

Reinhardt Abraham Memorial Foundation

Newsletter 1999

Edition No.2

Dear Reader,

1999 marks the third year that the Reinhardt Abraham Memorial Foundation (RASf) has been in existence since its establishment in Berlin on June 13th 1996. Admittedly, the third year is not exactly cause for extravagant jubilee celebrations, but it does give us a welcome opportunity to look back on the work of the past 36 months.

After the RASf Trainee Program started successfully at Boeing in 1997 and went into its second round in the following year, the RASf Student Exchange Program between the Technical University of Berlin and the University of Washington came into being in October of 1998 after a long period of diligent preparation.

As for our obligation to keep you informed, who could be better suited to report on the RASf programs than the actual participants themselves? This prompted us to devote a great deal of space in this Newsletter to their personal impressions, which we have printed just as we received them - any alterations would detract from their charm and originality.

In any case, the participants' contributions to this Newsletter were in no way intended to be an official final tribute to the RASf activities in an academic context. What we actually wanted were real-life authentic reports that would reflect their experiences as participants. And that is just what we got, this being particularly apparent in Jens Wieske's report. When you read the reports, you will appreciate our decision not to make any changes to them.

The last meeting of the Committee of Trustees took place in Berlin in October 1998. It was here that the new interns were again selected for the next term of the Trainee Program at Boeing. In addition to this, a number of further developments were initiated concerning the future of the RASf. This Newsletter will provide you with a brief summary of the conditions of labour and sponsorships of the RASf, which should serve to give you an overview of the contents of the various projects.

The entire RASf team would like to take this opportunity to wish you a happy, healthy and successful 1999. We sincerely hope that you will continue to follow up and support our projects this year, too. Your donations are a highly appreciated contribution towards their success. We do hope you enjoy reading this Newsletter, and thanks again.

The Trainee Program at the Boeing Company

Report on a six months Internship with the Boeing Commercial Airplane Group in Seattle from March 1998 to October 1998.

By Jens Wieske

A few words on behalf of the people that make the Boeing Internship possible and have gone out of their way to turn this internship into something unforgettable:

The words "Thank you very much!" are the first thing that come to mind when I am thinking about my seven months stay in the Greater Seattle Area and the work with the Boeing Company. A "Thank You" for the people at Boeing, the Lufthansa Berlin Foundation and last not least the Technical University of Berlin, who have worked to make the internship not only possible but turned it into one of the experiences in life that one will always remember with a smile.

Whenever somebody is asking the question: "So, in a few words, how was it?" my reply is : "Fantastic!!!" And then I usually start talking for an hour without stopping for a second...

1996: The Reinhardt Abraham Memorial Foundation

Founded by the Boeing Company and Lufthansa German Airlines in 1996, the Reinhardt Abraham Memorial Foundation (RAMF) each year provides the opportunity for several students from the Technical University of Berlin to participate in Boeing's International Trainee Programme. This year the programme has been expanded and the first student from the University of Washington is living and studying in Berlin.

Reinhardt Abraham, a graduate from the Technical University of Berlin in 1956 and later Technical Director and board member of Lufthansa German Airlines, has helped and promoted young engineers and students throughout his entire career. In addition he worked towards a closer relationship between Lufthansa and

Boeing and is well remembered within both companies.

It all started in July, 1997

That was the time when I applied for one of the places in the Student Exchange Programme. Having missed the first public notice about the RAMF Exchange Programme in late 1996 I was all ears when I talked to Roland Platz and Andreas Reinke and heard that they were going to Seattle for six months. After their explanation of the programme it became obvious to me that this opportunity was just short of being too good to be true.

During the summer I was working with the University of Helsinki and had to fly back to Berlin a little early to be present for the selection interviews. I was a bit surprised that I actually enjoyed the interviews and got over being nervous quickly. Probably it was my good luck that I presented myself like I actually am and did not try to put a show like some of the others I talked to later who admitted of being nervous through the whole interview.

In October I received a letter from Lufthansa. Feeling the envelope I had the impression there were two pages inside and I inferred that I had been selected. (I figured that to tell somebody he had not been selected one would either need only one page or would send the complete paper work back.) And I was right!!! For the next five minutes my neighbours must have believed that I've gone insane because I was jumping up and down in my flat and shouting unintelligible words. After having calmed down a bit I had to tell my "then-significant other" (that is the p.c. expression as I have learned in America, I could have said girl-friend) that I would be gone for seven months. No surprise there, she was a little less enthusiastic than I was. After having been selected there were a lot of things that needed attention within the next five months. Luckily the other selected students Sylvia König and Dirk Krappel and I were working together to fill out the requested three zillion forms. Why is it that we had the impression those

forms use Chinese as official language? It took one week, some e-mails and the help of two English teachers to solve the mysteries of the bureaucratic language.

Take off: Thursday, March 19th, 1998

Monday: written exam in Aeronautical Medicine.

Tuesday: oral exam in Cockpit Design and farewell party.

Wednesday: Packing my baggage, cleaning out the apartment and handing over the keys to my tenant.

Thursday: flying to Seattle via Frankfurt and Vancouver. Fourteen hours travel time. Ten hours time difference. I am trying to imagine what will happen the next seven months and am failing badly. And what after the seven months? I stop thinking when the cabin attendants serve lunch. Then a huge surprise: Roland is waiting at the airport together with the Boeing representative Ginnie Schlitzer and takes Sylvia and me out for dinner after we have settled into our hotel. Roland is immensely helpful and answers nearly all our questions. The longer we are talking the more I am impressed that he and Andreas managed so well despite the fact that they started working immediately and had to look for cars and housing after work and had nobody to answer all the little annoying questions. The Boeing human resource managers for the international programme, Ginnie Schlitzer and Michelle Colby, were very helpful with everything concerning work and offered a lot of help. But it is the little things not connected to work that give you a hard time if they are not going smoothly and we got a lot of advice from Roland on how to deal with these. For example, there are just a few car insurance companies that will insure you if you don't have an American driver's license.

Roland was working three days on that problem, we just looked up the nearest insurance agent of his company in the phone directory.

Sylvia and I are spending the next week looking for cars and places to stay. After

the Friday morning drug test we get a rental car for six days and am using it nearly ten hours a day. Careful planning is needed to co-ordinate our schedules. Sylvia has looked up housing via the internet from Berlin and decides to take up on one of the offers. After looking at the black board at the University of Washington I am calling four or five people who offer shared housing. The first place I am visiting is in Wallingford, north of downtown between Lake Union and Green Lake. The house is from 1910, my room dark and small, the living room light and friendly, the neighbourhood is great. My housemate's name is Melissa, she's four years older than I am and is doing her Ph.D. in English at the UW. Without looking at any other place I decide to stay there. It turns out to be a good decision.

The same evening I am buying a ten-year-old red Toyota Tercel with 180,000 miles ($180,000 * 1.8 = 324,000$ km!) on the odometer. It looks, sounds and feels like a "red tin can". After the seller has received his money he is gone and the car doesn't start anymore. Sylvia who had driven me over has left already. I am twenty miles from the hotel with a car that worked perfectly yesterday during the test drive. I've been had! Somebody sold me a lemon! Luckily the car is parked on a little bump and I can start it while rolling down the little bump. On the way to the hotel I realise that there is no way to coax the fan into blowing cold air into the car. I feel like a roasted chicken after two minutes. Could it be that I forgot to check the air condition yesterday?

Thursday it is sign-in day. We are signing our names approximately 27 times but we don't get a contract. What a difference to Germany! All other times I was working the first thing I had to do was to read the small print in my contract and sign it.



On Fridays new employees get an introduction to the Boeing Company. 40 people, mostly office staff, and two very cheerful human resource representatives are spending the morning going through the history of the company, talking about the present and goals for the future. Everybody is happy, energetic, enthusiastic and involved. Us four Europeans (we've met two trainees from Spain at the hotel) are sitting back, listening and wondering whether these people represent the American way or whether this is because of the Boeing Company's hiring philosophy. I tend to think that it is the American way. Compared to Germans Americans are friendlier (I am from Berlin! Nobody is friendly here unless he has a very bad day!), more open and they talk to everyone.

After lunch we get a tour through the Renton factory where the 737 and 757 are assembled. Us Europeans are regarded as "Foreign Aliens" and have to wear a green stripe on our badge instead of the usual white one Americans have. One of our tour guides is asking whether I am a VIP because of the green stripe. "No" is my reply, "I am from Germany and therefore considered a foreign alien and as such you get distinguished by this funny little stripe." He is laughing and says: "Ey, man! I am from New York! And I thought that's as alien as it gets! I should be wearing a green stripe, too!"

The first week in April

April 1st, fool's day, and I immediately feel like a fool. Obviously I haven't read the

book "How to drink hot coffee without spilling it over your shirt" thoroughly enough. Breakfast in the hotel did consist of coffee and a plain donut with cream cheese. Nice way to start your day. I had a Boeing van driving me up to Everett on my first day. Talk about privileges for interns. The next 20 minutes I played hide-and-seek with my supervisor Doug Topp. He had described on the phone where we would meet but somehow we were chasing each other in circles. Fool's day. We are having breakfast with the group leadership team. The mechanical flight controls group I am working with is responsible for the lateral system of all original Boeing products but the 777. They are designing the cables from the control wheel to the power control units for the aileron and spoiler on the wing as well as all the things the cables are attached to: pulleys, brackets and the amazing spoiler mixer and ratio changer. The group is split into two sub groups, one is working on the 737 and 747, the other one has the 757 and 767. Each sub group consist of several engineers and tech designer.

The Boeing breakfast is decidedly better than the one in the hotel and I am deciding to impose a weight control programme on myself otherwise I might end up like the usual airplane prototype: 2000 lbs. overweight.

Doug and his leads are asking what I would like to work on and what my capabilities are. Difficult question since I don't know what they are doing. I realise that it will probably take a couple of weeks before I actually will be working on something meaningful.

I get introduced to the 28 members of the mechanical flight controls team. Am I supposed to remember all the names tomorrow? Fortunately everybody wears a badge with her/his name on it and has a name tag at his desk. I get my own desk, computer and a huge file named "New Employee's Handbook". Half of the pages (around 100) contain the BAL, the Boeing Acronym List. I am instantly developing an

aversion to acronyms that have four or more meanings.

Furthermore I am slightly overdressed, of the 500 people I see during the day five are also wearing a tie. Obviously casual Friday has been expanded to include Monday through Thursday. Sam who is sitting at the desk next to mine is showing me his scissors and advises me on how that tool would cut through my tie should I dare wear one tomorrow. Point taken. Tuesday morning I am taking my car on the trip from Renton to Everett, 36 miles and I am afraid the whole trip it may break down. Today my group is participating in a team-building workshop. Two psychologists are talking about ways to improve communication and team work, how to become and act like one group. We get several tasks to show us how the group is working today and make us think about improvement. One of the little games worked like this: Two groups of eleven people, each group gets a long rope and is told the goal is to build a six-pointed star out of two triangles. Oh, and by the way: Everybody has to close his eyes and work without looking. While I am trying to find out what this exercise is good for everybody else is rushing ahead with an "Ok, let's do it!" attitude. Hands on the rope, eyes closed, everybody talking is the way we are spending the next ten minutes. Nothing much is accomplished. After about 35 minutes we have a perfect six-pointed star and I had my first experience with the saying that describes the way Boeing operates: "Ready, fire, aim" and if people are having a bad day: "Fire, ready, aim". There is substantial truth behind this. The urge to "get the job done" often leads to a very practical, fast and makeshift solution. To sit back, think about the problem and look for a methodical approach on the way to the solution is a concept we are taught at the university. Upon asking some of the folks from the group I got the impression that team work is not a necessity at American universities and the ability of coordinating several people's ideas, work

and time is only learned through on-the-job-training. I am still wondering which approach is the better one? The "Just-do-it" one or the "Think first" one? There are advantages to both but I think I prefer to think about a problem and choose a methodical problem solution process that takes longer but tries to eliminate these little embarrassments when your design is ready, it is cost efficient and good looking but somehow not working. Not that thinking guarantees that your idea will work... One example: For the 737 classic somebody discovered that if one bolt in the input rod to the spoiler mixer shears off and the bolt falls into the spoiler mixer the lateral system could be jammed. Our group had to develop something to hold the bolt in place. A kit would be shipped to all operators and installed during the next routine maintenance. The first idea used standard parts and a plastic cover and would probably cost less than \$2. It looked decidedly ugly and had just one minor flaw: it didn't allow full travel for the input rod. Oops! Several new designs floated around our group and most of them used plastic covers or composite material (mine did too). During a brain storming with people from the stress group and some material & technology gurus plastic was discarded as being way too expensive compared to a simple sheet metal spring clip. A lesson learned. Even if a lot of people think about a problem a solution can only be as good as the information the decision is based on. Nobody from our group had any idea how much a mould for a plastic part would cost and our knowledge about machining for plastic and metal parts was insufficient to find the cheapest alternative.

A Day in May

I am not a morning person! Getting up at six in the morning is just awful. I am bone tired after work and use the weekends to be lazy and stay in bed as long as possible. In Berlin I would go out three or four times a week till early morning. No way I can do that and work nine hours a day. On Fridays I am usually collapsing onto my

bed thinking that after two hours of sleep I could go out and party...never works that way.

I am a little frustrated that I don't have enough work. I am missing my friends in Berlin. My telephone bill suddenly triples. It is raining a lot. The second car I bought – a Nissan Sentra station wagon, Roland's old car – has a bad alternator and that killed the battery. When I moved to my new home I stopped at Roland's old place and bought the futon he left. And then the Toyota once again refused to start. Therefore I am not only buying the futon but also his car. My red tin can is angry at me and instantly develops more problems like leaking fluid from the clutch and the inability to open the hood because the cable to the hood's locking mechanism is broke. Lovely. I am selling the car in the as-is condition for a ridiculously low amount of money and believe that buying used cars is like playing Russian Roulette if you're not a car mechanic or don't have the necessary funds for a well maintained car.

The weather is too bad to go flying and I have to cancel about eight lessons. Two of my friends from Berlin look at the air fare and decide they can't afford to fly over and visit me.

Anything else?

Yep, I broke up with my girl friend. May definitely does not get elected for "Best month of the year".

Tune into June:

"Paine Tower, Cessna 54502, ready for take off at Alpha 3, 34 left, westbound." That's me sitting in my little flying machine waiting for the take off clearance. While the weather in April and May was pretty cloudy and rainy it improved considerably in June and I started to take flying lessons two to three times per week. The Boeing Employee's Flying Association (BEFA) has three planes based at Everett's Paine Field, a Cessna 150 and two 172's. Since it is a non-profit organisation rates are about a third of what you have to pay in Germany. And Boeing

is providing lectures for it's employees where flight instructors teach the theoretical stuff that you need for the private pilot's license written exam. The course material for the ground school is provided free of charge and there is no tuition fee. Twice weekly you are attending class for three hours. A typical day for me would be to get up at 6 a.m., work from 7.30 a.m. to 5 p.m. and go to class till 8 p.m. On other days I might get up at 5 a.m. and play basketball at the Boeing activity centre after work and go flying afterwards.

I found ground school pretty boring since classes most of the time did cover only the basics. Having attended classes at university in aircraft systems and a practical course in flight simulation I already knew a lot of the things that were new to most of the other Boeing participants.

I was very fortunate to have an flight instructor who loved teaching and flying and was not interested in milking the student. Steve Barton, born in England, came equipped with a ready supply of jokes and satirical remarks about my performance that I found very refreshing. He was working with Boeing FlightSafety as an instructor for the 737 and took me to one of the classic 737 simulators for a couple of landings.

Learning to fly is fun, a challenge, exhausting, consuming time and other resources, gratifying and like with some drugs, you get addicted after the first time, you're hooked. If there is anything more beautiful than flying over Whidbey Island, looking at the sunset over the Olympic Mountains, watching all kinds of boats and ships, Seattle and Mount Rainier at the horizon while flying the plane with two fingers, I haven't encountered it yet. And the feeling after the successful completion of my first solo flight, during the long solo cross country and after passing the FAA exam is something I will treasure for a long time.

Summer = July + August + September /2

It seems people are having prejudices about the weather in the American North-

west. Having lived in Seattle through the summer of 98 I feel competent enough to tell everybody that the sky in the area is not only grey and wet. Although it might be possible that my opinion is slightly biased by the fact that this summer was exceptionally warm and dry (somewhere in the top ten of this century).

Summer in Seattle: for me it meant getting up as early as possible to be able to catch some sun rays in the afternoon after work. Living close to Green Lake I was usually hanging around there, lying on the lawn, writing letters, listening to music, thinking, dozing or watching skaters and runners.

Summer in Seattle is also open air festivals, the Fremont Solstice Parade, the Southwest Airlines Torchlight Parade, Bite of Seattle, theatre performances at Green Lake, lots of sports, biking, hiking, street fairs, more hiking, the Woodland Park Zoo Tunes with jazz and folk music and of course: hiking.

Hiking is something you simply have to do when living in the Northwest.

After Nadja Wokurka, the new intern from Berlin, arrived in August we went hiking together nearly every weekend. One weekend Bob Schlilaty, the manager responsible for the international exchange programme, took us on a three hour hike to Tiger Mountain. We spent the rest of the afternoon and the evening cooking and dining together. His grilled salmon has been rated three cook's hats in my guide to Seattle's best food places.

Next weekend Nadja and I went to Whistler in British Columbia, Canada, a well known ski resort and a place where you can do some serious mountain climbing, biking and hiking. Andy Mason, an engineer in Nadja's group, had invited her on the trip and she declared me as overweight and oversized baggage and took me along. Andy and his wife Mary took care of us like we were family. Is there a way to get Germans to display the same openness and friendship towards foreigners? Maybe send them all to America for half a year?

The weekend after I ended up in Vancouver, Canada, visiting a friend from last year's stay in Finland. Then I drove around Mount Rainier the next Sunday with a friend from Berlin who was visiting me. A couple of days later we visited the windy city of Chicago. He was riding Greyhound (cheap! Only \$100. That's \$2 per hour travelling time) while I was flying American Airlines. He admired the landscape while I wondered why there were clouds in 31,000 ft.

The summer was also the time when I really enjoyed working. I didn't have to ask for more work because I always had a full desk to keep me occupied and therefore happy. I always thought that too much work is worse than no work at all. I was proven wrong. After I got accustomed to the "processes" and the ways to "get the job done" I had a couple of projects and day-to-day work to accomplish. But the first two months I often had to beg for work and had too many days when I had no work at all. And that is not only boring but also quite strenuous. I have heard from Roland and Andreas that it also took two to three months till they really had the feeling they were contributing and not just sitting around reading manuals. It is perfectly understandable that not only the intern needs time to adjust to a new environment and a new group but also that the group has to get a feel for the intern, to find out about her / his capabilities and way of working. But since I have found that everybody is overwhelmingly friendly and taking time to help with even the weirdest questions I think it would be best to throw day-to-day work or some not so urgent projects at the intern in the first or second week. Considering the situation in the flight control group I understand that there were problems to simply find work in the beginning. The 767/757 pod was involved with the new design of the 767-400 and test of the 757-300 and it was decided that it probably would not make much sense to have me learn the Design Software CATIA and start designing parts because it would require quite some time to learn how to

use the software efficiently. The 737/747 pod was going through three lead changes due to temporary assignments of the current leads to other groups or projects. Due to the production problems and the projected rate increase of the 737 next generation assembly lines some of the projects I was supposed to be working just couldn't be started or completed. I was very glad that Doug Topp and Scott Hanowski who was the 737 / 747 lead for the longest time were able to find some projects for me despite the – pardon my frankness – chaos that was going on. Boeing had huge problems at the time with the production rate increases, a declining economy in Asia, a plan to dismiss 10% of the engineering staff by year-end and a management shake-up in the middle of the recovery process. The flight controls group alone had 20% of it's engineers either leaving or on temporary assignment to other projects and I am very grateful that I was never considered to be another problem but part of the group.

The last six weeks

In the middle of August I somehow got transferred from mechanical flight controls to flight deck crew operations. I asked my supervisor Doug whether it would be possible to spent a couple of days with the flight deck design group since I am fascinated by the philosophy behind different cockpit designs and had I not decided to become an engineer I probably would have ended up as a commercial pilot. Doug arranged a meeting with the supervisor of the crew operations group Dennis Todd and he pirated me away for the last six weeks. Working together with Jim Johnson for this time I had to learn about the intricacies of engines, engine control and cockpit instruments mighty fast. After two weeks he had me give a briefing to the 747 chief pilots about a new design in the Rolls Royce 211-524 engines. At first it was kind of weird to give a presentation when you yourself have the feeling you

should know more and also that the people you are facing are the real experts. After that I thanked my professors at the university silently for forcing us students to give presentations and to analyse our performance in detail.

The differences between the groups I've been working with couldn't be much greater. While the flight controls group was mainly concerned with the design of mechanical parts and solving of production problems the crew ops guys thought about philosophy, human factors and the zillions of little details in electronics, flight instruments, the logic of flight management computers and the crew manuals. Crew ops had no direct influence on the actual system design but were thinking of themselves as a link between the pilots and the airplane systems group. When you are working in a design group you can see the part you've designed on the airplane. In crew ops there was no physical product. You are not designing you are looking at somebody else's design, you are not making any decisions but are lobbying for a specific decision.

All this made for a different working environment. The flight controls engineers were mostly sitting at there computers or solving problems in the factory while the crew ops guys were sitting in meetings, arranging simulator trials, co-ordinating other groups, had to think about safety and an unreal amount of little details.

The End

Now it is early December and I am back in Berlin. It took quite some time to feel at home again. While I had seven exciting months in a foreign country and have changed due to the multitude of new impressions my friends mostly continued their lives and nothing much has changed for them.

The time in America has shown me a couple of things I deem very important for my future life: I can survive in a foreign country, make new friends and still keep in touch with home. The university has prepared me for the working life better than I

expected. When I will start working "for real" I will be self-confident enough to know that I can handle most projects. I have learned how large companies are organised and how to work with other people. I found that work can be fun if you have enough of it and that there really are few things in the design, production, testing and maintenance process that I do not find interesting. Furthermore, watching Doug and Dennis care about the people in their groups has given me two very good examples of how to lead people, keep them happy and get the job done.

There is only one problem: The people at Boeing I have been working with have set pretty high standards in regard of team work, friendliness and support. But I have learned also that one has to look optimistic into the future and has to work to make things better. Thank you all!

My Reinhardt Abraham Memorial Foundation Internship In Boeing's Flight Test

Report by Nadja Wokurka

My name is Nadja Wokurka and I am a student in aerospace engineering at TU Berlin. Right now, I am the only recipient of the 1998 Reinhardt Abraham Foundation award still present in Seattle. I was chosen in the second round of this program together with Jens Wieske and Sylvia Koenig, who have already returned to Germany. As the beginning of my stay in the United States was delayed by an exchange year at the ENAC in France, I arrived in Seattle only in August. Thus, I'd like to take the opportunity to give the 'freshest' impressions on what's happening in the RASf program.



Shortly after a visit to the office of Deutsche Lufthansa Berlin Stiftung in Hamburg, where I met Dr. Dienger, Mr. Kreth and Mrs. Reichow, who would be my contact person in Germany, and where I was given a tour at the facilities of the Lufthansa Technik AG, I departed for Seattle. At the airport, I was met by Virginia Schlitzer, responsible for international trainees at Boeing's Personnel Department and by Jens Wieske, whom I'd like to thank for the many hints that facilitated my getting settled considerably. During the first days, I could stay in a hotel and drive a rented car, sponsored by Boeing. This was very helpful in my 'hunt' for a reliable car (especially after all the horror stories I had heard from my predecessors about their experiences with used vehicles - see also RASf Newsletter 1/98) and a place to live. Both worked out very well - I found a room in Fremont, which is a very scenic community about 10 min from downtown Seattle and a pretty nice car, that has not been causing any trouble so far...



5 days after my arrival, I reported to work in the Flight Test organization of Boeing's Commercial Airplane Group. It is situated at Boeing Field, near the building where William Boeing built the first of his planes and what is now part of the Museum of Flight. Flight Test Engineering belongs to Airplane Validation and Flight Operations among other organizations like Flight Safety, Flight Training, Laboratory Test, Flight Crew Operations. It is divided into several subdivisions like Flight Test Analysis, Test Operations and the groups dealing with the test instrumentation and data systems. I was assigned to the Stability & Control/ Flight Controls Group of Flight Test Analysis. This turned out to be a very good match with my background gained in classes at TU Berlin in subjects like flight mechanics, flight control and, particularly helpful, experimental flight mechanics. The testing this group is involved in mainly concerns the functioning of primary and secondary flight control

systems and the handling qualities and performance of the airplanes. Internal Boeing flight tests serve to get familiar with and gather data on newly developed systems, to verify modifications and to solve occurring problems on new and existing aircraft. The purpose of Certification flight tests is of course the main goal of airplane validation - to show compliance to the FARs, JARs and other international aviation regulations and to get the airplane certified for airline service.

Our responsibility is to prepare flight tests by determining the test procedures and the measurements to be gathered during the flight, assessing the risk, coordinating the test planning with the pilots, test operation engineers and the division engineers. Then, during the test flight, we work the on-board flight test stations, observe and evaluate the test maneuvers, communicate with pilots and the other participating members of the test crew. This is an absolute real-time job and one has to react and decide very fast. During the last 2 months, I had the possibility to go on test flights as the responsible analysis engineer, not only as the observing intern I had been in the first weeks, on the 757-300 as well as on the Boeing Business Jet (Increased Gross Weight version of the 737-700) and these were the most demanding and rewarding experiences of my current assignment.

The post-test work consists of the writing of Certification Reports that are then submitted to the several aviation authorities. Overall, I was very lucky to arrive almost exactly at the beginning of the test and certification program for the 757-300, with launch customer Condor, and thus to have the opportunity to follow such a process through.



Nevertheless, I was looking forward to seeing more of Boeing's many fields of operation. So, beginning in January, I'm going to work part of my time in the aerodynamics laboratory where I will assist in the development of wind tunnel testing with pressure sensitive paint. This will provide me with some insight into the methods of industrial research, in an exciting very promising area.

I would like to mention the friendliness and helpfulness of the 'Personnel Ladies' Virginia Schlitzer and Michelle Colby and of Bob Schlilaty, who unfortunately is no longer directly involved into this trainee program, as well as the people I'm working with in Flight Test, who contributed to making this internship a valuable work experience and also much fun in my spare time. Naming only some of the activities I've done so far - rock climbing, mountain biking, skiing, skating, white-water kayaking - shows that the Seattle area is not only a great place to work but also a wonderful place to live.

I hope that the Reinhardt Abraham Memorial Foundation Internship program will continue its great work and will thus give more students a very good preparation for their first job after graduating and the knowledge of another culture.

The Student Exchange Program (SEP) at the TU Berlin

Report by Jenna M. Pike

The approach of the half-way point in my time in Germany as the first American recipient of the Reinhardt Abraham Memorial Stipendium seems an appropriate time to reflect on my experiences and to look forward toward what the next three months hold for me. Before my arrival I didn't know exactly what to expect -- what sort of place I would be living in, what I would research, what the environment at the Technische Universität would be like, or even how I would manage to get around while surrounded by a foreign language.



I was met at the airport by Herr Kreth and Herr Jacob, who helped immensely in getting me settled in my student hall of residence. And since my arrival on October 1, I have accomplished a great deal -- from learning my way around Berlin, to managing to collect enough papers and stamps to enroll at the TU, to getting a research project started.

I live in a hall of residence for international students, where most of the students come from England, France, Russia, and the U.S. It is interesting to learn a little about the subjects my new friends study, as most of the students I have contact with study social sciences and humanities. At other times I feel rather isolated, since I have not made much contact with other students in materials science and engineering. Another challenging aspect is the language problem, and as a result, my conversa-

tional German skills have improved greatly over the past few months.



With so much going on in Berlin, there is never a chance to get bored and I have had a huge variety of experiences here. I saw Tosca at the Staatsoper, attended a performance at the Philharmonie, and been to several art exhibitions. I've visited the new shopping center at Potsdamer Platz, been clubbing, and seen some German movies. I spent a weekend in Dresden, and another in Prague, and plan to do more travelling, including a snowboarding vacation in Switzerland at Christmas-time.

Although getting a research project underway took more time than I anticipated, I am now making progress with my work on the molten salt synthesis of lead zirconate titanate particles (PZT). I began this research last summer at the University of Washington as my senior project. The use of a molten salt speeds the reaction of the constituent oxides, and allows the PZT to form at much lower temperatures than is possible with other methods. Anisotropic growth rates should result in whisker-shaped PZT particles, which could then be used for piezoelectric tapes, and other applications where a shape anisotropic particle is required. I have also recently begun taking German classes at a private language school. Although most of the Germans I have met speak remarkable English, it would be a shame to spend half a year in Germany without making a great improvement in my German. In addition, there are so

many new and complicated procedures to go through, a knowledge of German is invaluable. For example, most of the literature for my research is written in English. However, in order to find anything in the very complex library system, it is necessary to ask a few questions in German.

In the second half of my time in Berlin, my main objective is to finish my PZT research. I also plan to continue with the German lessons. The first three months have past so quickly, and I feel like I have just begun to get started, that I want to make the most of all the opportunities available in the short time remaining.

Basic Information about Support Conditions

REINHARDT ABRAHAM MEMORIAL FOUNDATION

1. About the RASf

The RASf was established officially on June 13, 1996 at Berlin and is based on an initiative of THE BOEING COMPANY (BC) and the DEUTSCHE LUFTHANSA AG (LH) in memoriam of the late Reinhardt Abraham.

From 1972 to 1989, he was the member of the Board of Directors of Lufthansa responsible for the Technical Division. In the successful course of his professional working life, he built up a reputation as a professional of high calibre in the domain of civil aviation.

During his working life he maintained always a close relationship to the Technische Universität Berlin (TUB), the place where he performed his studies in physics, business engineering and aviation technology. Holding guest lectures at the TUB have been one of his activities which reflected his intense interest in promotion of young talents in the aviation industry.

On November 1st, 1995, he passed away at the age of 66.

Mission of th RASf

is to foster the further education and training of students and/or young German and American graduates in the field of aviation and air transportation.

The RASf has been integrated into the existing Deutsche Lufthansa Berlin-Stiftung (DLBS) as an independant division in order to minimize administrative expenses. The statutory object of the original DLBS is the preservation and operation of civilian historic aircraft as well as the patronage of sciences in the field of aviation.

A Committee of Trustees (CoT) has been established, it being composed of representatives of Boeing, Lufthansa and the TUB. The CoT selects the beneficiaries and provides advice concerning the directives of the study support programs. In this way it works under the auspices of the Executive Board of the DLBS.

Structure of the Support-Programs

The support programs of RASf will be provided as internships using the capabilities of the partner companies respectively organizations. Presently, there are two kinds of internships being offered from the RASf:

- a) The Trainee Program (TP) at the Boeing Company (BC)
- b) The Student Exchange Program (SEP) at the TUB and at the University of Washington (UW)

Both programs will be described in more detail in the following paragraphs :

2. The Trainee Program (TP)

Objective of the TP

is to provide qualified candidates from the TUB with meaningful work experience to supplement and enhance their

academic studies. In addition, the program enables students to establish effective working relationships with professional staff, work in an international business environment, and live in a different culture.

Support from BC

Each Trainee will spend 6 (six) months at BC facilities in Seattle, Washington, USA, working in various aspects of the commercial airplane business and will be assigned to a function reasonably related to his/her education, skills, area of interest and academic study areas before.

In return, BC will derive the full benefit of the Trainees capabilities to assist in BC's normal work activities or with special projects. Each Trainee will be a regular, full-time employee of BC and will be paid by reasonable salary covering standard live expenditures at Seattle area.

Support from DLBS / RASf

In conjunction with Lufthansa German Airlines (LH) round trip transportation between Berlin and Seattle at the beginning and at the end of the training period will be provided.

Eligibility

Applicants must have completed a minimum of 4 years of the TUB faculty approved program in Engineering, Business, Computer or related sciences . Their study focus should be on areas related to aviation / air transport or related basic sciences.

The applicants should be of high academic standing, speak and read in English, and be able to qualify for an H-3 visa.

The application is open to all students of the TUB regardless of their nationality.

Application Procedure / Course of Events / Dates

The application for the TP shall comprise a letter of application, other reference documents and a letter of recommendati-

on from a professor/teacher from an appropriate institute at the TUB. Study focus on aviation/air transportation shall follow from the application.

Application and recommendation letter shall be in English.

The application documents shall be passed to the planning department of the TUB.

DEADLINE for the application is on the 31st of July, except as noted otherwise.

At the END OF SEPTEMBER or BEGINNING OF OCTOBER the regular CoT meeting will take place at the TUB. The interviews will be conducted by Boeing representatives at a TUB location. The candidates will be invited by the TUB planning department well in advance. After the interview session all applicants will be informed by letter within 2 weeks about acceptance or refusal. BC will prepare the internship (job definition, visa application etc.) within the following time period until march of the subsequent year.

The TRAINING PERIOD itself is normally starting MID of MARCH and will last until MID of SEPTEMBER

3. The Student Exchange Program (SEP)

Objective of the SEP

is to provide to qualified students from the TUB and from the University of Washington (UW) with meaningful work and learning experience to supplement, widen and enhance their academic studies.

Within the course of the exchange program the opportunity is given to the student to enhance her/his academic work at the study with insight views into the professional work environment of the aviation industry (BC, LH, other interested companies) or alternatively to per-

form the study at a foreign university (UW students at the TUB and vice versa).

Main objective of the exchange program is to foster working and learning in conjunction with a specific thesis (diploma, dissertation) in a new foreign / international environment.

Focus of the studies and the subject of the thesis shall be related to civil aviation / air transportation. This includes also related basic sciences.

The exchange period will be 6 months.

Support from DLBS / RASf

In conjunction with LH round trip transportation between Seattle-Berlin (U.S: Students) respectively Berlin-Seattle (German students) at the beginning and at the end of the training period will be provided.

The DLBS/RASf provides an apartment at the International Study Center, Berlin (ISB) for American students staying at Berlin. The living standard is equivalent to a good to excellent hotel. The ISB is located in Berlin-Charlottenburg about 10 minutes by subway from the TUB.

In addition, all students will receive a reasonably monthly contribution to cover normal livelihood expenses. This will be about DM 720 / EUR 368 for stay at Berlin and USD 800 for stay at Seattle.

Eligibility

Advanced students preparing or working at Masters/diploma or PhD/doctoral Their study should be related to civil aviation/air transport or related basic sciences.

The applicants should be of high academic standing, speak and read in English (German students), and be able to qualify for an appropriate visa.

For American students knowledge of the German language would be beneficial The application is open to all students of

the UW and the TUB regardless of their nationality.

Application Procedure / Course of Events / Dates

Professors/teachers at corresponding faculties of the UW and TUB will nominate candidates in combination with a study subject/project, will prepare application documents and will send them to the TUB planning department for review. The Department will propose eligible candidates to the CoT-members who will elect the candidates. The RASf office will contact the elected candidates for further procedure.

The INTERNSHIP PERIODS for UW-students at Berlin will commence normally on April 01 and October 01. TUB-students at Seattle : still open

4. Contact

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A more detailed version of this information covering also legal aspects may be requested per eMail from the DLBS/RASf office.

Thanks to the Donators

Since the middle of 1996 until January 1999 a number of renowned companies as well as private persons helped to raise the capital assets of the RASf by donating

the amount of about 1 Mio.DM. The above mentioned amount has been invested and the annual earnings will be used at full extent for the internship programs.

The donators are :

Mrs. Erika Abraham
Boeing Commercial AirplaneGroup
C.F.M. International SA
British Aerospace Holdings, Inc.
Deutsche Lufthansa AG
Mr. Camilo Dornier
General Electric Aircraft Engines
International Aero Engines
Mr. Robert L. Kirk
Rockwell Collins
Sundstrand Aerospace

The members of the Executive Board of the Foundation as well as the Committee of Trustees would like to express their gratitude and thank all donators.



Ekkehard Tschirner, Vice President Public Affairs Berlin and Dr. Gerwin Dienger, Advisor to the Executive Board of Lufthansa Technik AG Hamburg, the two members of the Board of Directors of the DLBS, are responsible for all matters concerning the Reinhardt Abraham Memorial Foundation.

Lufthansa`s DGLR awards

In addition to the activities of the RASf, the DLBS supports the German Society for Aeronautics and Astronautics ("Deutsche

Gesellschaft für Luft- und Raumfahrt-Lilienthal-Oberth-e.V." ; DGLR) on behalf of the the Deutsche Lufthansa AG. A number of awards for outstanding diploma theses will be granted by the DGLR. Two of those awards named "Reinhardt Abraham - Lufthansa Stiftungspreis", endowed with 3000 DM will be sponsored by Lufthansa and handed over by the the Executive Board of the Foundation in the course of the annual general meeting of the DGLR.

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