in text format? Am I hearing that there's not any kind of database someplace where I can go and say --

BOB DETTMANN: No, I don't think there is. I think they're probably just at each unit.

EARL McKINNEY: So getting back to my question about wouldn't it be easier to convince people that were misallocating resources, if we had a system where some of the data was comparable?

BOB DETTMANN: I think so, yeah, yeah, yeah. You could do that, you know, particularly if -- when resources become slim, those are, you know, decisions that you try and make and forecast on weather and the allocation of those resources.

AL HYDE: That was your last question? Are there any other questions for the panel?

JIM HULL: We really appreciate you coming forward and providing your testimony. It's very helpful to us.

BOB DETTMANN: Thank you, it was a pleasure to be here.

(Off mike.)

JIM HALL: I hope -- this is the first time I've had a meeting set up in front of a window so I hope that's not a problem to you all or to the audience.

MR. : The view is fabulous, it's Denver.

JIM HALL: Well, we were -- the panel is very upset because everybody's looking past us and the pretty day outside.

(Laughter.)

HAROLD SCHAFER: My name is Harold Schafer (ph). Everyone calls me Buzz. I'm a retired Navy pilot. I flew for the Navy for 20 years. Most of that time was in C-130s and P3s.

JIM HALL: So you're a believer in the angle of attack indicator?

HAROLD SCHAFER: You bet I am.

JIM HALL: In my days at the NTSB the Navy and Air Force pilots would always argue over the angle of attack indicators. I always check once I see a naval aviator.

HAROLD SCHAFER: I do believe in it. I've been an aerial firefighter for five years. I am not now. I do not work for any company now. I used to work for Hawkins & Powers. Therefore I don't feel I have any ax to grind. I've got several issues or several topics --

MR. : I'm sorry, but just to clarify my notes, you worked for five years for them or five years in the industry?

HAROLD SCHAFER: I worked five years in the industry and all of it was with Hawkins & Powers.

MR. : Okay.

HAROLD SCHAFER: Okay. First of all, I see a cultural bias, a corporate attitude, if you will, exists, and right now it's a bad attitude as opposed to a positive attitude. There is always going to be a positive attitude but we need to modify the one that we have. The attitude stinks. I think we need to identify key billets or key jobs in the Forest Service, in the system that should be maintained only by pilots, experienced pilots.

I'm talking about jobs like aviation safety officer, national aviation safety officer, air ops officer on each of the teams, regional air ops officer as a regional safety officer. And whether the jobs are administrative or in operations, they still need to be held by pilots. And the reason for that is you have people who are making decisions, setting policy, and they're not the people doing it. The pilot's got to be at the other end of the working equipment doing it. And we look around like, well, who's bright idea was this? Where did this come from in the ivory tower? And you find out that the first time a pilot even looked at the idea was when he was told to execute it.

So there needs to be a cultural bias established. And the only way to do that is to put pilots in those positions. The Air Force does it, the Coast Guard does it, the Army does it and the Navy does it. You need to have line pilots involved in just about everything that involves aviation, and I'm talking about contract development and implementation. Any air tanker studies that are going to be made, pilots need to be involved in it. Not just subject to it but involved in it.

Accident investigations. When was the last time there was a line pilot on an accident investigation in this industry? I mean, the aircraft manufacturer is represented, Forest Service is represented, NTSB is there, the company is there. Who speaks for the pilots? Who speaks for the dead? There are no line pilots on the accident investigations.

All safety programs should have a pilot or pilots involved. Fire-fighting workshops need pilots involved. You need -- continuing education programs need to have pilots involved. Fire or incident debriefs or the fire reviews that you've been talking about, I've never been to one. I've never even been debriefed at what happened on one. So feedback is important. Pilots need to get involved in all phases and all the decision making, and there needs to be a system where it gets back to the people who executed the plan to find out how well they did.

Next is one you've heard over and over and over, and I just want to add my 2 cents, and that's value for value. It goes against basic economic law to expect a lot for a little. And yet that's what the Forest Service does year after year after year. Contractors need to make a profit. They're the ones taking the risk, they deserve the reward. I don't believe the contractors are trying to rip off the government, I didn't see that at Hawkins & Powers. They were simply trying to do the best they could with what little assets the contracts provided them.

You can't make a silk purse out of a sow's ear, and that's what the contractors are getting. They're getting a sow's ear and the Forest Service wants the silk purse. The contract doesn't provide, or there are no provisions for advances in technology, and no dollars available for new equipment. Radar altimeter, TCAS, GPS, they're not there. I had a GPS, it was my own. The company didn't provide it. There are no TCAS in the airplanes and there is no radar altimeter.

I've heard older tanker pilots say, what do you want a radar altimeter for? Because we're flying over terrain that's varying so much and you're sometimes going to be low, sometimes you're going to be high. You don't have time to look at it. And I thought, well, you know, with the mountains that might be true, but we fight a lot of fires in the flats. And if there is no radar altimeter in the airplane, do you know how much time I use it? Zero. If there's one in the airplane at least I have the option to look at it. But right now I don't even have the option. It's not there.

Whether you're talking about new aircraft or old aircraft or government owned aircraft, you still need to provide dollars to maintain those aircraft. If they're new aircraft, the purchase of them is going to be expensive and the upkeep's going to be low, but you're still going to need to provide the dollars. If they're old aircraft, you'll probably get them for a reasonable price but the upkeep is going to be high because they're old airplanes, they need to be maintained to a higher standard.

And I don't know about government owned, it depends how you guys operate those contracts, whether the variable costs are absorbed by the government contractors only provide labor, or how you work it, it's unknown, it hasn't been proposed. But all I know is that in order to maintain airplanes it costs money, and the money just isn't there.

Next is quality of life. The aim of this panel should be to make the lives and the careers of fire-fighting pilots long and satisfying instead of short and brutal. And it's not

my quite, that's Walt Darren's (ph), and I like it, I like it a lot. You need professional career pilots. In order to do that, we need to build this as a career destination, not a stepping stone to an airline job or to build a résumé. So we need to put in place a system to keep pilots, identify the really good ones and keep them in the system. We need to treat them and pay them like the professionals, instead of treating them like dogs.

Crew rotation. Right now pilots go out on a fire at the beginning of a fire season, whenever that is, and they don't get off until there's a season ending event, whenever that is. Typically May to October. The Forest Service has their own rules where they put people out on the fire for 14 days and they rotate them out, and it doesn't happen in the air tanker industry with pilots. I would propose that you and the Forest Service fund three crews for every two aircraft or four crews for ever three aircraft.

The advantages to have three crews for two aircraft is 20 days on, 10 days off. And I mean off at home, not wherever the airplane has to be. Four crews, three aircraft, that's 21 days on, seven days off. And I mean off at home, not wherever the airplane happens to be. You basically have while you're on contract or while the fire season's on, a ready alert status. Everyone who has been in the military knows what a ready alert is, and you really didn't like standing the ready. You're on call all the time. So we have a ready alert status.

To expect to be on ready alert from April to October in the facilities that are provided is unreasonable. You need to standardize tanker bases. I'm not talking about a temporary base. I mean, everybody understands a temporary base. You go in there and there's a porta-potty, there's a pumpkin for loading the airplane and it's rough conditions. Great, that's fine, we all can live with that. I'm talking about the standard bases that you contract for.

There needs to be facilities for crew rest, sleeping. Not all bases provide bunks. Crew cooking facilities, not all bases have crew cooking facilities. Washers and dryers, and that's a safety issue and I'll talk about it if you want me to. Crew recreation, TVs, horseshoes, pool table, something. I mean, a guy has to occupy his mind with something. I mean, a guy has to occupy his mind with something. A study area or debrief and brief area, weather and "note 'ems" (ph) need to be made available to pilots, and they're not. You have a ready alert? Where's the ready alert quarters I don't see them.

The reason I saw washer and dryer is a safety flight issues, flight suits are expensive. I came from the military, I had something like 10 flight suits, not an issue for me. My flight manager doesn't come from the military. He has one flight suit. One. He goes out to fill the airplane. There's a problem with the interface between the fuel truck and the airplane and he gets doused with fuel, comes back in. "What are you wearing?" "Jet fuel." "Well, take off your flight suit. You're not flying in that." It's a safety issue.

Forest Service says he has to have a flight suit to go to the fire. He only has one. There's no washer and dryer at the base. I don't care the flight suit is dry. I just don't want it to have fuel in it. So a washer is necessary to get the thing clean so we can

continue on to the fire. Right now, the procedure is at tanker bases, that if there is a fire going on, you're really the hero and when there's no fire going on, you're the fleas on the dog. Everything's available to you, if there's a fire going on. They'll feed you. They'll take you to get to the fire. They'll do everything they can to keep you in the airplane and keep you going, which is good and I like it. Everyone likes fighting fire.

When there's not a fire going on, you're literally treated like a dog and this has actually happened to me. I went to the coolers for water. No water in the cooler. I was told -- I went to the tanker base manager and said there's no water in the cooler. I'd like to get some water. While we don't have a fire to charge it to, there won't be any water in the cooler. He's drinking a bottle of water he got out of the cache, by the way. I say, "Well, my crew is thirsty. I need to provide water for them." His comment was, "Well, there's a garden hose on the side of the building." That's what I mean by being treated like a dog. You want professional pilots? Treat them like professionals.

The grievance procedure. I have -- that's under the quality of life also. I don't mean Safecom. The Safecom system is in place right now and it's used for everything, everything from "I don't like the color of somebody's shirt" to a real safety concern. We need to limit Safecom to safety related issues. That's all they should be used for, not maintenance, not because you've got a complaint about something, but simply safety issues. A grievance procedure needs to be put in place for pilots. Under the current situation, you have the government who has the money and you have the contractors who want the money. Okay? Then you've got the pilots who just want to work and fight fires. Okay? You got a pilot who's got a complaint. He goes to the government side of the chain of command and says, "Hey, this isn't right. I need water." Government says, "Gee, it's not in the contract. And I read the contract and I interpret the contract and I'm telling you it's not in the contract." So I've still got a grievance that has not been satisfied. I approach my employer and say, "Got a problem here. I'm not being treated correctly on the road." Employer wants these dollars and this is his only customer. "Now, Buzz, settle down. We don't want to appear to have an adverse relationship with the Forest Service." There are no means for a pilot to get satisfaction.

The next one has been touched on before by other people, standardization and training. I believe in standardization religiously. I mean I've seen it work and if you're going to have standardization, you need training to enforce it, to make it happen. Again, there are no dollars for standardization. At Hawkins & Powers, we had -- I believe they still have, I haven't been with the company for a while but I know that while I was there, there was a training procedure. We had training every spring. We had standardization in the airplanes. I stressed to the C-130 pilots there might be 50 ways to fly a C-130 but we are all going to fly it the same way and that's the way Duane Powers wants us to fly it. Period. There's no room for "I like this way." Standardization of procedures and of training to make sure that the standardization happens.

MR. : Buzz, did you have standards for deciding if aircraft were unworthy to fly the next day? If a certain thing, a certain gauge, was above certain tolerance levels,

did you guys have standard procedures for grounding the airplane? Or was that pretty much left to every pilot's whim?

HAROLD SCHAFER: I would not call that a pilot's whim but the aircraft commander did decide if his airplane was up or down and we make phone calls back to the company and say, "I've got a downing discrepancy" and the company would make every effort to send a mechanic out to fix a downing discrepancy. Now if it was a nice-to-have item, like I would like to have this fixed, that was always a problem. You negotiated with the company on those issues. But when you get a downing discrepancy, we'll fix those other problems. Or, We don't have the dollars to fix them. So you learn to live without the things that would be nice to have. You know, the basic airplane over the season become less and less IFR worthy, basically, VFR only airplanes because the equipment is not there to begin with and then it cannot be maintained properly because they all need dollars to do it.

MR. : Does it seem odd to you that we hear from Forest Service representatives that 50 percent of the flights they have -- 50 percent of the time that the airplanes that they have are not flyable? They seem to have more money spent on maintenance on relative terms than they allow contractors to spend based on a contract. It seems odd to me that the tankers are as available as they are.

HAROLD SCHAFER: The tanker availability is high because they are strictly VFR airplanes. I mean, they're not -- we try to maintain them in IFR condition and at the beginning of the season, they are and I've heard Duane pinning on maintenance constantly to get things fixed at the beginning of the season. But as the season goes on, a discrepancy that is a nice-to-have discrepancy but not essential to get over to the fire will go unfixed, simply because there isn't the time or the dollars to fix it. Am I answering your question?

MR. : You are.

HAROLD SCHAFER: So I want to talk about standardization again. We need to standardize procedures and not just within the company. Our company has standardized procedures. But we're only one company. How about a national standard so that we're all talking the same language and reading off the same sheet of music when we're over fire? We need to have training to do it and I'm not talking about OJT. OJT or experience is not the best teacher. Experience is a very good teacher because once you learn something from personal experience, you probably will never forget it. But it's not the best teacher. It puts the test before the lesson. You're out there. You've got to do it and then some lessons, if you don't do it right, you don't survive to learn the lesson. So experience is not the way to go with training. We need to fund training. We need to give the contractors dollars to get the airplanes airborne so that the pilots can put themselves into an artificial situation that's going to simulate a real situation, when you're not going to ding an airplane but yet you know what kind of performance you can expect from your copilot. You know what kind of performance you can expect from yourself because you've been there before.

Along with standardization training, you need to have a feedback or evaluation system so that lessons can be learned. There's standardization, there's training. You're over the fire. Someone doesn't do something in the standard manner. It needs to get back to him. You just can't go, "Oh well, here comes Joe Blow again and he always does it this other way." There needs to be a feedback system so that we can learn from our mistakes. And when I say standardization, I'm not talking about going to a mediocre position or a least common denominator. I'm talking about a jumping board, a starting point for continued improved performance. Like I said earlier, find the best pilots, treat them well and keep them. And allow openings for new guys to come in because you're going to have to replace pilots. People will retire, people will quit. But this needs to be a career destination, not a résumé building experience.

This one, you're going to hate. Cost accounting. The Forest Service lets the bean counters drive the problem. They let the accountants make many decisions and that is wrong. For example, they measure the cost of a fire in cost per acres burnt. Well, the more scorched earth you have, the less dollars you going to have per acre. So it looks good on the bean counting side. If you fight a fire when it's small, yes, your cost per acre goes up but you have less acres burnt therefore your bottom line is much smaller.

Big fires have a big bottom line. Small fires have a small bottom line. That's just the way it is even though you put \$3,000 on the ground to stop an acre at a quarter acre of fire, the cost for that acre is \$12,000 per acre, you say, wow that's an expensive fire but it's only a quarter acre and it's only \$12,000 as opposed to letting one go for thousands of acres and having a big bottom line. Why weren't air tankers used? I've asked this question from every hotshot that I've ever given it towards you.

Why didn't you guys call for air tankers sooner? I mean you wait until the last possible minute to call us. You don't give us any time to get there. I mean it's the last possible moment when they make the call. There's a windshield time that I'm looking. I mean I've got to look at a windshield to get to the fire before I can start doing anything. By the time I get there I can hardly do anything either because this fire's pretty much out of control. Why didn't you call us sooner? We don't want to waste retardant. Retardant's expensive. Air tankers are expensive. And they've been told over and over and over again that it's expensive, so don't call the tankers. I try to point out to them that wasted retardant is retardant that's still sitting in the tanks as your fire's going over the ridge.

We need to fight fires when they're small. Air tankers are best at initial attack not at large fire containment, although it's possible. It's not what we're best at. We're best at initial attack. Attack the fire when it's small. There's less risk. There's less smoke. Even on large fires, attack it early in the day instead of waiting until the middle of the afternoon. Early in the day the humidity is relatively high, the temperatures are cooler, the fire is smaller, there's less smoke, there's less risk. No. We'll sit around tanker base waiting until 2:00 before they call you. Some times later.

AL HYDE: Well, we're just about out of time. So if you could put this into a summary.

HAROLD SCHAFER: Okay. I have one more issue and that's fire-fighting itself and that's the opposite side of the house. We need a Complan that works. The current Complan -- first of all they change from fire to fire to fire and even from base to base. We have a national tanker based frequency but not all the tanker bases are up on that frequency and at least one guards that frequency. So you need to have a tone guard to put in to contact them and they don't advertise it by the way. If you need standard ingress and egress procedures, the lead plane needs to fly the pattern and the altitude he expects the tanker to fly. He can't just be flying -- okay, this is pattern I want you to fly and then when you look over at him, you think, my God, he's about 75 feet, does he really want me down that low? He needs to be at the altitude and the exact pattern he wants the guy behind him to fly.

And needs to be standardized. I'm not just talking about standardization of air tanker pilots but you need to standardize the lead plane pilots too because flying behind him -- each lead airplane is different. I'll do more initial attack i.e. fight the fires when they're small and fight the fires early -- the larger fires early in the day as opposed to waiting and the fact that air tankers are expensive is not a good excuse not when your fire's out of control.

Gentlemen, you have any questions? Anything I can answer?

MR. : I wouldn't mind one last one. When you were flying, Buzz, for your five years, were you the air tanker captain or the first officer, co-pilot.

HAROLD SCHAFER: My first year I was co-pilot, second year I was a co-pilot in the upgrade program and for the last three years, including half of this year, so for five and a-half years, the last three and a-half I've been a captain.

MR. : During any of those three and a-half years have you ever taken an unsafe airplane?

HAROLD SCHAFER: I have not taken an unsafe airplane but I have taken an aircraft with less airworthiness than I would have liked to have taken it. I put limitations on myself because I had to take an airplane that was sick. Okay. Example is my ATM is out. I called back to maintenance to say I need a new air turbine motor. A couple of pretty critical things are driven off of it. Down the airplane and we'll send it. I said, no, I'm not going to down the airplane. I can still fly this airplane as long as I have 8,000 feet of runway and a certain density altitude, but if they send me to a short field I can't go. So Bings (ph) was aware of that and I continued to operate as long as I was operating out of long runways.

MR. : In your experience have you had many in flight failures that you had to limp back with? Can you give us a feel for how often than happens?

HAROLD SCHAFER: The airplanes are maintained very, very well as far as system capabilities. They're not full system capable. They're partial system capable. If you want to go back to the Navy standards, you've got non-mission capable, full mission capable and partial mission capable. These planes are partial mission capable. They are airworthy. I mean, air frames and power plants is what I believed in and that's -- when I took off I figured as long as the airplane was going to hold together and I had a power plant to push it through the air, I was a happy man. And H&P did a good job. A really good job on making sure the power plants were operating and the air frame was holding together. The avionics was a completely different story.

MR. : Al, I've got my real last question. If I could.

AL HYDE: Go ahead.

MR. : Over your three and a-half years, how many engine-out landings have you had to do? Any of your engines not working?

HAROLD SCHAFER: Less than one a year.

JIM HALL: Well, Buzz, thank you for your time. You're very straightforward and plain spoken and I like that and hopefully you get comfort from three of the folks up here are pilots and Jim Hull and I are both from Tennessee and Texas so we obviously have good common sense too.

(Laughter.)

HAROLD SCHAFER: I understand.

AL HYDE: -- We have -- Hank Dominguez is here, and we're going to add one last person to the panel, and then we'll be done.

[TAPE CHANGE.]

HANK DOMINGUEZ: Good afternoon, gentlemen. Hank Dominguez, I'm the helicopter operations specialist for the Rocky Mountain region, so I'm going to shift gears on you a little bit and maybe move away from the fixed wing a little bit and talk a little bit about rotor wing. I was kind of hoping to do this tomorrow, but I was asked to do it today and I think I'm prepared to do it so I'll proceed from there.

I started working for the Forest Service as a firefighter -- ground firefighter back in 1975 and moved into the helicopter program as a helicopter crew member, on up to helicopter manager and now am currently in the regional aviation position. I have

enough student pilot time to be awfully dangerous. I've got 11 hours as a student pilot in rotor wing, and just to give me a better understanding of how they function.

JIM HULL: Have you been a helicopter manager?

HANK DOMINGUEZ: Yes, sir, I have.

JIM HULL: Oh, right.

HANK DOMINGUEZ: I've got some notes here and they're in a draft form, but I'll provide you with some final ones tomorrow. Within the Rocky Mountains we have nine exclusive use helicopters. Those are a mix between Forest Service funded, BLM funded, BIE funded and interagency funded where we all participate in some fashion in multi-funding them. They're on contract anywhere from 60 to 122 days. We have one helicopter that we host that is the national Type 2. It's funded for large fire support, and the others are used basically for initial attack. The large fire support one is just for that, for large fire support. When it's not doing that, then we can use it for initial attack.

Currently -- and what I want to maybe address this afternoon is the helicopter manager and the lack of helicopter managers that is perceived in our system at the time. Within the Rocky Mountain region we have 76 qualified helicopter managers. Of those 76, 18 of them are funded and staff exclusive use helicopters, so they fall out of the mix right off the bat. So that leaves us, I don't know, with a total of, what, 58 that are available to support in the Call When Needed Program?

Currently in the Call When Needed Program for Type 3 helicopters, the light helicopters, we have approximately 37 of them on the books for the Rocky Mountain region. At any given time 10, maybe 15, of those are available to us. As you all know, the vendor isn't going to wait around for us to call on. They're going to use them aircraft for other work if need be. Since 1975 when we implemented Alternative 4B of the National Helicopter Operations Study, it required that we manage every aircraft with one manager. And I say "we", we the Forest Service.

Prior to 1974 we had a lot of accidents. We were not managing the resource, we weren't requiring managers. There was a lot of things we weren't requiring. Alternative 4B fairly well spells out what those implantations were that we are in now. Since implementation of Alternative 4B, we've reduced the number of accidents dramatically. And it's not all attributable to the helicopter manager, it's attributed to better maintenance standards that we have in our contracts that we require, better bodily check rights (ph), of better equipment, newer equipment. We don't -- within the Forest Service we only use turbonized (ph) equipment, we don't use resip (ph) any longer. So there's a number of reasons why our accident rate has gone down. But I do want to say that the helicopter manager is one of those.

And I'll jump into that. I submit to you that we do not have a shortage of helicopter managers. You know, I mentioned that we've got 37 CWN helicopters in the

Rocky Mountain region and we have 58 helicopter managers. So there's plenty of qualified people out there. The issue is availability of those people at any given time. Some of these individuals are engine foremen. They're on a hotshot crew, they're on a hand crew of some sort. They're in other natural resource work: they work in timber, they work in range. Some of them are tied to targets. That's the way they're funded, they have to meet those targets to maintain that funding.

So there's a number of reasons why those people may or may not participate. Some are shopping. They're so versatile that they can go out on an engine, they can go out as a sawyer. They can go out as whatever when the bell rings and those that are in the fire program are here to fight fires, so they're going to go with the first ring of the bell. So I still submit that we don't have a shortage of people. In the Rocky Mountain region that's a small number, but we're a fairly small region when it comes to aviation resources rotor wing. If you look at other regions I know the numbers are much larger than what they are in Region 2.

My opinion is that we don't manage the resource well enough to have them available to us at funding level 4 and 5 when we really need them. And as an example I'll give you this. This year within the Rocky Mountain region we were always struggling to find helicopter managers. I sat at Jeffco (ph), at the tanker base, and I saw three fully qualified helicopter managers come and work on the ramp when we had shortages of people. Going back to the point that people are responding to the first call that comes out, or they're trying to get their ticket punched through other missions.

I don't believe that -- I mean, we've already made some policy changes. We can do the two for one, as long as the criteria is met. We can -- so that means we can manage two helicopters with one manager. We've relaxed the standards for the prerequisites for a helicopter manager. They no longer have to be ICT4 qualified. We've relaxed the physical fitness requirements. It's now moderate, it's not arduous. I don't believe that any of those changes have increased our pool of available helicopter managers to this day. I may be -- I may stand corrected on that. But in my experience within the Rocky Mountain region that pool of available managers has not increased.

To me it's -- a recommendation on my part is that we develop a process, and I don't know what that process is, but a process and a mechanism to limit those qualified people as solely helicopter managers when we reach funding level 4 and 5, to make sure that we have availability of people to manage the resource. That's one of my recommendations.

Something else that I would like to mention associated with the helicopter manager is not only the resource work and the targets. Our management officers are responsible for taking care of the home front. If they let all of their resources leave, and let's say they've got four or five helicopter managers, they still have to maintain some staffing in the event that they have an incident in their zone of responsibility. So they are reluctant to let people go. So it's -- there's a bunch of different angles as to why maybe

we don't have people participating. But you can't blame the FMO for wanting to maintain some staffing and not be a total draw down. Yes, sir?

JIM HULL: Help me understand. Now, if somebody's on a ramp --

HANK DOMINGUEZ: Yes, sir?

JIM HULL: -- do they make the same money they make being a helicopter manager?

HANK DOMINGUEZ: Yes, sir.

JIM HULL: So it doesn't make any difference to them?

HANK DOMINGUEZ: Well, it does if there's less responsibility.

JIM HULL: Okay. And does the person have a say so in this? Or is it -- you know, if I called you up and you're on the ramp and you've been assigned to the ramp and we say "We need you as a helicopter manager" and you say "Well, I'm on the ramp here and I'm going to stay here."

HANK DOMINGUEZ: Usually when we order the resource -- wherever they come from, they get a resource order and once they're dispatched they fulfill that 14 day requirement, or that 14 day --

JIM HULL: So you're a GS9 let's say, or whatever it is, and -- you're a GS9 and you're carded to do five different things, you're still a GS9 wherever you go to do those functions?

HANK DOMINGUEZ: Yes, sir, you are. That's the way the system works.

JIM HULL: So if you have a job that's easier than another job and you're working, you don't have any incentive to take the harder job?

HANK DOMINGUEZ: No, sir, none at all. And I'll mention that here a little briefly, just because I think it's an issue. And it's not only in the helicopter program, I think it's within the whole fire organization and it's interagency -- different agencies. In my field travels some of the -- or some of the discussions that I've had with folks in the field is that there's no equity for the work that you're doing. There's no pay equity. If you are a GS5 qualified as a helicopter manager and you can go out as a crew member, what incentive is there to go out as a helicopter manager as a --

JIM HULL: What's the lowest grade you would have as a helicopter manager?

HANK DOMINGUEZ: It can be at 5 on up, or even lower if somebody has had the experience and had the training. Not all helicopter manager positions are GS9. The

GS9 position only applies to our exclusive use helicopter managers within the Forest Service. So a helicopter manager could conceivably be a GS5.

JIM HULL: What about a ramp worker? Just somebody helping on the ramp?

HANK DOMINGUEZ: A ramp worker, the same thing. It depends on what their pay scale is from the unit they're coming from.

JIM HULL: Okay.

MR. : But it helps them get promoted to that GS level if they have that helicopter manager card punched?

HANK DOMINGUEZ: No, sir, not necessarily. No. If you envision we're bringing somebody from, say, law enforcement that's a GS7 law enforcement officer and does -- and is qualified as a helicopter manager. If they go out as a helicopter manager or as a helicopter crew member, they're going to get the same amount of pay. How that helicopter manager or crew member position may help probably does not even play a part in the law enforcement arena, unless they're running a helicopter program of some sort in law enforcement. So, no, it may not have any bearing whatsoever on their current position. Can I go on or is there something else?

JIM HULL: Oh, yeah. Yeah, please.

HANK DOMINGUEZ: Okay. I guess --

JIM HULL: You're doing a good job. I understand.

HANK DOMINGUEZ: You understand? Well, I'm not from Texas but I was born and raised in New Mexico.

(Cross talk, laughter.)

HANK DOMINGUEZ: I guess I'll close this up. In closing, what I'd like to say is that we've come a long ways since 1974 and pre 1974. The implementation of Alternative 4B has brought us in a different direction. We have a good programmatic approach to the helicopter program. And, yes, there are some safety requirements that we require -- and I heard some comments earlier that safety costs money and a helicopter manager to manage the resource, to make sure that we're doing the right thing. I don't think that that's wrong. I think that Alternative 4B laid a great foundation for us. I think we need to take that foundation and build on it.

And if the changes we've already made have not relaxed the -- have not loosened up the availability of helicopter managers or increased that pool, I'd hate to see us continue to tear away at Alternative 4B for the Forest Service and not have any more availability of people to participate. I think that it's important that we do a better job of

managing the limited resource that's out there, if that's the fact that it is limited. I don't believe that we have a shortage, I think we just need to do a better job of managing.

MR. : Well, do you think a GS5 level is appropriate for a safety position as a helicopter manager?

HANK DOMINGUEZ: You know, the -- no, I don't. I think that the requirements that we put on a helicopter manager, not only in the administrative side of managing and administering these contracts, but the implications that come along with that in managing a good, safe operation, in supervising people -- because not all -- a helicopter manager is qualified to go out with a light, a medium or a Type 1 helicopter, so they can function in any of those positions. To go out there and ask them to respond and do that kind of work at a GS-5 wage -- I mean, where is the incentive? I think that it's a lot of -- it's a big workload. Along with that, they've got to ensure that the people that they're helping on the line, that they're not breaking policy, that they're staying within the parameters of the policies that we've developed.

AL HYDE: More questions?

JIM HULL: Thank you very much.

HANK DOMINGUEZ: Thank you.

MR. : We'll see you tomorrow at the (off mike.)

HANK DOMINGUEZ: The what?

MR. : (Off mike.)

JIM HULL: Not this one. (Laughter.)

(Cross talk.)

AL HYDE: We're going to close up here... Pleasure to work with you. Thank you all for coming to the session, and we'll close it off here....

JIM HULL: And we also would like to thank the Salvation Army for the entertainment. (Laughter.)

[END OF EVENT.]