This tape has been transcribed without editing. Much of it is devoted to background information concerning how the missions came about, how they were organized, etc.

We would like to address your attention to the following highlights.

Page 2 -- press invited to go along on missions, 1962

Page 5 -- How they earned the title
para 3 "The most shot at big unit in Vietnam"
" 7 description of wearing apparel all designed to ward off bullets, flak and glass.

Page 8 -- description of chemical loading (paragraphs 2 & 3)

Page 9 -- no precautions taken and no worry about defoliant chemical; description of amounts spilled and tracked (paragraphs 2 & 3).

Page 11 and 12 -- How quickly defoliated areas grew back in Vietnam climate with its heavy rainfall
- Green Berets request spraying to protect them
- spraying results in reduction of ARVN required to guard cleared area
- pilot's rating of effectiveness

Page 13 and 14 -- Why program was terminated

Page 15 and 16 -- On camera transcript for T.V. program

WETA-TV Channel 26

for

F.Y.I. Program
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The attached is a transcript of an interview with the Ranch Hand Association pilots who flew in Vietnam. Most of the information was used as a background with a very short segment filmed on camera.

Interviewer	--	Chris Koch
Pilots	--	Jack Spey Charles Hubbs
Producer	--	Ricki Green

Ques: Were you two in Vietnam together?

Spey: Charlie arrived after I did.

Hubbs: Jack actually started the operation way back in the original days and I came over in '66 and spent one year during the high peak time when the most defoliant that was ever put out, that one year period there.

Q: What period was that Charlie?

H: That would be '66 through '67 that time frame -- high utilization there. But (ah) Jack and I never flew at the same time together although Jack spent 4 years over there but we never spent it overlapping with one another.

Q: Right. Let me interview Jack if I might. What was it like when you just got over there? I mean what . . .

S: In what way do you mean. . .What do you mean what was it like?

Q: I mean what was an operation like in the early sixties when you first went? It was experimental at that point wasn't it?

S: Initially the sorties that were flown were in selected areas that were chosen for different vegetation types so that they could determine, you know, what effect it had -- just growing season or not in the growing season had an effect on the effectiveness of the material, the chemical. (Ah) and they also chose areas with different types of foliage also to see how you know what the effectiveness was. There were relatively few actual missions flown during the early 1962 time frame. It wasn't until -- I guess it was late '62 when the feasibility was determined to be worth while so then we started pressing ahead. Most of the targets that were chosen at that time were flat land targets -- lines of communication, roads, canal sites, you know, to try to remove foliage for -- to prevent ambush or try to reduce the risk of ambush and most of it was in relatively flat terrain because we, the Air Force hadn't then, up till this time had not had any experience in spraying over rough terrain and gradually as we got bolder and better why we started getting into mountainous terrain working mountain passes -- railroad passes where maneuvering was a little bit more difficult. So as we learned and as the requirement grew steadily, why we started working more and more and more over the years.

Q: Right. How did you get involved initially? I mean what led you to volunteer -- were you asked to volunteer? Did you care about it or what?

S: We were -- there is a special aerial straight flight at Langley Air Force Base which is an Air Force mosquito control flight, who were called upon to form a cadre initially. They didn't have the numbers of people in that organization to man the numbers of airplanes they wanted and intended to fly over there, that DOD and the Air Force intended to deploy. As a result they came to Polk Air Force Base looking for additional air crew to man four airplanes, giving them a total of six airplanes for the initial deployment. We, the different squadrons, there were five squadrons on the base, the different squadrons were asked if they would be interested in volunteering for a class five (?) program and there was a group of us who did volunteer and then a subsequent group that was chosen or selected to join Operation Ranchhand for the initial deployment over.

Q: Was it always called Operation Ranchhand?

S: Oh yes. I guess it was Operation Ranchhand from the start. It was Ranchhand, I'm not sure the Operation was in there or not, it was just the unclassified code name for the entire project.

Q: Were you at all involved in a policy level or. . .

S: No. When I volunteered I was just a brand new 2nd Lt., just a pilot.

Q: Were you given like a policy description or a policy briefing? The purpose of the mission?

S: We weren't - because it was classified at that time -- we weren't permitted to speak, you know, about what we were going to be doing, in fact initially, because of the classified nature of it, like any other classified program, we weren't, we knew where we were going. We knew generally what we were going to do but we were only told what we had a need to know at the time which is normal, normal policy.

Q: After a period of experimentation I guess it was decided it was worth doing -- it was efficacious, that is it worked and then another decision was made at some point to go public with it or to announce it or something, right? I mean it did become public at some point. Were you around at that time? I mean do you know why or when that decision was made?

S: I don't know. No. I don't have any knowledge of the decision making process. I do know that as early as 1962 reporters were invited to go along on missions in Vietnam. David Halberstam was, ah, he writes of it in his first book, not "The Bold and the Brave" his recent one.
(Some garbage about which book -- not the "Best and

Q: What was his attitude? Do you remember what his attitude was in that?

S: He enjoyed it. He enjoyed flying. It was an exciting mission, in fact we almost lost him out of the back of the airplane.

Q: (Laughter) What do you mean, how?

S: Oh, that's immaterial really. He went along and took some photographs, of course met all the people involved -- so at what point in time it went public, so to speak, I don't recall, but there was never -- the press, if they were interested in going along were more than welcome to.

Q: Right. Can you, ah, Charlie, when you got over there it was, I guess you were there during the maximum use of defoliation. I mean at the time they put out the most defoliant. What was the mission like? How did it begin? What did you do?

H: Well, it was open and it was well known. We were asked to volunteer for it though because of the hazardous aspects, not for any other reason and (uh)

Q: I mean was it one of these things that would come along at the last minute where you would have to get up and rush out for the plane? Like was it a week in advance?

H: Oh no! No, no, we knew we did our own planning as best we could, in other words the Province chiefs would submit-- the province chiefs -- in fact I'd rather Jack explain this --

S: Once ARVN or the Republic of Vietnam Army became aware that the program was available to them and became educated as to what it could do, the province chiefs would send to ARVN headquarters in Saigon requests for areas to be sprayed and it could be a river's bank or a roadway in order to get rid of the underbrush along the road -- this sort of thing and that request would be forwarded to MAC VEE (?) in Saigon and the provincial reps also had army advisors in the field with them. And there was a coordinated program between ARVN and the U.S. Army. If an area were approved and there were political considerations given as far as the amount of control that the Republic of Vietnam exercised in that area -- there were different political considerations given -- if the target area was approved, why - during the period of time that I was there the U. S. Army representatives brought that area to us on a map and said this is what we approved to be done. We would then sometimes go out and take a look at it from altitude, usually, to see if it was flyable for one thing because you can only maneuver a big airplane a certain amount and then we would sometimes request and utilize photographs of the areas to make identification and navigation a little easier. Once we had an opportunity to chop the thing up in workable seg-

ments so that it could be flown, then these different segments were scheduled to be flown and we would try to randomize rather than going back and hitting the same place all the time which could get a little risky. Generally we had enough areas in the bank, so to speak, that we were able to move from different areas to different areas.

Q: You did a lot of pretty heavy flying? I mean you were in the air a lot?

S: Well the average sortie might run -- say you're flying out of Ben Hua or Saigon and you had to go all the way to the ...(garbled)... Peninsula which is about an hour and fifteen minutes down there and depending on how chopped up the target area was in terms of how much maneuvering you had to do on it -- runs back and forth -- it might take as little as four minutes to finish a run or as much as ten or fifteen minutes to empty your tank and then you climbed back up and you know, cruised home. And that was the reason for putting detachments in Danang, you know, to cut down the travel time because the country is about 2 1/2 hours long.

Q: Right. What was it like to fly those missions, I mean, was it particularly dangerous flying or was it . . .

S: It varied. It depended on the nature of the beast. I mean that if they were over very dense jungle with few clearings they can't, I mean if there's anyone down there they can't shoot you. By the same token you can't see them and targets like that -- areas like that -- were very easy, relatively easy to fly if it was flat terrain. Now if the terrain started to become difficult, why mountainous or this sort of thing, why then techniques involved became a bit more difficult. It's harder work. You have the possibility of over-stressing the airplane and you want to make sure you work downhill and not find yourself working uphill because the hill might go up higher and faster than the airplane can and then you're kind of boxed in so it just depended on the nature of the target. We took our particular licks in the clear open areas where they had a clear view of (garbled) and they were known hostile and they perhaps had seen us before and they had some idea of what our tactics were and as the war progressed this is what really hurt us; they got more intelligence on how we operated and it was just like shooting ducks, the more you shoot at them and learn to lead them then the better you are at leading an airplane at 150 feet off the ground. And as the war progressed the ground fire became more sophisticated as well as more accurate. And then we really started taking our lumps.

Q: Do you recall any particularly frightening moments or any scary times?

Both: laughter

S: Probably your first mission you were stupified by the fact -- if you'd never been shot at before -- and some folks (garbled) and the ground fire started it was exactly like what you've seen in the movies. You heard the guns going off and when the bullets hit the airplane you heard the gun that fired it so that got your attention. And you could smell cordite if the bullet came through the cockpit. These were not just random things you see on television. This is true.

Q: You mean bullets from small arms fire?

S: Yes. And they did quite often hit us -- in fact that's how we earned the title of "the most shot at big unit in Vietnam" and that was scary, of course, that was initiation. Once you got over that and found out that you could live through this hail of noise and scare program why then you settled down and became a professional again and then you took it in in stride. Then after that the only time that I think you would get scared is when you either had severe damage to the aircraft which meant that you had a very good possibility of crashing imminently or you yourself or some of your crew actually got struck by a bullet and was hurt then you then had a problem taking care of this guy trying to get him back and getting him some first aid.

Q: Did that ever happen to you?

S: Yes, the first week I was there (laughter). It absolutely got my attention. I didn't even want to look at my co-pilot -- he'd been hit and I didn't want to look at him. But I was flying tight formation and I did not want to take my eyes off the leader because I was in a complete state of scare -- and ah he'd been hit. But he was still functioning so my idea was I don't think I'll look over at this fellow right now since he seems to be doing quite well without me doing anything -- no sense in losing my breakfast at this point in time.

Q: Well, were you guys wearing flak suits or did you have any kind of special protection?

H: We had armour plate in the aircraft. I mean anybody that thinks we were flying in there completely cold would be foolish -- it would be foolhardy to even try it. We had armour plate on the bottom of the cockpit. We had armour plate in a curved sense like the arm rest of a chair -- up the sides -- and some on about a 45 degree angle back up front -- forward of the aircraft -- remember this was a huge airplane and there was a huge area out there of just empty space. We also, in some cases, sat on a flak jacket and we also wore a flak jacket. We also wore, in the later years, the best ballistic helmet that the Army could develop. Now it was only good against splinters and things like that.

It wouldn't stop a 30 caliber round. Then as the war progressed on further we put on the clear visor to protect our eyes from the glass. That was one of our biggest problems -- was to get the glass in the cockpit and it would come right in on you.

Q: Well it sounds like a lot of near misses!

H: Oh yes, yes -- in fact this was a common thing getting the airplane hit was not the problem, it was keeping your body in one piece and not taking a lot of licks on that. Then we uh, the next thing we went to ---

Q: (interrupts) You mean the first time you're not really, you're not scared?

H: No, it's surprising because you see that's why I'm trying to explain the protection we had, is, we weren't doing this in a foolhardy way -- we were doing it in the best manner we could to protect ourselves and in our final protection, that is as far as the individual was concerned, was a collar. And again now you hear today about people wearing bullet-proof vests. Now they're not made out of heavy ah ceramic. They're cloth types really, but we called 'em a horse collar or whatever you want and we found that we were taking quite a few hits. For example, if I can describe what happens to you when you take a a windscreen out. We're flying, usually in tee shirts, with a flak vest on -- and that looks just like a regular vest. Alright? Our arms were exposed, the bottom half of our face was exposed and initially our throats. So when the windscreen was shot out the bullet, of course, gave it some impact, the air flew through and everything, it just came in like now. It was there. And the whole cockpit was filled with shards of glass. You took a pretty good beating around the face and a pretty good beating on the arms. And the rest of your, anything that was protected did not get hurt. Now if a bullet itself struck you that's another story, but I'm saying just the glass itself was a real problem.

Q: Were you hurt? Did you fly in a fighter formation? Or would it be just one or two planes or what?

H: Well in the period I was there it was commonplace to have a three aircraft flight and a flight of from anywhere from two to four fighter planes as escort -- in Jack's time they hadn't established all these things so he went through various changes of tactics. They are the ones who determined the tactics. When I got there things were pretty well stabilized. I went into a pretty stable operation. Jack's got some background on how it all got started.

S: The areas that were selected for spraying were relatively secure because as I mentioned before the forestry people wanted to get in there and the chemical people wanted to get in there and see it -- how effective the material was going to be. Later on once we started, operationally you

you might say, we then gradually started to pick up a little more opposition, again depending on where we were flying. Once we started picking up opposition we started to think of ways we could minimize the opposition -- or at least the effectiveness of it. One tactic that was used was arriving at the target as early as possible with just enough sunlight or just enough dawn light to be able to see and get the job done without running into trees and this sort of thing. That was helpful because you could usually catch them at breakfast and whistle right through. No problem. Later on when we started in to crop destruction -- enemy crop destruction -- when you have crops you have people, when you have people you're going to receive opposition. Initially again we tried to utilize the element of surprise, however, some of the targets were densely enough populated that the consideration was given to marking it when we would receive ground fire we would throw out canisters of smoke. We then went to having a forward air controller accompany the mission and he would attempt to locate the origin of the small arms fire or the opposition relative to the smoke. The smoke, of course, was a little further down the road, obviously, because by the time you called for it and the flight engineer throws it out of the back door, why its gone down. The "facs" would then try to determine where it came from possibly they were able to see it -- most of the time not. But if they could locate it they sometimes would direct an air strike or at other times if they felt it was a little bit too late and they couldn't come up with a good location they would go ahead and hold the fighters and anticipate, maybe, a problem further on down the road. That was pretty much option number two. There were some targets that were known to be in enemy areas -- again these were generally crop destruction type targets whereby we utilized pre-strike. We didn't like to do this because many of us felt it just woke them up and got them even madder, which it would me, and it really didn't have that much damaging effect on the amount of opposition we received. However, we would use pre-strike on some targets and in this case the forward air controllers would mark targets for the fighters either observed targets or the most probable areas and those areas would be struck prior to our arrival. We would attempt through planning and coordination meetings with the fighters and the fact that if they could follow us closely behind the actual air strike as possible. The idea being we could slip through there as quickly as possible while maybe they still had their heads down or they were confused or their ears were ringing or something of this sort. And I guess that basically the three tactics that were used.

Q: Were the most dangerous missions those over crop land?

S: Generally speaking, yes it would be safe to say that the crop destruction targets were generally the most dangerous and where you expected to receive the most opposition.

H: You also remember now, because they were crops they were relatively flat although they could be in the mountains, but they were also the most populated and there were also many hostiles in that area. I'd like to add one thing to what Jack was saying. We tried once to send in -- you know we had psychological warfare aircraft over there -- so we thought, why don't we send in the psychological warfare loudspeakers and tell them who we are and what we're doing? And that this is to everybody's benefit (garbled) and all we got was a lot of wide awake people with a lot more ammo all set and ready to shoot and knowing that we were coming. It did not work at all, a disaster, so we went back to the tactic of surprise.

Q: You guys were pilots so I guess you weren't too much involved in actually handling Agent Orange were you? Who did all that part and how did that work? I mean did you fill the plane just like fueling it or what?

S: Yeah, right. And in that film that you saw it probably showed a re-fueling ah a re-servicing operation. The chemical arrived in the country by ship -- freighter -- and was off loaded and trucked to the airport in 55 gallon barrels. Those barrels were pumped by hand, well, with a portable type siphon pump and pumped into initially a thousand gallon tank which was the same tank that was used inside the airplane. It was just an extra one. And this transfer was done by members of our organization assisted by ARVN soldiers usually -- just workers, privates, P.F.C.'s that could labor and that they could spare because it was kind of laborious, wrestling these 55 gallon drums full of material around. Those thousand gallon tanks were lined up in a row and when the airplanes would come in they were finished or they were empty or they were going to turn around and go back out again for a second sortie which we did once in awhile, fairly often sometimes. Why you'd simply pull in, back up to 'em, bring the hose in -- it's just an ordinary hose like a fuel hose in a gas station -- and pump it from one tank to the other. Later on they got a little more sophisticated, larger tanks and used some old fuel tanks that had been salvaged.

H: We also used low boys. The agents were all set up on low boys that were brought up right up to the thing. We had multiple siphons. It was a very very slick operation near the end as it got more sophisticated.

Q: What we're meaning in a certain sense is that nowadays there's a lot of controversy about how dangerous this stuff is and we'll get to that in a minute, but were you guys given any kind of special safety precaution in working with this stuff? Was there any special care?

S: No. There was no need for it. This chemical had been in use commercially in the states, in fact the White House lawn was treated with 2,4-D or Agent Orange in 1944 (ah) there was no need to be concerned with it. We knew what it was. It was explained to us. We knew how it functioned and there was simply no requirement for any special protective clothing of any kind. There was a lot of spillage that occurred. On the ground you were constantly tracking through -- walking through small puddles or this sort of thing and it was tracked into the airplanes and there's always a little bit of spillage during the transfer operation and the cargo compartment quite often just had normal spillage on the floor which got tracked up to the cockpit on the soles of your shoes and things of this nature. But there was just no reason to be concerned about it. There wasn't then and there isn't now.

(Some off tape discussion here about what they're going to do next on the tape). They ask Jack about a typical mission.

H: A typical mission when Jack's initial group had worked out the tactics would consist of -- assuming we had the target on the frag -- now the aircraft are loaded, they're pre-positioned during the night and actually at 4:00 AM or 4:30 AM we would have the briefing. Now the briefings were pretty standard. The folks were all professional. They were what I call a double volunteer really, for the operation but well, because you have to volunteer for Vietnam and you have to volunteer to be a Ranchhand but there was no connotation to that except that it was an elite group and it was kind of a real honor to get into it. It meant you'd been looked at pretty hard. It meant you were a number one airplane driver or whatever your specialty was -- particularly a navigator. Navigators were very, very important to us. And in the lead aircraft as I said earlier when we had the crews, the crew was basically a three man crew with the exception of the lead aircraft which had a navigator and he had to be good because he's looking for a match stick in a forest at a hundred feet at a hundred and thirty knots (ah) pretty tough. And these folks well, we were really proud of them. They did a mighty fine job. And our flight engineers had to be hardy and brave souls so the composition of the crew was a pretty big deal. So the briefings really weren't that complicated. The people were professionals and after

two or three missions they had it under control. They had good training in the states. I'd like to emphasize that. But, well, assume it was a three ship flight that was the average -- now later in the war it did become bigger, they went with huge goggles, but then -- but just to keep it simple what a normal mission would have been, it would have been a three ship formation, which meant you have three per aircraft except for the lead which had four. You had a crew of ten to brief. If you were lucky and your fighter cover was on the same base then you might brief with them. Occasionally you might even be able to brief your FAC face to face but not too often did that happen. The forward air controllers usually came from very near where the target was. The fighters may come from half way up-country -- so that was done by phone. After only a few missions everybody had the tactics worked out. So all everybody had to know is, where is the target? We would fly to it and at around 35-hundred feet above the ground, but away from the target, the three ships would go into orbit, the fighters would come and join up, the forward air controller would be down a lot lower and he would be near the target but still a little way away from it. When radio contact was established with everybody and everybody had their call signs and their numbers and the folks involved all going in the same direction, then the forward air controller would normally drop in a smoke round and that was the beginning of the run. Now our navigator would make the actual pinpoint of the target but that smoke round was usually very close to it. Now if it was a quiet target and all we had was fighter cover, not forward fighter suppression, then we would go in and turn on our smoke and drop right down on the trees -- come on in, turn on our tanks and start putting out the Agent. The fighters would then make passes parallel to us and they would set up an orbiting type thing where as one pulled off there was another coming in and there was another in the pattern somewhere. If it was a straight shot, four minutes later it was all over and we went home. We'd climb up, the FAC would tell us we did a good job, and that was all we needed. If it was a hot target, then we had another procedure and that was where the flight engineer threw smoke out the back door, these were smoke cannisters, and at that time he made the determination of what type of suppression to use since this was his area. Now remember, we used the fact that he knew his geographical area. They were assigned geographically. They knew the people. They knew the province chiefs -- everybody out there. And that's basically the way it went.

Q: How much agent did you carry and how long did it take to get out and how much area did it cover?

S: O.K. The Agent on board was one thousand gallons. That was the capacity of the tank. We probably had 950 or so

useable gallons. It took four minutes, approximately within a few seconds, to empty that tank. That's it -- full power turned on and this would cover 14 kilometers -- a 240 foot swath.

Q: When you would go back -- I imagine that you would eventually fly over territory that you had previously sprayed, was there any visual difference? I mean how long did it take -- what did it look like?

S: Yes. The agent, of course, was designed to defoliate and, depending on the agent, anywhere from 5 days to two weeks it would start turning brown. I think the biggest problem that I discovered was that it kept growing back. And so twice a year you were back on the same target -- and this was not fun. If you found you got hurt the first time when you thought you were surprising them then they really had a shot at you the second time back. That was when it was really unfortunate. This stuff didn't sterilize the ground (ah). In Southeast Asia the growth rate is so high, you know, because of the climate and the rainfall and so forth that you could, say, take a road section alongside a highway, a main highway, you could kill all the grass alongside that highway one week, and three or four months later, you've got your grass again. It would have to be mowed. The return rates are quite high.

H: A good example of that is the elephant grass in NASHA (?) Valley and I'm sure everybody has heard of NASHA (?) Valley and what a tough target that was and how the VC owned that in its entirety. They had massive roadwork in there, massive tunnels and they controlled the mountains. They were really there in force and if we did the elephant grass there which is normally eleven feet high and if we hit it in January in July it was eleven feet high again -- all brand new. So that gives you an idea of the problem -- that was using the agent we were using. I'm sure there were things that could have done a better job and then we wouldn't have had to go back. But the Forest Service and everyone had argued that it would be to everybody's best interest to go ---

Q: You've talked essentially about two kinds of missions, one, clearing communications routes of different kinds and two, enemy crops, (ah) what about around the perimter of U.S. bases or advanced zones around outposts and stuff like that?

H: Sure. We got that request quite frequently - ah - the Green Berets were just pleased as punch to have us come out there and clean out an area, a fire zone, around their place so they could have a view of who was coming after them. And it also assisted them in laying mine fields and setting up a perimter defense. And another place that we did that was quite frequently called for was our communication dumps and (garbled) facilities where there are

hugh fields of tanks and they wanted those cleared back as far as possible so they -- we found that by doing this -- and we were cited for this, you know, as being one of the major contributions we've made -- that it reduced the number of ARVN required to guard those particular areas once they had a cleared area. But again we had to come back and continuously do it over and over. Every six months you had a completely new growth rate --

Q: Jack, overlooking the whole program, how effective do you think the program was in its entirety? Was it really effective?

S: I'd say generally speaking, yes. Now there were some areas that I'm sure that you could argue possibly that it did cost more than -- you know effectively -- it cost more than it was worth but generally --

(There is discussion here about re-phrasing and answering the question -- how generally effective the missions were).

S: I think generally the missions were quite effective, particularly in food denial I think is where we probably gained the most per dollar, so to speak, if you want to equate it and put it in dollars and cents. The defoliation of lines of communication, I think, in my own personal view, probably came next in terms of effectiveness -- opening up roads to surveillance, reducing the cover to minimize and reduce or minimize the effect of ambush. Probably some of the most disappointing results came in some of the very, very thick, dense jungle. The reason for this was that you would spray a large area of very, very dense thick jungle in an effort to increase the vertical visibility. This also permitted sunlight to get to the lower foliage and quite often any increase in visibility was negated by the new growth very rapidly. So that, in my own personal view, I'd rate 'em scale in those terms, first crop denial, which was by far the best, lines of communication and increasing vertical visibility over lines of communication and then lastly, and maybe least effective of the three would be large areas of foliage, simply because of the nature of the forest.

Q: Do you have any sense of what proportion of the mission was devoted to each of those three areas?

S: No. But I think that that study you were given, ah, there's more statistics in there. I can't recall the actual number.

H: Now, my problem is, I did all three but I didn't do it on a statistical basis in other words. What was fragged was what I did and we didn't count -- other people counted.

S: In other words, we had administrative types who worried about how many you did each day --

Q: Why was the program ended, I mean do you think it was just the controversy surrounding it or do you think there were other military reasons?

S: Well, I think the reason the program was terminated was because of the controversy and the vague possibility that was raised because of the National Academy of Science's original study and the ecological resistance that developed here at home. Now some of the areas -- the unit was the headquarters of the Air Force, and Air Force chiefs held us out because the threat started to reach a point where the aircraft simply couldn't survive in that kind of environment. As long as we were talking small arms, light machine guns and this type of opposition the odds were, you know, favorable. But when you started talking in SAM or Strella (ah) heat-seeking missiles, 37-millimeter and and this sort of thing, the airplane at that altitude and speed is simply not going to survive and simply isn't worth the risk in a case like that.

Q: Were you guys sustaining heavy casualties toward the end?

S: No. I think one of the fascinating things about the organization and the mission through the years is the actual relatively low number of people -- numbers of people who were lost and the numbers of airplanes that were lost. It speaks a lot for the way in which missions were planned -- the professionalism displayed by the crews and I think, more importantaly, the reliability and simplicity of the airplane. The airplane had no complicated hydraulic or electrical systems in it. You would easily punch a hole through it in 90 percent of any place you walked up to and you couldn't hurt anything. You just have a hole. As long as the engines weren't hit and the flight control cables were intact you were going to bring the thing home in most cases.

Q: Charlie, do you want to add something to that?

H: Well, I was just going to say that the (ah) environment that we were flying in -- the aircraft was ideal for up until right near the end and then some sophisticated weapons were introduced into S. Vietnam, as you may know. One of them was code named STRELLA which was a shoulder-held I.R. weapon. We never lost an airplane to it, but the threat to lose the entire operation to it certainly existed. I don't think that was the reason it was shut down, however, I just wanted to point out that I'm glad I wasn't there when they introduced STRELLA.

S: With the STRELLA you were susceptible up to seven thousand feet on the first model that was introduced and then later on up to about twelve, thirteen thousand feet, with the one that was introduced with the booster on it. So that slow moving airplanes then became very susceptible.

H: So there might have really been a combination of reasons -- like in part it was increased enemy opposition on the ground, I mean, our capacity on the ground and also this controversy with the science report (he says AAAS report but he means National Academy of Science, I think).

H: Neither one of us was there at the time. But I'm talking from a pilot's viewpoint. It certainly changed the tactics that Jack and his folks developed. In fact the results proved that they did everything right and they figured out how to go at this thing.

Q: So STRELLA changed the whole picture?

S: STRELLA negated all your slow moving transports. This occurred in Cambodia after the fall of Vietnam when STRELLAs were introduced in Cambodia. It threatened to disrupt the air lift in Laos because it was all being done by slow moving aircraft -- and that changed the whole name of the ball game, any kind of weapon like that.

THE PRECEDING PORTION WAS ALL DONE OFF-CAMERA AND WAS DONE FOR BACKGROUND INFORMATION. THE FOLLOWING SEGMENT WAS DONE ON-CAMERA AND WAS RECORDED IN ITS ENTIRETY.

Q: Do you have any knowledge of any veterans who have been affected?

S: The Ranchhand Association represents about 350 people. We have no knowledge of anyone being affected by the chemical. In 1971 when Charlie was president he even requested that anyone having problems should get hold of us and there was no response at all. Earlier the individuals that apparently that had made claims to the best of our knowledge were not members of the organization. Our members obviously would have had the most exposure.

Q: Were you extremely careful in your handling of the material?

H: There was no undue care taken. Not any more than you would take fueling an airplane, for example. It was expensive so you didn't like to get it spilled -- I mean it was $11 a gallon, but as far as taking unnecessary or unusual precautions because it was a chemical, no.

Q: Were unusual precautions taken because of areas where G.I.'s were there?

H: No, no reason to.

Q: Do you give any credence to the argument that there is danger?

H: Not based on our relationship to our own people whom I feel were probably more highly exposed than any of the people we've read about. You've got to know that we dealt with it every day. And we dealt with it in massive quantities. If there were an exposure problem, I would expect that we had the highest exposure rate and in every form. I mean in undiluted, poured on you and in some cases the mist and as Jack pointed out, during the five years I was president, at that time there were at least 450 to 500 in the roster, and I queried and got absolutely nothing back from any of them. And I'm sure since we're all in the business and are concerned, we would be the first to start telling one another our problems.

S: I think the other important thing to keep in mind is so far all the scientific data that are available show no positive link. The Air Force has recently completed an exhaustive study of the problem (ah). They've made absolutely no attempt to bury their head in the sand. They are obviously as concerned as anyone, but there's been no scientific, clinical evidence to link any medical problems to this chemical -- so we weren't concerned then and we aren't concerned now. When I say we I mean the members of the outfit, at least Charlie and I, and I know we speak for the majority of the members of the Ranchhand Vietnam association.

Q: I've talked to some veterans who are, you know, real convinced that they have symptoms they feel can only account for being exposed to it. What would one say to them in terms of their concern? What should be done with them?

S: I feel obviously that they may have medical problems. I don't think there's any questions about them -- I wish I had an answer to that.

(Conversation here plus garbling)

Rest devoted to camera shots, etc.

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