

**NASA HEADQUARTERS NACA ORAL HISTORY PROJECT
EDITED ORAL HISTORY TRANSCRIPT**

JOHN E. YEATES
INTERVIEWED BY REBECCA WRIGHT
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WRIGHT: Today is April 3rd, 2014. This oral history session is being conducted with John Yeates in Newport News, Virginia as part of the NACA [National Advisory Committee for Aeronautics] Oral History Project sponsored by the NASA Headquarters History Office. Interviewer is Rebecca Wright, assisted by Sandra Johnson. Thank you so much for letting us come into your home and visit with you and making time for us. We'd like for you to start if you would today by telling us how you became involved with the NACA.

YEATES: I got out of the Army Air Corps in 1946, came back to [University of] Alabama [Tuscaloosa], and got my engineering degree in aeronautical engineering. When I was about to graduate I thought I was going to have to take a job building Pullman [railroad] cars in Birmingham, and along came an NACA recruiter, and he was recruiting aeronautical engineers at Alabama. He picked me and about three others of my classmates to come to NACA Langley [Research Center, Hampton, Virginia]. That's how I first was introduced to NACA. I didn't know too much about it before that time.

WRIGHT: This was 1946?

YEATES: This was 1947, October '47.

WRIGHT: What did you know that you were going to be doing when you went to work there?

YEATES: Had no idea.

WRIGHT: Except it was going to be in aeronautics.

YEATES: Oh yes, I guess so.

WRIGHT: Tell us about the first days that you were there, where you were assigned, and some of the first projects.

YEATES: The main thing was coming and finding a place to live in that area. But it happened that one of the people that was going to be sent to Edwards Air Force Base [California] had just given up his apartment—he was being sent there so we were able to lease his apartment. My wife got a job in the school system, and so NACA personnel people helped us a lot. But the first day I came on board, I was assigned to the Flight Division there. The Army Air Corps at that time was allowing NACA to use a hangar and office buildings there for their use. I was assigned to the Flight Division, and Mel [Melvin N.] Gough was the Chief of the Division. They had a project there which they had an engineer named Bernie [Bernard B.] Klawans who was the project engineer. I was assigned to him to take over the project. He was going on to other things.

The project is as follows. A sheet of acetate was placed over a large hole in a large tank. A supersonic nozzle was bolted to the tank. The tank was pumped down to create a vacuum. A

solenoid with a sharp point was actuated to puncture the sheet of plastic. Supersonic flow was induced through the nozzle around an aerodynamic shaped body which had been placed in the throat of the nozzle. A drag sensor measured the drag on the shape. Many different shaped bodies could be tested cheaply. I have a report, this project and five others which I authored with other engineers. Every three years NACA had an open house to show off some of their projects, and I got to show my project during this period. The visitors were mostly congressmen and other notables, and I was really scared of giving my presentation. I went on to other things.

WRIGHT: Mr. Yeates, tell us how your experience from World War II and being a pilot helped you in your job at NACA.

YEATES: Really, it didn't help me at all, because in World War II I was a troop carrier pilot. We towed gliders and dropped paratroops in combat. Luckily I only had some bullet holes in my aircraft, I didn't get shot down or anything. But really I'd been interested in aeronautics all my life. I had built model planes as a boy and young man coming up.

I decided I wanted to go into aeronautics. The recruiters came by Mississippi State [University] where I was going to school, and they were looking for pilots, and so I passed the physical, and they told me, "Well, we'll see you later." Then I got into the Army Air Corps and graduated, got my pilot's wings, and of course went into military service. Then when I came out I went to college again and then I was hired by NACA.

I went through all my aviation cadet training in Mississippi.

WRIGHT: All the way through?

YEATES: All the way through. I went through Madison, Mississippi, Primary, Greenville, Mississippi, Basic, and Columbus, Mississippi, Advanced. I only lived 15 miles away in Aberdeen, Mississippi. Since I knew the commandant in basic, he said, "Would you like to go to your hometown for advanced training?" I said, "Yes, sir."

WRIGHT: That was nice. Kept you from getting homesick, anyway.

YEATES: I guess so. I did go to Texas when I was in the Army Air Corps. I trained glider pilots at Lubbock, Texas, that's just a side effect.

WRIGHT: Tell us about your first impressions when you first got to Langley Field and the different type of facilities there.

YEATES: They had hired I don't know how many, maybe 1,000, engineers at that time because they were reinvigorating NACA. A lot of the people had stayed on during the war because it allowed them to be deferred. They had a program that you went once a week to be told all about NACA and what they did. We did that for probably six months to be indoctrinated into NACA.

WRIGHT: Did you get to somewhat choose what area you wanted to go into? Or did they place and reassign you?

YEATES: No, you were placed. Most of the time you were placed by your supervisor. My supervisor at that time was Tom [Thomas J.] Voglewede. He's probably dead by now. In fact I don't know, most of the people I know are dead.

WRIGHT: You mentioned one assignment. What are some of the other areas that you worked in that you were interested in?

YEATES: Of course in the Flight Division we worked on real aircraft. We were interested in aircraft buffeting. We designed some flight vibration absorbers that we put on F-80 aircraft, and we flew the aircraft to probably Mach .75 or something like that, and we were looking at the effect the absorbers would have on buffeting. Buffeting was a phenomenon that you run into when you're in high speed at high Mach number. We did that, and I published a report called "The Effect of Dynamic Vibration Absorbers on High Speed Buffeting on an F-80" by John Yeates and Jim Thompson. That was an RM L54K02, a NASA RM [Research Memorandum]. They published different things. They published an RM, a technical note, and a report, which was the big job. That one really got disseminated. That's the one we wrote with [John C.] Houbolt and [George W.] Brooks, but I'll tell you more about that if you want to later.

I worked mostly in the Flight Division on this aircraft, the F-80. My next project, I was transferred to Mr. Gustafson, Fred [Frederick B.] Gustafson, who was in charge of the helicopter work at NACA. I worked with Al [Alfred] Gessow. He's now in Maryland. He wrote a book. He's a well known fellow in the helicopter field. We were working at that time finding out about the vibration response of helicopters. This one was a tandem helicopter. In fact they call it the Chinook. But in those days it was the H-25 helicopter. George Brooks and John Houbolt and

myself. George Brooks worked on the “Analytical Methods for Determining the Coupled Vibration Response of Tandem Helicopters.”

I was the experimental part. I did the flight experiments. We telemetered the data. You know what telemetering is? Someone will know. We telemetered the data from in flight to the ground, and this could be recorded on instruments. They had an Instrument Division at NACA. You could go up there and watch the telemetered data come down on the instruments to see what was going on, see how it was responding, the helicopter. That was a report, NACA Report 1326.

WRIGHT: You mentioned right there that you did the flight experiments. What did that entail? What did you do?

YEATES: It entailed taking the helicopter and flying it through different categories. They have transition, vortex-ring state, landing approach, yawed flight, that sort of thing. To see how the helicopter responded to these things.

Then what they did, we had bought vibration testing equipment, and so George Brooks used this to hook up. We took the helicopter over to the Structures Division and they would hook up these vibration devices to get the aircraft to respond in its natural modes. Then they would use these to calculate what they thought you would get in the actual flight helicopter.

WRIGHT: Did you actually fly the helicopter yourself then?

YEATES: No. It takes a real qualified person to fly a helicopter.

WRIGHT: I was curious if they had taught you how to do it.

YEATES: I had flown. Later when I worked for the Army, when I went up to visit contractors, yes, they would let me fly the helicopter.

WRIGHT: I knew it was totally different from flying a military plane.

YEATES: Oh, it's entirely different, yes.

WRIGHT: I thought that was a pretty good learning curve, you were able to manage that, but you just made sure that those experiments—you were in charge of the experiments that went out on those helicopters.

YEATES: The Army was pretty good about giving us aircraft. We got an H-34, we got an F-80, in different experiments. Then we got the Chinook helicopter.

Now when I flew in the F-80, I flew with the pilot to see how it felt. I'm jumping back. I had to go over to the Air Force and get checked out in a G [gravity] seat simulator, which they would shoot you up in a G seat to about 5G or something like that, to see if you were physically qualified to go along on the flight. Then after I did this they qualified me to fly. I went up in the F-80 on one of the experiments. I went up in the F-80 and we went through a high Mach number .75 and I got to experience how it felt in buffeting.

We also had equipped the pilot. We had put instruments on his head to measure how it affected him. I can't think of the name right now. It has a name for it. It's a medical name about how the pilot felt in the buffeting.

WRIGHT: That's pretty interesting. You were running experiments on the aircraft itself but at the same time were able to see what effects that had on the pilot.

YEATES: Yes. Oh, encephalography I think is the term.

WRIGHT: Was that part of your overall experiment? Or was that part of someone else's experiment?

YEATES: That was just a side effect.

WRIGHT: Just a side effect. The helicopter and then you were just talking about the F-80.

YEATES: Yes, first we flew the F-80, and then I was then assigned after we did those experiments. I was assigned to Gustafson for the helicopters. Before I left there we did some "Flight Measurements of the Vibration Experienced by a Tandem Helicopter in Transition, Vortex-Ring State, Landing, Approach, and Yawed Flight." Came out in September '58 just before I left.

WRIGHT: When did you leave?

YEATES: I went on to greener pastures October 1st, 1958, which was the day NACA became NASA.

WRIGHT: When others were transitioning over you started a new job.

YEATES: The Army over at Fort Eustis hired a lot of NACA people. NACA trained them, see, and then the Army was able to offer them more pay. But I also had a lot of programs with NASA after I went to work for the Army.

WRIGHT: That's interesting. Could you share some of those and talk about that some?

YEATES: Yes. In October of '58 I went over to AVLABS, which was the Army Aviation Materiel Laboratories at Fort Eustis. They had taken over the aeronautics work that the Army needed to do. The people at Wright Field [Wright-Patterson Air Force Base] had been doing it for the Army and so the Army decided that they'd want to do their own aeronautical research. We did the 6.2 research at Fort Eustis, which is applied research.

In applied research you generally make models of the thing you want to investigate, whereas in basics it's all analytical, it's all that way. The first project that we had, we went back and came up with a project with Gustafson at NASA; you're not interested in that though, are you?

WRIGHT: Oh, sure.

YEATES: NASA had always wanted to measure the flight loads on a helicopter rotor blade. The Army had the money to get Sikorsky Aircraft to build a special blade that had pressure transducers all along the blade and crosswise, spanwise too, across the aerodynamic shape of the blade. I was the project engineer on that. I used to go to Sikorsky about once a month to keep up with the project.

WRIGHT: That was an interesting time when all this new innovation was coming out, wasn't it?

YEATES: Yes. Then later we had a project. The Army wanted to measure the aircraft landing loads on rough terrain operations. They teamed up with NASA. They have a Landing Loads Section over there which has a track, landing loads track. We brought up a carload of Mississippi mud. Can you imagine that? Put it out on the track to test. [McDonnell] Douglas was the contractor for the Army. They had a landing gear which we then tested on the Mississippi mud, which is rough as heck, pretty rough. That was a project that somebody at NASA wrote a report. NASA always had to write a report on their work before you could get in their good graces. Douglas Aircraft wrote the Army report.

Then another program we had with Langley was—I don't know whether you ever heard of it or not. But Lockheed built the rigid rotor helicopter. When it became a prototype the Army was going to use it as one of their helicopters in the fleet. But the rigid rotor had an aeroelastic problem and it disintegrated in flight one time, so that killed the Army project. They didn't develop that helicopter at all. But we did the model testing in the Freon Tunnel. Have you ever heard of the Freon Tunnel?

WRIGHT: Yes.

YEATES: We did the model testing with Lockheed in California, and they built the model and brought it to Langley to test in the Freon Tunnel, and that was part of the overall project. That was the type two—that was the experimental part of the program, before you actually built a prototype.

Then we had another project. Trying to think of all these projects we had with NASA. Of course all these helicopters, the Air Force in those days did loan them to NASA for their use, which is what they do now.

WRIGHT: Was that a mutual benefit that NASA learned as well as the Army had the research done on those?

YEATES: Oh yes. I don't know whether the Army got much out of it, but they learned about buffeting, they learned about flight accelerations, vibration. They learned about all these things in working with NASA.

WRIGHT: Vibration is a pretty important facet in flying, isn't it?

YEATES: Oh yes. They learned a lot about it now and are able to design the helicopters now to minimize the vibration. I'm trying to think of another project here. George Brooks and I worked a lot together. He finally became—I think he became head of the Structures Division, before he

left. He came in one day and went to his personal papers and looked at it and said, “Golly, I think I’m going to retire.” He retired the same day. That’s the story I’m told.

WRIGHT: Man could make a decision, couldn’t he? Pretty confident in that. You were there almost 10 years?

YEATES: Eleven years, yeah.

WRIGHT: Eleven years, okay. During that time period it not only transitioned to NASA of course, but the space age was starting to come up.

YEATES: Yes. Before I left they were testing doing some preliminary space work, space testing.

WRIGHT: Were you involved?

YEATES: No, I wasn’t involved.

WRIGHT: Were you aware that they were doing it as well?

YEATES: I was in the aeronautical area. No, we pretty much kept separated. You did your thing, we did our thing, but somebody kept up with what you were doing so that you didn’t duplicate.

WRIGHT: The reports that were written. Were people like you, if you wanted to go to the library and read those, were they accessible for you to learn from?

YEATES: They're still in the library. No. It's hard to get hold of reports now. I went to the Internet and pulled up some of this. In fact I've written—I couldn't pull them up though. I had trouble pulling them up. But you could go to the NASA Library and ask for these reports. Give me all the reports under my name, and they could probably print them right out.

WRIGHT: It's good to know that people can still get to the work that you did. I'm sure it's still useful.

YEATES: Of course it's been proceeded by now. They've learned a lot more.

WRIGHT: Served as a good foundation though, built upon, and then people built from you as well.

YEATES: I can't understand why the history part of NASA at Headquarters didn't come up with a history program before everybody passed along.

WRIGHT: I know.

YEATES: I know you all are contractors, aren't you?

WRIGHT: Yes.

YEATES: See, I'm pretty perceptive.

WRIGHT: I think you are. You didn't have any interest in working with the Space Task Group or the people who were starting to form?

YEATES: I wasn't asked to.

WRIGHT: Would you have liked to have moved to that part?

YEATES: No, I was more attuned with what I'd been doing. A lot of people that I worked with had moved from NACA, NASA, mostly NACA, but then later some came from NASA.

WRIGHT: It sounds like you still had friends that you had from there like Mr. Brooks.

YEATES: I don't know whether he's still alive yet.

WRIGHT: But you still worked with him after you left NACA? Did you all do any more projects together between the Army and NACA with Mr. Brooks? Or just other ones?

YEATES: No, I don't think so. The only one—no, we did with mostly with people in Gustafson's group.

WRIGHT: The helicopters?

YEATES: Yes.

WRIGHT: It's interesting. How long were you with the Army at Fort Eustis?

YEATES: I was 20 years. I retired as a GS-15.

WRIGHT: Did you do other projects other than helicopters? Did they move you on to other things there?

YEATES: No, I was Chief of the Aeromechanics group. We did projects in aircraft, helicopter performance or V/STOL [Vertical and/or Short Takeoff and Landing]. We did performance, vibrations, structures studies. Stability and control, all of those more or less 6.2 research. Most all of our work was with contractors. In other words the Army didn't do any of their own work. The contractor would come in with a project that he wanted to sell. If you liked it, and you thought it would be of benefit to the Army, then you could promote it. We had the money. I had a couple million dollars every year to do research projects. Then we could sell the program and contract it. Then I had about 15 engineers that worked for me and they would take one of these projects. Or sometimes they would come up with their own project and try to promote it. We did work in a more varied range of programs.

The Army basic research headquarters is in Durham, North Carolina. But they do the why the grass is green and all that kind of stuff, the basic research stuff. We used to work with them a lot, but that's not NACA.

WRIGHT: Is there a project that you remember though?

YEATES: The one I remember is this basic flight data that you get from a specially instrumented blade on the helicopter, because it was quite technically detailed.

WRIGHT: Was it a long-ranging project that took years?

YEATES: I don't know. I left I think before they really flight-tested the helicopter. But someone at NASA wrote a report on it, I'm sure. But I don't know. Who are the other people you've found that you—any that I might know?

WRIGHT: I don't know. We're talking to Bill [Wilmer H.] Reed.

YEATES: I talked with Bill Reed at a recent alumni meeting. His wife died recently.

We worked together. We used to sell insulation on the side, Bill Reed. Ask him if he remembers the aluminum foil insulation we used to sell.

WRIGHT: I will do that. I will do that. Branching out, that's right.

YEATES: You got any more?

WRIGHT: Let's see. We talked to—trying to think, Sandra. Who else have we talked to this weekend?

JOHNSON: Bill [William C.] Woods.

YEATES: No, I don't remember him.

WRIGHT: He worked the wind tunnel. He was a wind tunnel man.

YEATES: Oh, we did some other work with the Army. We put a full-scale helicopter in the [NASA] Ames [Research Center, Moffett Field, California] 40-by-80 Wind Tunnel. It was probably an add-on to this program where we built the special blade. But I wasn't involved with that.

WRIGHT: That must have been something to see for those who were there.

YEATES: Yeah. Ames finally doubled the size of the tunnel, they made it 80 by 160. Now it's closed down.

WRIGHT: Did you work much directly with the wind tunnels here at Langley?

YEATES: Oh yes, sure. We knew the people that ran them. Is [Robert W.] Boswinkle still living?

WRIGHT: I don't know.

YEATES: We worked with him. He was in charge of the Freon tunnel I think at one time.

WRIGHT: We'll have to ask Mr. Duncan McIver. He's in charge of the Alumni Association, so he probably would know more. He came in I think about the time you were leaving, because he was there the last three months of NACA.

YEATES: I guess I knew a lot of the old-timers like Mel Gough and John Bailey.

JOHNSON: We also spoke with Bertram [D.] Aaron. He was in the IRD, the Instrument Research Division.

YEATES: No, I don't know him. That was a big facility.

JOHNSON: I know you mentioned getting the telemetry, and they worked on that.

YEATES: Yes.

WRIGHT: A lot of folks during that time period.

YEATES: I think they had about 3,000 engineers then but I don't know exactly. But it was a time when they were refurbishing, because I know the people that used to work there, that had worked there during the war, they weren't allowed to take any leave or anything like that. I guess they got deferment because they were considered—

WRIGHT: Essential?

YEATES: No, they were considered—they made them an Army private or something like that. I don't know all the details. But in the area most of the men were young and single. The men would rent a whole house, and then they would do their own meals and everything. Have you heard about that?

WRIGHT: No, go ahead, tell us, it's interesting.

YEATES: They would rent a house and then they would cook their own meals and all of them would live in the house, like a boardinghouse. Then the women would do the same thing. A lot of the people lived on Elizabeth Road in Hampton. We rode into work. I was the only one that had a car in my group. This is still when I was at NACA. But we would ride-pool. I would take them in. I think I did it five days a week for a long time until Chrysler started selling cars again, so I think Dodge came out early with one that you could buy. We'd ride in every day to work.

WRIGHT: Did you bring that car from Alabama when you moved?

YEATES: I bought it when I was in the Army at Little Rock, Arkansas, for \$800.

WRIGHT: Must have been a good car if it made it in from Arkansas all the way out here.

YEATES: It was a good car, yeah. I think it had about 19,000 miles on it when I bought it.

WRIGHT: What kind was it?

YEATES: Chevrolet.

WRIGHT: I'm sure people were glad you had a way to get them all to work and back. You said your wife came with you. Was she a schoolteacher?

YEATES: Yes. During the war she worked on the Manhattan Project. You ever heard of the Manhattan Project?

WRIGHT: That's interesting. Yes.

YEATES: At Oak Ridge [Tennessee]. She had all these professors and head of departments that came in and she'd have to show them how to do what she was doing.

WRIGHT: Was she a mathematician or scientist?

YEATES: No, we both went to college together. Western Kentucky University now, but it was Western Kentucky State Teachers College then. Yes, she was smart. Smarter than I was.

WRIGHT: That's interesting that you were in Mississippi. You grew up in Mississippi, right?

YEATES: Yeah. See that house there? [Referring to painting on wall]

WRIGHT: Yes, sir.

YEATES: I was raised in that house. That's an antebellum home.

WRIGHT: It's beautiful.

YEATES: It's a national landmark. General Reuben Davis's house. He was as general in the Confederate army.

WRIGHT: Beautiful.

YEATES: There are all the medals I got while I was in the service.

WRIGHT: I saw those when I walked in. Nice memories. So you got here and decided to stay. Did you live in Newport News or did you live in Hampton?

YEATES: You ever heard of Marlbank? You're not from this area.

WRIGHT: I'm not from here. I use a map.

YEATES: It's over in York County. I built my own house by my own hands and hired people that'd come. They would come and help from NACA. They had a lot of people that were good workers. For \$1.25 an hour you could hire them. We'd do plumbing work, do heating work, air conditioning, all that sort of stuff. Then later when my mother moved up here from Mississippi I built her a house on my property. We lived on the water.

WRIGHT: Oh, that's nice.

YEATES: Yes. When I left it I sold it for \$1 million.

JOHNSON: Goodness gracious.

WRIGHT: It was a good investment.

YEATES: I built it for \$17,000.

WRIGHT: It was a good location.

JOHNSON: Good return on your investment.

YEATES: Yes, that's right.

WRIGHT: That's amazing.

YEATES: I'm telling you all these things. My memory is pretty good.

WRIGHT: It is, yes, it is good. What other things were going on when you moved here, you and your wife? Did you all live on Elizabeth Road? You mentioned a lot of people lived out there as well.

YEATES: Yes. There was another road there that some of the women lived on nearby, but I think it's Sussex or I don't remember what it was. But anyway there were a lot of young people here. Not many people married at that time. They did later on. I got married during the war, but luckily I made it home.

WRIGHT: Yes, that is a good thing. What year did you join the war?

YEATES: 1941. When the recruiters came around and you looked at all these officers riding around with good-looking girls in these fancy convertibles, I said, "Boy, that's for me."

WRIGHT: It worked, huh?

YEATES: Yes.

WRIGHT: Sandra, do you have anything you want to ask?

JOHNSON: You mentioned the women lived on whatever road it was you were talking about. A lot of those women were mathematicians and computers.

YEATES: We called them computresses. They had these comptometers. Ever heard of comptometers?

WRIGHT: Yes.

YEATES: They had those. What they would do is they would write an equation. You would write the equation. Then in columns you would set down each part of the equation. Then they would come out with the answer at the end. It wasn't until the '50s I think that NASA Langley, one of the organizations, got a very simple type of computer I think. I can't remember what it was. Bell Computing or something, I don't remember. But anyway it was a long time before they actually got computers. We had a lot of women that were mathematical people, had graduated with a math degree, and they hired them as computress. I call them computresses.

WRIGHT: Computresses. I like that.

YEATES: You can call them what you want to.

WRIGHT: I don't think I've heard that. I like that, that's a good term.

JOHNSON: Did you ever work closely with anyone in particular in that group or were they in a pool? I know they had pools.

YEATES: No, no, we didn't use a pool. We had them in our office. But we had several women, but I can't remember their names. You have selective memory, and that's not in my memory bank.

WRIGHT: Is there anything else that you remember or you have stories about being out there in those early days or during your transition from one to the other?

YEATES: Oh, I remember they had a whirl tower there at Langley which I remember a friend of mine, Paul [J.] Carpenter, who later went to the Army. He was in charge of that whirl tower I think. They made a lot of tests on that. They put a rotor on the whirl tower and they'd whirl it.

JOHNSON: Never heard of that.

YEATES: Whirl tower, yes, oh, they were the big thing back—I know Lockheed built a wonderful one in California.

WRIGHT: Did you ever travel? Did they send you out anyplace?

YEATES: NASA was pretty stingy on travel, and they didn't send you anywhere unless it was really important. The only trip I ever made was in 1956. I gave the results of one of these papers at the Helicopter Society reunion. They actually allowed me to fly, my wife and I, to New York. The hotel now is no longer there.

Another time they loaded up a DC-3 and flew a whole bunch of us to a meeting in Washington [DC]. I think it was a helicopter convention. They wanted to cut costs so they flew us all up in a DC-3. That's what I flew.

WRIGHT: I saw that up there.

YEATES: Those are called D-Day stripes. The Navy shot down a whole bunch of aircraft in Sicily during World War II, because the Germans had just flown over, and they thought they were the Germans, and so they kept shooting. They shot down a whole bunch of aircraft like that. For D-Day they put the stripes on so the Navy wouldn't shoot them down. They're called the D-Day stripes.

WRIGHT: That's good to know.

YEATES: Do you know that?

WRIGHT: No, but I recognize the plane.

YEATES: I got all kinds of stories.

WRIGHT: Any more you can think of that you'd like to share?

YEATES: Not about NACA, though.

WRIGHT: That's okay.

YEATES: One time we were—towards the end of the war, after the—I flew into the Battle of the Bulge and my aircraft towed a glider and dropped my ammunition and gasoline and so on at the drop zone. The Germans were shooting at us with .50-caliber and 20-millimeter cannon, and luckily I only got some small arms fire.

WRIGHT: That's good.

YEATES: But we made it there and made it back, two hours back, full throttle.

WRIGHT: I guess so. Little lighter plane than the one you had going out, I mean coming back?

YEATES: No, no, it was the same. When you tow—

WRIGHT: You're towing, that's right.

YEATES: We were towing in at 400 feet, 90 miles an hour. So you were an easy target. Also I was in Holland, the Holland invasion, which we came over from England and I towed a glider into Holland. Luckily I didn't get shot down there either. The Germans had flak towers about eye level here. They could shoot right at you.

I went to southern France and flew. We flew a mission to southern France in the middle of the war and the Germans were still in southern France. But it was a milk run, not a shot fired.

WRIGHT: Good.

YEATES: Got to see the Rock of Gibraltar though.

WRIGHT: Oh, well, that's interesting.

YEATES: When I was flying over there I got to fly from here through South America across to Ascension Island and across to Africa, and back up the coast to Morocco, and then to England. I had a personal navigator for my aircraft. He kept us on the right track, and we flew the aircraft. It took two weeks.

WRIGHT: At least it was a nicer flight than some of the other ones you had.

YEATES: Yes, that was a good flight. We did a lot of gasoline. [General George S.] Patton's Army. Flew a lot of gasoline up for Patton as he was going across Germany. You'd fly up to a

dirt field and land. Of course the Germans at that time were on the lookout for aircraft on the ground. That was considered a combat mission because several of the aircraft got shot up on the ground. The Germans still had a few aircraft that they would make little sneak runs and shoot up the aircraft. But luckily I didn't get shot up.

WRIGHT: How many missions did you fly?

YEATES: About 17, I guess. But these were the big missions, D-Day, and then Holland, and then southern France, and then across the Rhine, those were four big missions. There were as many as 1,350 aircraft towing gliders. It took them an two hours to pass. An armada of such aircraft going into Germany and across the Rhine. Go to the Internet and look it up, it's really magnificent. You'll never see it again.

WRIGHT: No, never will. Have you been back to any of those places since you returned here?

YEATES: I've been to England, I've been to Paris, I've been to Belgium, and I've been to Rome, I've been all over the world. I've been in 32 countries, personally.

WRIGHT: That's nice. At a better time. It's good that you were able to go visit.

YEATES: Went to Machu Picchu. You know Machu Picchu, don't you?

WRIGHT: We have a colleague that's getting ready to go in a couple weeks.

YEATES: That was my wife's heart's desire. Before she died we went to Machu Picchu in South America, all over South America. She died of Alzheimer's.

WRIGHT: I'm glad you all had great times together.

YEATES: Oh yes, we had a lot of fun together. I guess I've probably told you enough. You have any final questions?

WRIGHT: I'm just looking back over and see if there's anything else I can think of. If I do though we'll be back in touch with you, because we'll send you the transcript. If you think of something else that we didn't cover, you're certainly welcome to make a note or send us some information with that.

[End of interview]