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James N. Bexfield Interview (MORS)

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INTRODUCTION

Oral Histories represent the recollections and opinions of the person interviewed, and not the official position of MORS. Omissions and errors in fact are corrected when possible, but every effort is made to present the interviewee's own words.

Mr. James N. Bexfield was President of MORS from 1983 to 1985. In 1993 he was elected a Fellow of the Society and in 1994 he received the Vance R. Wanner award. Jim was the MORS Sponsor's Representative for the Office of Secretary of Defense (OSD) Program Analysis and Evaluation (PA&E) from 2003 to 2012. The interview was conducted by Dr. Greg McIntyre and Dr. Bob Sheldon, FS, on June 12, 2006 at the US Air Force Academy; June 10, 2007 at the US Naval Academy; December 27, 2007 at the Pentagon; and June 20, 2011 in Monterey, California.

Bob Sheldon: We're here in Colorado Springs for the MORS Symposium (MORSS) and an interview with Jim Bexfield. First of all, give us your parents' names and tell us how they influenced you.

Jim Bexfield: My father was Bill Bexfield. He retired as a full colonel from the Air Force in 1970. He flew 38 B-17 missions from England during World War II, many as the group commander, which meant he was in the lead aircraft in the tight V formations they flew in those days. I have his log book. It appears his group lost very few planes in the missions he led. His easiest mission was D-Day. He took his dog on this mission as it was short and they did not need to fly at the higher altitudes where it can be very cold. He was a big dog person and just loved to have dogs around the house all the time. Golden Retrievers were his favorite.

Bob Sheldon: Where was he based in England?

Jim Bexfield: He flew out of Great Ashford, which is near Cambridge, for his first 25 missions in 1943. These were the really dangerous ones as they were early in the war when the Germans still had a lot of firepower. In one mission he returned with only two engines working with fuel flowing over one of the engines that was still working. He landed just after clearing the coast of England and considered himself very lucky that the fuel flowing over the working engine did not ignite. That was probably his most scary one.

His saddest moment occurred just after he had completed his 25th mission and was at another base in England on his way back to the United States. He called back to see what happened in the mission he would have led if he had led his 26th mission. Much to his surprise, all of the B-17s in his squadron had been shot down. On that raid the Germans tried a different tactic. They attacked in mass from the front. It resulted in the lead B-17s being shot down, but the Luftwaffe also lost an awful lot of airplanes and never tried that tactic again. Dad prided himself in keeping the bombers in tight formation to concentrate firepower against the German fighters. He never knew if there was a problem with the formation that day, but my guess is that this loss of so many friends really affected his psyche. He never talked about his war experiences with me until he was in his 60s.

After spending a couple of months in the US he returned in late 1944 to England, this time to Bury St. Edmonds, and flew 13 more combat missions. After the war he stayed for a few more months as part of the initial occupation force.

Bob Sheldon: Did you ever show him the probability calculations about the odds of making it through 25 missions?

Jim Bexfield: No, he understood, but wasn't interested. He was a different kind of guy than I am. He was a football player in high school and college. After hurting his knee playing football at the University of Illinois, he became a wrestler. He could climb a rope hand over hand with no feet all the way up to the top of the gym and back down again. He had a tremendous grip.

He used his wrestling skills to his advantage as a B-17 commander in the war. To gain the respect of some big tough guys who were not obeying orders, he sometimes took them out behind the barn door and showed them a few moves. After the session he said they seemed to fall into line quite nicely.

Dad had a great career. He was promoted to Colonel in 1951 after about 10 years in the military. His early assignments included two years in Germany, a year in Paris, three years on the Joint Staff and as Vice Commander of Stead Air Force Base (AFB) in Reno, Nevada. His favorite assignment was in the Joint world as the lead planner for the fleet in the Mediterranean from 1957-1959 in London, England. It was his

Military Operations Research Society (MORS) Oral History Project Interview of Mr. James N. Bexfield, FS

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plan that was put into place when the US Navy responded to the Lebanon crisis in 1958.

Following London was a tour as a professor of aerospace science at Colorado State University in Fort Collins, Colorado. This is where I met my wife. He left Colorado in July 1965 to serve two years as the Secretary of the Mutual Defense Board in the Philippines. His final assignment before retiring in 1970 was as an ROTC (Reserve Officer Training Corps) Area Commandant where he lived in some very nice quarters on Maxwell AFB, Alabama.

He really loved the Air Force. When he retired in 1970 he couldn't find a military position so he entered the healthcare field and advanced quite nicely, eventually retiring for good as the administrator of the nursing home inspection program in New Mexico.

Bob Sheldon: How about your mom?

Jim Bexfield: My mom was a devoted military wife who did everything she could to support my Dad's career. Her flexibility was amazing. Many times he'd call her up at about 5:00 pm saying, "Hey McGee (his nickname for her), Sam's in town. Okay if I bring him home for dinner." And she'd adjust immediately, sometimes with smaller portions.

Bob Sheldon: So you were an Air Force brat.

Jim Bexfield: Yes, moving around all the time. I enjoyed it very much. It seemed that every new location was better than the one before.

Bob Sheldon: Where did you go to junior high and high school?

Jim Bexfield: I went to junior high in Reno, Nevada. I rode a bike to school wearing tennis shoes, a white T-shirt and jeans. I collected baseball cards, played basketball and baseball and did as little in school work as I could. Shortly after starting high school in Reno we moved to London. Mom gave me two options for schools in London. One was the American School in London (ASL), a private school that had started classes about a week before we arrived but had a coat and tie dress code. The other was the military school at Bushy Park that had started classes four weeks earlier and required an hour-long bus ride each way, but I could continue wearing jeans.

I agreed to wear a coat and tie in what turned out to be one of the best decisions of my life. ASL was a small school—my graduating class had only 19 students, 13 girls and six guys. I began

dating immediately using public transportation. I enjoyed being one of the better athletes in a small school, and really bonded with some of the teachers. I thoroughly enjoyed those four years and graduated in 1961.

Bob Sheldon: That was in London?

Jim Bexfield: The high school was in Camden Town, two to three miles from the center. We lived for the first two years on New Cavendish Street and the last two years in a flat just off of Park Lane. We moved from New Cavendish Street when the owners remodeled and significantly raised the rent. One improvement was installing new elevators to replace the one operated by tugging on a rope. Both were within walking distance of Grosvenor Square where Dad worked; both took about 10 minutes for the bus rides to and from ASL.

Bob Sheldon: Did you learn a lot of British culture?

Jim Bexfield: Some. My main focus was on school but I did go to a few plays and of course went all over the city and saw all the major sites.

Bob Sheldon: Did you have some good math or science courses in high school?

Jim Bexfield: Yes, but not in Reno where I really hated mathematics. They would give me an aptitude test and I'd do well on it. Then they'd put me in these hard math classes where you had to study and I didn't want to work.

But when I got to London I got an important lesson in education. I took algebra and got my gentleman's C, and another C in English, always working just hard enough to get by. But in French I fooled around a little too much. I thought I was sure to pass the course after getting a C or a D on every six-week report card. Unfortunately, there was a comprehensive final exam where I scored 12 out of 100. My French teacher failed me for the whole course! I said to her, "You can't do that. I got Cs and Ds throughout. The worst you can give me is a D." And she said, "Do you think you're ready for French II?" I said, "Maybe not." So I had to take French that summer, and that's the last time I got anything below a C. I made sure I worked a little harder after that.

Then came my sophomore year and I got my first A ever, except maybe physical education. It was in plane geometry which was the first course I ever took that was fun. Then the next year a retired English headmaster joined

the faculty. He was a lot like Clayton Thomas, quiet but very bright and unassuming, and always willing to help other people. He taught 11th grade math—trig and algebra, and in the 12th grade analytic geometry and calculus. In the summer between the 11th and 12th grades my parents paid to have him tutor me, not because it was required, but because I enjoyed being taught by him so much. Learning of his death about five years after I left was quite a blow. He was hit by a bus crossing the street in front of the school.

Bob Sheldon: So he prepped you for your college math?

Jim Bexfield: Yes, I was pretty well prepared for college math. But many in my college freshman class had a year-long course in calculus whereas mine was only half a year with a focus on differentials.

Bob Sheldon: Where did you apply for undergraduate school?

Jim Bexfield: I applied to four schools. Illinois was my safe school. That's where my Dad went. The others were Case Western, Rensselaer Polytechnic Institute (RPI), and Rice. Rice was my first choice because it was free. They didn't charge tuition. I was rejected by Rice but accepted by the other three. I chose RPI because I received a small scholarship that they later said I really didn't deserve.

Greg McIntyre: Did you get to keep it?

Jim Bexfield: Yes, I got to keep it. It was partly need-based, and my father's income was too high. In those days you didn't fly back to the US from London to visit schools so the school decision was made without a lot of data. I was in London and didn't visit any of the schools. In reflection I wish I had picked Case. That's where Russell Ackoff was, one of the early leaders of operations research (OR). Of course, I didn't even know the field existed when I made the school decision.

Bob Sheldon: What did you study for your undergraduate degree?

Jim Bexfield: I arrived as a math major, but that only lasted until freshman week. I quickly realized a couple of things. One, I had to take a language as a math major, and I wasn't real anxious to do that. And two, almost all of the math applications were in physics, and I really wasn't too excited about applying math to physics. I wanted to apply math to something else.

There was an engineering major that appeared to be better. Management engineering majors took the core engineering prep classes the first two years—calculus, physics, chemistry, statics and dynamics, English—with no language requirement. In the place of a language, it required graphics and I wasn't very good in graphics either.

In my junior and senior years about half of the courses were in engineering and the other half in management. I took a couple of classes in electrical engineering (EE), a couple in aero, a couple in mechanical, and one in civil. I really enjoyed the EE sequence. If I was going back to school again I probably would do a double major with EE being one.

Bob Sheldon: Did you have any good professors?

Jim Bexfield: I had some, but none that really stuck with me the way that the teacher in high school did. They were good but usually you had them for only one semester. I did have Professor William Wallace for a couple of courses and worked as a grader for Professor Maynard Loux.

Bob Sheldon: Your dad was athletic. Did you participate in collegiate sports?

Jim Bexfield: I tried baseball. As a pitcher I had a good fastball but lacked control. I was the number three pitcher on the freshman team, but they only took two on the varsity next year, so I ended up not playing varsity baseball. I was too slow afoot and lacked experience in other sports. My high school did not have wrestling and played just two flag football games a year because the only available opponent was the military high school.

Greg McIntyre: You said you took graphics. Was that the same as mechanical drawing?

Jim Bexfield: It was mechanical drawing. The problem I had with the class was that I pressed hard when writing, which results in an indentation on the paper after erasing a mistake. I never got my plate (drawing) stamped for being perfect. I think everyone else in the class did. It was very frustrating because I'd make a mistake, erase it, and leave an indentation. I'd continually ask myself, "Do I want to start again? Or do I want to just finish it and accept the lower grade."

Nowadays it's all done on the computer so my handicap would no longer be important.

Greg McIntyre: You talked about taking management courses. Did any of them have anything noteworthy?

Jim Bexfield: Yes, I really enjoyed the statistics and accounting classes and was exposed to OR by taking a basic course and auditing a graduate-level class taught by Professor R. Carter. His testing approach was unique. He would start by giving a four question test in class, which the students would then take home to do again as a take-home test. The in-class scores averaged about 25 percent and the take-home scores about 50 percent. He asked me to be the grader but told me I would have to develop the solutions. I turned that one down—too much work.

Of note was that I did just okay during my first two years because I fell back into my high school routine. My focus was on having a good time and being the sports manager of a fraternity, and then the steward of the fraternity. I was too active in doing other things and not spending much time studying. At the start of my junior year I changed my whole way of doing things. I still was the sports manager but I would go to bed right after dinner and get up at about 2:00 in the morning to study. Now my frat brothers had to ask me questions during the day rather than during prime study hours in the early evening. My grades went from a 2.2 to a 3.8 by the time I graduated in 1965. Part of the reason was undoubtedly due to more interesting courses, but an equally large reason was the new studying regimen.

Bob Sheldon: What were your plans after finishing your undergraduate degree?

Jim Bexfield: I enjoyed applying math to business problems so I decided to get an MBA (master of business administration). I took the GMAT (Graduate Management Admission Test) and, much to my surprise, did phenomenally well. Usually my English scores on these types of tests were, at best, average. This time I did better in English than math. The reason was there were no synonyms and there were reading passages that I could relate to. They asked you to read the passage on a business subject and then turn the page and answer the questions without looking back. Invariably I would finish reading the topic at exactly the time that they said turn the page and my slow deliberate reading style

enabled me to answer almost all of the questions correctly.

Bob Sheldon: Which business schools did you apply to?

Jim Bexfield: I applied to Harvard and the University of Pennsylvania Wharton School and one or two others. Harvard accepted me but said, "We don't like to take people straight out of undergraduate. We'll give you a full loan if you want to come now and your acceptance will be good for a few years if you want to delay to get some business experience. Wharton gave me a full scholarship, which enabled me to enter the military, accept the scholarship, and go to school. I should have mentioned earlier that I was in ROTC during my four years at RPI and was a distinguished ROTC graduate despite ranking low in summer camp due to my limited marching skills.

Bob Sheldon: Did you have an ROTC scholarship?

Jim Bexfield: No, but I was given a stipend, \$50 per month as I recall, during the last two years. I did not attend the graduation ceremonies in June 1965 at RPI because I was anxious to get back to Fort Collins to prepare for my wedding on July 2. I arranged, with some difficulty, for my father to commission me. At that time he was the head of the ROTC program at Colorado State University. I also convinced my metallurgy professor to give me a C exemption so I did not have to stay two extra days to take the final exam.

Bob Sheldon: So you got married and then you went off for your master's degree?

Jim Bexfield: I got married and then had an automobile accident.

Bob Sheldon: What happened?

Jim Bexfield: My father was leaving for the Philippines immediately after the wedding. He gave me the family car, a 1955 Dodge station wagon with one of the eight cylinders not working, suggesting that I drive it during the summer and sell it before going to school. After the reception my new wife and I got in the car and began our honeymoon to the Black Hills of South Dakota where she grew up. Due to the missing cylinder, the Dodge would shake at speeds over 55 miles an hour. I was hovering in the right lane with cars passing me at speeds exceeding 75 miles an hour. Somebody in a 1965

Mercury fell asleep behind me, woke up just in time to realize that he was about ready to hit me, and turned quickly causing his front right side to hit my left. We were pushed off the road and completely overturned. Nothing left of the car except the two of us as we miraculously were wearing lap belts, probably due to my limited driving experience (I didn't start driving until after my freshman year at RPI). The car was totaled. The seat belts probably saved our lives. We spent our honeymoon in the Warren AFB hospital! I had a badly sprained ankle and my wife had lots of cuts as well as two-and-a-half crushed vertebrae. With the help of a brace she recovered. She completed her undergraduate degree at the University of Pennsylvania while I was in the Wharton School.

Bob Sheldon: What curriculum did you choose as a business major?

Jim Bexfield: OR was available only as a minor and Wharton was noted for its finance, so I majored in finance. I took the minimum number of finance courses required of the major and focused on OR. Russell Ackoff had just arrived at the Wharton School from Case and brought with him excellent professors. I attended a number of very interesting lectures from him. He was amazing. I recall doing a major finance paper on IBM in which I recommended buying the stock. Wish I had! Instead, for diversification reasons, we purchased a mutual fund with the insurance money from the accident. We used William Feller's book for probability before it became a classic. That was probably my favorite class. I really enjoyed my time at Wharton and did very well; I finished second in the class. My only B was in a case study class where having work experience to relate to was important.

Bob Sheldon: Was that an 18-month curriculum?

Jim Bexfield: For the typical student, yes. I ended up going for 21 months and finished in 1967 because the Air Force was not going to give me the summer off and many of the required courses had prerequisites. I took the four courses in the summer, including macro and micro economics.

Bob Sheldon: Other than Ackoff, who were some of your notable professors there?

Jim Bexfield: Sam Litwin taught probability, Irwin Friend and Dr. Baxter taught finance, Jim

Emory taught management, Morris Hamburg and Shiv Gupta taught OR, Matthew Freedman economics, and Ross Webber organizational theory. Morris Mendelson was my thesis advisor.

Bob Sheldon: They required a master's thesis?

Jim Bexfield: Yes. It counted as six credits. My title was *Real Investment Decision Making under Uncertainty*. It used utility theory and was about 100 pages long. Getting it typed before the advent of word processing was a challenge.

Bob Sheldon: So you were already commissioned and then you graduated from your master's program in 1967. Did you have an assignment lined up?

Jim Bexfield: They sent me to Andrews AFB as a fairly new first lieutenant to be a management engineer. A management engineer is a manpower person in the Air Force. I was part of a small detachment led by a GS-13. It was at Headquarters, Air Force Systems Command. We did the unusual hard-to-do tasks associated with setting manpower standards in the Command. One challenging assignment was setting standards for the workers who modified aircraft to test new technology for the Aeronautical Systems Division at Wright-Patterson AFB. Our primary technique was work sampling followed by data analysis.

Bob Sheldon: That was your first experience with real data gathering?

Jim Bexfield: Yes. It was an interesting experience. At one point I recall climbing into an aircraft to take a sample only to find the worker asleep in the pilot seat. We stayed in the Fairborn Inn at Wright-Patterson. It was a pretty dingy motel. My wife didn't like that too much, but I was glad she was with me.

Bob Sheldon: Did you have to deal with a lot of fuzzy data too?

Jim Bexfield: Yes, lots of judgment calls. We mostly did simple regression analysis which required us to punch the data into big calculating machines and then pulling the lever to get the answer. It was very data intensive with lots of data entry that did not require much thinking.

Bob Sheldon: Did any of your regressions show the coefficients going the wrong direction?

Jim Bexfield: Sometimes, yes.

Bob Sheldon: How did you deal with that?

Jim Bexfield: We used multicollinearity concepts when interpreting the results. I soon realized that being a manpower person wasn't something I wanted to do—at least over the long haul of my military career. I was able to talk the military, with my OR educational background, into changing my AFSC (Air Force Specialty Code) to OR.

Greg McIntyre: What year was this?

Jim Bexfield: This was early 1968. Then in late 1968 the Inspector General (IG) came through and asked, "What's this OR person doing in management engineering?" They had me transferred to Development Plans Division in Air Force Systems Command. Lt Gen (then Maj Gen) Glenn Kent had just left as the commander of that division to become the leader of Air Force Studies and Analyses (AFSA—the predecessor to AFSAA—the Air Force Studies and Analyses Agency and A-9). The person who replaced him, and was my big boss, was Maj Gen Felix Rogers.

The Development Plans Division had three sections. There was a large strategic analysis shop doing SIOF (Single Integrated Operational Plan) kinds of things. There was a large tactical analysis shop doing a lot of work associated with the Vietnam War and what our tactical Air Force should look like. And there was a small third shop that was exploring ways to apply new technology to the Air Force. The shop with the vacancy was the one applying new technology to the Air Force. A PhD physicist, Colonel Sherwood, was in charge of that section—a sharp guy. In the initial interview he says, "Oh you'll do fine. You'll be great." So I started working in the communication security area. It wasn't very OR-ish. My boss recognized this and sent me to ORSA (Operations Research Society of America) meetings (now INFORMS, the Institute for Operations Research and the Management Sciences) and to a two-week course led by Seth Bonder at the University of Michigan on Military OR. It was a great course. I still have the notes.

Overall, I was not very happy. I did not have a background in technology and did not know the Air Force well. All of the others in the section were majors or above. I was a very junior captain. After two years at Air Force Systems Command I contacted the Air Force personnel person that managed the OR field and told

him I did not think I was being utilized right. The result: before I knew it, I was assigned to Vietnam as an analyst.

Bob Sheldon: This was in 1969?

Jim Bexfield: I found out in 1969, with a reporting date of early February 1970. We packed up our apartment in Suitland, Maryland. My wife and son went to Fort Collins to live with her mother. I went to San Francisco to get on the airplane at Travis AFB headed for Tan Son Nhut, the air base near Saigon. After getting off the airplane I learned, much to my surprise, that I was not assigned to the analysis shop at Seventh Air Force. I was assigned to the sensor shop.

I replaced an analyst that requested to be assigned to the sensor division when he got to Vietnam because he had just left an assignment in the States involved with testing the sensors we were using. He convinced the Air Force that his background in sensors would be a major asset to that division. The billet stayed in the sensor division after he left and I was his backfill.

So once again I wasn't in an OR position and was initially unhappy. But this time it worked out better. My job involved a fair amount of travel in Vietnam and Thailand and there were opportunities to use analysis to interpret sensor data.

Bob Sheldon: What kinds of sensors were these?

Jim Bexfield: These were the seismic sensors the US used to monitor enemy activity in Laos and Vietnam. They were usually airdropped into the ground. Most of the office was supporting the effort to monitor activity along the Ho Chi Minh Trail. They put me in charge of the "in-country" sensor program with sensors just inside Vietnam at the end of the Trail and along the DMZ (Demilitarized Zone). My position involved travel to Thailand and inside Vietnam and a weekly brief on sensor activity to the senior Seventh Air Force staff. My Thailand travels took me to Korat where the aircraft that dropped the sensors and the aircraft that served as relay terminals in the air were based, and to NKP (Nakhon Phanom Royal Thai Navy Base), the headquarters for the "out-of-country" program. Travel to Thailand always included a night in Bangkok—a mini R&R with good food and good shopping, especially jade jewelry.

Travel in Vietnam was to Pleiku, the base closest to the in-country sensors at the bottom of the Ho Chi Minh Trail and Quang Tri, the base closest to the DMZ. The briefing at the Seventh Air Force commander's Friday staff meeting usually lasted about three minutes and consisted of six slides shown simultaneously on two projectors. The commander during most of my tour was General George Brown who later became the Chairman of the Joint Chiefs. His Deputy, who took the brief in his absence, was Maj Gen Robert Dixon. He later was promoted to General and retired as the Commander of TAC (Tactical Air Command).

Greg McIntyre: What was the topic of your six slides?

Jim Bexfield: It was basically what happened that week in the two sensor fields. They had me give my first brief in late February, which was a little too soon. It was an elaborate process where all the briefers lined up in order in a back room. When you were the next briefier, you gave your slides to the slide flippers and started talking when it was your turn, which is also the first time you saw the room. You moved to the next set of two slides based on a head nod from General Brown, who was so low in his chair that he appeared to be lying down. Everything was great until the end when someone asked me a question. I did not know the answer and said nothing for about 15 seconds—the longest 15 seconds of my life. My O-6 boss bailed me out by saying we would do some research and get him an answer. Needless to say, they gave me a lot more background and had someone else give the brief for the next 3–4 weeks.

After eight months the IG came through again and said, "What's this analyst doing in the sensor program?" And I got reassigned to the analysis shop and spent the next four months there doing war statistics. It was not nearly as exciting as the sensor program and the analysts never traveled—never saw anything first hand.

Bob Sheldon: Were you in any threatening situations? Were you there during the Tet Offensive?

Jim Bexfield: No, I arrived after the Tet Offensive and no one ever shot at me during the year I was there. But I was always aware of the threat as illustrated with three examples. The first one occurred about two nights after I arrived. The

alarm of a potential mortar attack sounded in the middle of the night with everyone going to the bunkers outside the barracks for protection. Except me—I slept through it. The next day I went to the people in charge of rooms and asked, "Would you please move me from the top deck to the bottom deck?" Because on the bottom deck you had a five-foot wall of sand bags that gave you a little protection.

The second one was during a visit to Pleiku. After dinner the locals showed me where rocket attacks had occurred the night before and the night before that. But the night that I was there nothing happened.

The third was when I spent two nights at Quang Tri near the DMZ. The Army fired artillery at known North Vietnamese launch locations periodically during the night. It takes a while to get to sleep when "booms" from our artillery fire are occurring every 5–15 minutes. Again, no rocket attacks when I was there. I lived a charmed life. My only injury occurred when I broke my foot playing handball and ended up being in a cast for a couple of weeks.

Bob Sheldon: Did you work with any of your Vietnamese counterparts?

Jim Bexfield: I didn't work with Vietnamese. We had a Vietnamese lady that would clean our hooch. We would occasionally go into town to a Vietnamese restaurant or to the Vietnamese Officer's Club on base.

I was amazed at how I adapted to the weather. When I arrived in February 1970 I was so hot that I slept almost naked with a fan going full speed overhead (junior officers did not have air conditioning). When I left a year later the fan was off, I wore pajamas and used a blanket. February is their winter season—the coolest time of the year.

My interest in travel was on full display during the last four months of my tour. I was the atypical one that not only went on R&R with my wife to Hawaii, but I also took leaves to Hong Kong and Taiwan and stopped in Japan for a couple of days on the way back to the States. In Hong Kong I purchased more than 4,000 pounds of rosewood furniture that we are still using today.

Bob Sheldon: Join the Air Force; see the world.

Jim Bexfield: Yes. I got to see a little bit of the world. It was an eye-opening experience.

Bob Sheldon: So you were a card-carrying analyst by the time you left?

Jim Bexfield: No, I wouldn't say so. I really hadn't done much analysis. The stuff that was done in Seventh Air Force was mostly collecting data on the war and doing some regression analysis to measure trends. But I had learned a lot about the tactical and felt well-prepared to begin doing analysis in that area in my next assignment. I did take some advanced calculus classes by correspondence during my tour, which helped me maintain some competence.

My assignment preference sheet had AFGOA as my first choice. AFGOA was the civilian side of analysis in the Air Force, with the military side being AFSA. It is also where Clayton Thomas worked at that time, although I didn't know him then.

Much to my surprise, I was assigned to the Strategic Command and Control Division in AFSA. I knew nothing about the strategic side. I knew nothing about command and control (C2). Again, I was starting from scratch. But this time things worked out well. I learned a lot about C2 and had some interesting special assignments. The first one occurred when Captain Joe Zelinka, who did admin for Maj Gen Jasper Welch, was sent to Squadron Officers School and they needed a three-month replacement. Welch led a five-person shop with two lieutenant colonels who were real fast burners (both were eventually promoted to general), a secretary, Deborah Barnhart, and Joe. This shop used analysis to prepare papers to justify and defend Air Force programs to the Congress. It reported directly to Maj Gen Kent. All of the papers on such topics as the B-1A, AWACS, ICBMs, and the F-15 were extensively coordinated across the Air Staff and then given to the Air Force Legislative Affairs Office for transmittal to the Congress.

As a relatively new junior officer and being a relatively new arrival, I was asked to interview with Jasper Welch. During the interview he said, "I understand I'm taking you out of analysis, and I hate to do that, but I think this is probably going to be a good broadening assignment. What we'll do is write a paper together on the application of Lanchester equations to tactical air combat to support your growth in analysis."

Bob Sheldon: Was General Welch a one-star at the time?

Jim Bexfield: No, he was a Colonel. I ended up doing lots of proofreading and running all over the Pentagon to coordinate the papers. I learned a lot about these subjects and about the working of the Air Staff during those three months. Writing the paper was a fabulous intellectual challenge. Col Welch gave me some initial ideas that served as the basis for a first draft. He commented on the draft and gave me some more ideas. I was very impressed by his ability and thought process and consider myself lucky to having been taught by Jasper Welch. I remember saying to myself, "This guy's really good."

The paper appeared as a chapter in the December 1, 1971 publication *A Syllabus of Models for Economic, Personnel, and Force Effectiveness Analysis* and was titled "An Application of Lanchester Type Differential Equations to Determine the Desirability of Diverting Aircraft to Suppress Anti-Aircraft Guns While Attacking Ground Targets."

A few months after returning to the Command and Control Division, Maj Gen Kent called some of us into his office and said, "People are having troubles with the attrition equations that we're using in our bomber work. And I'd like to have somebody take a look at them." By that point in time AFGOA had been merged into AFSA. Clayton Thomas was a technical advisor in the computer area and Rick Camp was the technical advisor in the strategic analysis area. Rick Camp was given the lead and they assigned me as his support. He was an SES (Senior Executive Service) or PL313 and had been the number two guy at AFGOA. We worked in his office with the result being two briefings and a paper. One of the briefings compared alternative approaches for performing bomber attrition calculations. The alternatives included binomial applications along with ones based on Markov Chains and Poisson Processes. The second brief and the paper developed the binomial application in some detail. It was during this time that I got to know Clayton Thomas. He provided very insightful comments both on the paper and the briefings. The published paper was dated December 1, 1972 and was titled "Techniques for Evaluating Strategic Bomber Penetration—an Aggregated Penetration Model."

Bob Sheldon: You computerized all that?

Jim Bexfield: Well, no. Because back then you weren't your own programmer. They had coding specialists that built the program. The first comparison brief was given at the June 1972 MORS Symposium. This was the MORSS where Maj Gen Robert Lukeman, who had just replaced Maj Gen Kent as the Commander of AFSA, stood in line for two hours to get registered. That caused MORS to change a lot of procedures.

Bob Sheldon: Where was the symposium?

Jim Bexfield: At the Air Force Academy. It was my first symposium. Lukeman attended the presentation and I think he liked it. It was given again about six weeks later as part of a cross-talk session in AFSA. Back then AFSA had two major directorates, one that analyzed tactical issues and another that analyzed strategic issues. General Lukeman would pick a presentation from one of the areas and then select an analyst in the other area to critique it. All of the analysts in AFSA were expected to attend these sessions. It was a pretty big deal.

Bob Sheldon: Was it like a murder board?

Jim Bexfield: It was a little bit like a murder board. You were being critiqued. It was a serious discussion. And it was challenging.

Bob Sheldon: How many people from AFSA went to MORSS that year?

Jim Bexfield: Probably 20, 25. At the murder boards it was mostly the senior people asking questions. The critique usually provided lots of ammunition for the senior guys to show their stuff in front of the General.

Bob Sheldon: How was it briefing at MORSS as compared to your murder board?

Jim Bexfield: I think it went better at MORSS. That was my first MORSS and I enjoyed it a lot.

Bob Sheldon: What was your initial impression of the symposium?

Jim Bexfield: Back then A1, the Strategic Analysis Working Group, was one of the largest, with about 75 members. It covered almost all of strategic analysis—I learned a lot. In the fall I returned to the Command and Control Division and a short time later received another special assignment. I was asked to document, using the computer code, a differential equation-based model of tactical electronic warfare. Now I was working in the tactical area. It turned out to be

about a six-month effort because it was a pretty complicated model.

Bob Sheldon: Written in FORTRAN?

Jim Bexfield: Yes.

Bob Sheldon: You had learned FORTRAN at Wharton?

Jim Bexfield: Yes, so I knew enough to be able to read it without too much trouble. After finishing this task, I was given another special assignment, this time with a transfer to the Bomber Division. They were developing a big Monte Carlo simulation called the Advanced Penetration Model (APM), a huge multimillion dollar effort with 20 to 25 Boeing analysts doing the coding. They wanted me to become an expert in a CALSPAN model named SPEED (Simulation of Penetrators Encountering Extensive Defenses) so that if the APM failed they had something to turn to.

Steve Murtaugh was the CALSPAN lead for SPEED. I made several trips to Buffalo in the process of learning about the model. This was my first in-depth exposure to a Monte Carlo simulation model so I learned a lot. Steve, one of the early MORS Fellows, is the one who got me involved in working for MORS, asking me to lead the contributed papers sessions, to be discussants of papers, and many other activities.

I got very involved in MORS. And at the same time I was teaching courses at the US Department of Agriculture (USDA) graduate school and taking courses for a PhD in mathematical statistics at George Washington University (GWU). I was doing that because the Air Force said they didn't have any PhD OR slots but that there were two in statistics.

Bob Sheldon: What courses did you teach?

Jim Bexfield: I was teaching courses in probability theory, OR, calculus, and linear algebra. I also chaired the Academic Excellence Committee for the school. The linear algebra course was co-taught with Rick Camp, who used it to help prepare him to teach for the University of Maryland in their overseas program after he retired.

Bob Sheldon: What courses did you take in mathematical statistics?

Jim Bexfield: I was taking courses in distribution theory, analysis of variance, hypothesis testing, multivariate statistical analysis, and measure-theoretic probability. These were all year-long courses.

Bob Sheldon: Any notable professors there?

Jim Bexfield: Samuel Greenhouse taught multivariate statistical analysis, John Dirkse taught probability (my favorite subject and teacher), and Hubert Lilliefors taught distribution theory.

Bob Sheldon: Were there any other military folks taking these courses?

Jim Bexfield: Yes, there were several, one of which was Nancy Spruill, who later became an SES in Acquisition, Technology & Logistics (AT&L). She was at the time working for the Center for Naval Analysis and was arguably the best in the class. I continued to take classes and qualifying exams after leaving AFSA for an assignment as the lead analyst at the Defense Fuel Supply Center (DFSC) at Cameron Station in Alexandria, Virginia. I was promoted to major in 1976 while at the DFSC. I left the GWU program before starting a dissertation. I was sponsored by the Air Force Institute for Technology (AFIT) in Dayton, Ohio for a 27-month assignment as a PhD candidate in operations research at the Naval Postgraduate School (NPS). I wrote, but never defended, a dissertation at NPS. From NPS, I went to AFIT as an instructor. I was pleased to find my name on the lieutenant colonel's list about six months into my tour.

I really enjoyed teaching at both USDA and at AFIT. I was the statistics group lead in the Mathematics Department at AFIT. David Lee was the chair of that department then. My specialty was probability theory and stochastic processes. I also taught a little bit of computer programming and everybody in the math department taught the calculus review that was given to entering students. I also advised a number of master's theses, to include Mark Reid's who is currently active in MORS. One of the best theses was done by Lt Col Fateen, an Egyptian. He was an excellent mathematician, but struggled with English so I had to work hard to make his thesis understandable.

In addition, I taught a few one-credit courses that were military OR focused, including classes in Lancaster equations and search theory.

Bob Sheldon: When did you start teaching there?

Jim Bexfield: I started in January of 1980 and left in October 1983.

Bob Sheldon: How many grad students did you have where you were supervising theses?

Jim Bexfield: I would usually have three to four. In total, I advised 11 master's theses and was a reader on 18. I also served a term as the President of the Faculty Senate.

I was elected to the MORS Board of Directors right before leaving NPS. So MORS was a big part of my AFIT tour. During my last year at AFIT, I was the MORS Vice President for Professional Affairs (VPPA). Then I was the program chair for the MORS Symposium at AFIT in September 1983. Finally, at the beginning of that symposium I was elected President of the MORS Board of Directors. These were busy times.

Bob Sheldon: What issues did you tackle as a VPPA?

Jim Bexfield: There were a lot of initiatives to improve liaisons with other professional societies. The big publication activity was the release of the first edition of Wayne Hughes' monograph on *Military Modeling for Decision Making*. I don't recall any huge issues in the professional affairs area.

Bob Sheldon: Nothing contentious?

Jim Bexfield: This was during the time when we were transitioning from two symposia per year to one. We had a symposium in June, and then we did not have one in December like we normally did. We waited until March to hold the 50th MORSS. And then we had the 51st in September when I became President. During the four days I chaired the symposium, I participated in Board activities as the VPPA and organized the Board for the next year (MORS did not have the President-Elect position back then). That was a very busy week. I didn't go to very many working group sessions. David Chu gave the keynote, Larry Korb was the banquet speaker, Brig Gen Leon Goodson gave the Sponsor's Welcome, and Jasper Welch received the Wanner Award.

Bob Sheldon: What was Korb's job at the time?

Jim Bexfield: Korb was the Director of Readiness in OSD Personnel and Readiness (P&R).

Walt Hollis, the Army MORS Sponsor, was the one insisting that MORS hold only one symposium per year and this was the second one in 1983, so very few from the Army attended. As a result, attendance was a little below the norm, somewhere between 500 and 600 analysts. We waited until June for the next symposium, which

was the start of a yearly cycle we've been on ever since.

Bob Sheldon: How was the decision made to continue you in status as President beyond the one year?

Jim Bexfield: On Sunday afternoon the MORS Executive Council (EC) debated the two options: a term nine months ending with the next symposium, or 21 months ending in June 1985. They felt it was not fair to elect somebody for just nine months, so they recommended the 21-month option to the full Board who subsequently agreed. The previous President, Marion Williams, served for 15 months. He was elected in June and his term ended the following September. The election was close. I was running against Sylvia Waller, an SES in AFSA, and Ed Scholz, a recently retired Air Force colonel. I was surprised when I won. There were two rounds with the first round eliminating Sylvia.

Bob Sheldon: Did all the other MORS EC officers also serve for 21 months?

Jim Bexfield: Yes. Everyone served for 21 months. In October I left AFIT for an assignment in AFSA so I was working for a Sponsor during almost all of my tenure. My three vice presidents were Navy captains: Wayne Hughes, Bill Lavallee, and Bill Gost. Pat Sanders was the Secretary/Treasurer. Unlike typical MORS ECs, mine was often contentious with many 3-2 votes. Bill Gost and Bill Lavallee wanted to reduce the role the Sponsors played in MORS. I felt the Sponsors were our most important customer and should have a major role in the society. Wayne Hughes would go along with me, as would Pat Sanders.

We did hold an EC meeting in Texas at the plant where Bill Lavallee was the lead government rep for a major Navy program. As far as I know, this is the only time MORS held an EC meeting outside the DC area that did not coincide with some other MORS event. It made sense, since Pat and Marion (the Past President) lived in Albuquerque; Wayne lived in Monterey, with Bill Gost, Dick Wiles, and me coming from DC. I don't recall how many, if any, of the Sponsors' reps attended this meeting.

Bob Sheldon: You had 3-2 splits on the EC. Was it the same relative split on the entire MORS Board when you voted on those issues?

Jim Bexfield: Usually the Board supported me. The two Navy captains did not have a lot of members supporting them.

Bob Sheldon: How did the MORS Sponsors or reps who attended all those EC meetings react?

Jim Bexfield: They were polite and supportive, offering many useful suggestions. Clayton Thomas was the Air Force rep, Frank Shoup the Navy rep, Dick Lester the Army rep and Lt Col Joe Guirrerri the OJCS rep.

Another major activity during my term was Ed Napier retiring and the subsequent hiring of a new Executive Director. Lots of very good people applied for the position, including Dick Wiles, a retired Army Colonel working in private industry. The Board had given the EC the authority to do the hiring. It was not an easy decision. Dick, while active in MORS having attended a dozen meetings and chaired working groups, had never served on the Board and the other two candidates were members of the current Board. The hiring committee, chaired by Amie Hoeber, recommended Dick and the EC supported that recommendation. Then we had to vet that decision with the Board, and that worked out well. Dick Wiles came on as Executive Director (a title that later changed to Executive Vice President, or EVP).

Bob Sheldon: What were your criteria for evaluating candidates for the job?

Jim Bexfield: The criteria included education, military OR experience, management experience, personality, his or her ability to work with people, and involvement in MORS. The interview turned out to be important and Dick nailed it. One of the candidates' attitude toward the role of the Sponsors was negative and another candidate was expecting a lot more dollars than we wanted to pay.

Bob Sheldon: What was Ed Napier's reason for leaving?

Jim Bexfield: Just normal retirement. He had been Executive Director for a number of years. Roasting Ed Napier turned out to be a lot of fun.

Bob Sheldon: Did you institute a training program for Dick Wiles?

Jim Bexfield: There wasn't a formal training program. But we did have a list of things that we wanted him to do. He checked off the items on the list, and in doing so got familiar with the

office very quickly. His corporate experience turned out to be a big plus. He knew how to manage an office and set salaries.

Bob Sheldon: What was the sense of the other people on the Board and the membership going from two symposia a year to one?

Jim Bexfield: Change is always hard. I don't think anybody on the Board wanted it to happen. But at the same time people saw opportunities. And the Board was extremely strong with many subsequent Fellows and Wanner award winners. It included Wilbur Payne, Ed Brady, E.B. Vandiver, Gerry McNichols, Dave Spencer, Harry Thie, George Heinrich, Dick Garvey, John Friel, Lannie Elderkin and John Battilega, to name a few. I had a great team that helped a lot with the transition.

I must tell you a story about Wilbur Payne. My sense is that many felt Clayton Thomas should have been one of the first five winners of the Wanner Award. The problem was that Clayton insisted that he did not want to be nominated for the award. I think the real issue was that he did not want to win the award before someone he very much respected, Wilbur Payne, received it. But Wilbur was on the Board and hence not eligible. At one point Wilbur made a comment to me something like "Seems like you would want people with the qualifications to be Wanner Award winner on the Board yet you don't allow them to be nominated for the award." The comment didn't resonate with enough of the Board and the policy was not reversed. But as soon as Wilbur was off the Board he was selected for the Wanner Award. The very next year Clayton let his name be put in nomination, and he was, of course, selected too.

Bob Sheldon: How did you feel about having to serve as MORS President for 21 months? Was that extra stressful?

Jim Bexfield: It was stressful because of all the changes. In addition to hiring Dick, we hired Natalie Addison (another great hire) and Sandy Huhn, began to automate the MORS office, held a mini-symposium cosponsored by ORSA MAS (Military Applications Society) on resources-to-readiness, expanded *Phalanx* and started paying the editor, established the multitiered fee structure for symposia, and published the military modeling monograph. And, of course, we ran two symposia—the 52nd MORSS at Fort Leavenworth

and the 53rd MORSS at the Air Force Academy—and held two workshops.

At the 53rd MORSS I recall using the term MORSian in my remarks at the opening session. The term seemed to resonate with people and it is now used frequently to refer to those involved in MORS.

My favorite early workshop occurred in February 1986 when I was MORS Past President. It was led by Clayton Thomas with a title of "More Operational Realism in Modeling of Combat" (MORIMOC). It was held at the CAA (US Army Concepts Analysis Agency, later renamed the Center for Army Analysis) facilities in Bethesda, Maryland, before it moved to Fort Belvoir. Clayton wrote some insightful papers that helped set the stage and Brig Gen Goodson was a big supporter.

Bob Sheldon: During your time as MORS Past President, you probably didn't have to give Wayne Hughes too much advice.

Jim Bexfield: No, Wayne did not need much help. He had an easier EC to deal with and didn't have nearly as many issues so the year went smoothly. As Past President I ran the elections, and ended up running the elections the following year too because Wayne was not able to attend.

Bob Sheldon: Were you Past President when Dick Wiles started the Past President's lunch at the annual symposium?

Jim Bexfield: I think I was still President. I recall it starting at the Air Force Academy with Wayne as the one receiving the advice.

Bob Sheldon: Let's return to AFIT. You said you were interested in putting more military OR into the curriculum. Were you successful in that?

Jim Bexfield: Successful only from the standpoint of getting people to do master's theses that were military related and getting people to take the optional one-hour classes on military topics. I used the ORSA books on Lanchester equations and search theory for two of the classes.

Bob Sheldon: Did you get any Air Force sponsors for those thesis topics?

Jim Bexfield: There was little input from the Air Staff in those days. Most of the military sponsors were from the Wright-Patterson area. My prior background in AFSA and MORS helped me suggest several topics. I recall advising

students on solving multistage simultaneous games, using queuing theory to improve B-1 avionics maintenance, planning runway attacks and modeling tactical command and control.

My PhD dissertation topic at NPS was on using queuing network theory to predict the performance of the Honeywell 6000 computer system in the Pentagon. I advised a master's thesis on this topic that resulted in a paper that we gave jointly at a computer performance conference in Minneapolis.

Bob Sheldon: What kind of jobs were you looking for after AFIT?

Jim Bexfield: I was offered several jobs including ones in the Air Force Operational Test and Evaluation Center (AFOTEC) in New Mexico and another in the Aeronautical Systems Division at Wright-Patterson. In the end, the job as branch chief in the Bomber Division in AFSA was the one I accepted in 1983. I think Clayton recommended me and we had a house in Washington, DC that we were anxious to get back to.

Bob Sheldon: Did your academic background help you in your job at AFSA?

Jim Bexfield: It did. One example was calculating small sample size confidence intervals. We were running a large bomber model called the Advanced Penetration Model that required about eight hours for one result so we couldn't afford very many replications.

Bob Sheldon: Was that the model that Clayton had some hand in?

Jim Bexfield: Not too much. Clayton focused more on mathematical models and this was a Monte Carlo simulation.

Bob Sheldon: What was the focus of the bomber studies? B-2 or B-1?

Jim Bexfield: It was mostly B-2 at that time. It was fortunate that my MORS presidency ended in June of 1985 because in the fall I was the analytical lead for a B-2 study that was ultimately briefed to the Congress.

That was a very intense time. We were working at the special access level and used the large Air Force mainframes to run the APM. These Air Force computers were used for lots of Air Force business during the week so we had to do all of our runs on the weekend. We gained access to the computers about 6 p.m. on Friday and would return them purged of special access data at 6 a.m. Monday morning. I took the last shift so

I could get the results to prepare a briefing that would go to the head of AFSA later on Monday. During the week we were working 12–14-hour days to prepare for the next weekend set of runs.

Bob Sheldon: Who was the Commander of AFSA then?

Jim Bexfield: The Commander was Brig Gen Leon Goodson.

Bob Sheldon: What issues were you studying on the B-2?

Jim Bexfield: How many did we need and did it need to fly low were the two big issues. Members of the team frequently visited HQ Strategic Air Command (SAC) in Omaha and the Systems Program Office (SPO) at Wright-Patterson AFB to get data. We also used a lot of complex feeder models to calculate inputs such as air-to-air and surface-to-air probabilities of kill.

Bob Sheldon: What kind of data issues did you encounter?

Jim Bexfield: Most of the data issues had to do with the proper representation of the stealth technology in air-to-ground, air-to-air, and surface-to-air attrition models. We also had some analytical surprises. Prior to the study there were 6–8 contractors making modifications to the APM. Some of these modifications added detail to the model. One modification added detail to the air-to-air engagement by explicitly modeling the firing of each missile by the fighter. When we ran the APM with this additional detail we were surprised to find B-52s surviving at a much better rate than the B-1s. The reason proved to be interesting. Both bombers were flying at low attitude with the B-1s flying much faster than the B-52. The interceptor speed was optimized for the B-1B, so when a B-52 was encountered the interceptors were flying so fast that all they could do was get off a single salvo before flying past them. Multiple salvos were being fired at the B-1B, hence the higher losses. Because the interceptors had only one engagement speed, we had to revert to an earlier version of the model during the study. Beware of too much detail in a big book-keeping model.

Bob Sheldon: To whom did you brief your study results?

Jim Bexfield: The study was actually led by someone from another part of the Air Staff. He was responsible for integrating the cost

information with the effectiveness results we were providing. He briefed the study to the higher levels of the Air Force and OSD, and later to Congress. I was usually either in the room or behind the screen to answer questions for all the briefs.

Bob Sheldon: Did you go to Capitol Hill for this?

Jim Bexfield: No, that was the one brief that I did not get an invite to.

Bob Sheldon: Were there any other noted analysts you worked with in AFSA at the time? Did you work with Clayton on some of those projects?

Jim Bexfield: I worked with Clayton every chance I got. He always had useful things to say. I recall working with Tom Allen, who was on the Air Defense side. Ron Trees was the lead mission planner for the bomber study. He is now with RAND. During my tenure in the Bomber Division, I had two below-the-zone colonels as bosses. One was Buck Adams, an SR-71 pilot and the other was Jim Vick, a B-52 pilot with a technical background—both later made general. This was a tribute to the kind of talent AFSA was attracting at the time.

When Lt Col Tom Moriarty retired from the AFSA Chief Analyst position to work as a futures trader in Chicago, I was selected to be his backfill. I was very excited. It not only gave me the opportunity to work very closely with Clayton, it also involved moving to an office next to the General's office.

Bob Sheldon: Was it back on the E-ring?

Jim Bexfield: Yes, and it had a window. The vaulted area that I left is where the airplane hit on September 11, 2001. As Chief Analyst, I worked with Clayton to review and advise all major studies. I was also responsible for overseeing all of the models and simulations used by AFSA and in helping recruit analysts to come to the organization. I also led the low observable (LO) working group charged with improving our capabilities to model LO.

There was a leadership change shortly after I became Chief Analyst. Maj Gen Dick Carr replaced Goodson as the Commander and Colonel Hank Shinol became his deputy. Col Shinol worked closely with Clayton and me. He had a vision that we could improve our analytical capability by implementing a distributed database

management system, using local area networks to improve information sharing, using object-oriented coding of models, and using software architecture to help the analyst design their analysis. The goal of the advanced combat analysis (ACA) capability was to improve algorithms, reduce redundancy through making the sharing of data and models easier, and to enhance the software and hardware environment in the organization. He used almost all of AFSA's contract money to implement this vision and put me in charge.

Bob Sheldon: Was it the grandfather of Joint Data Support (JDS)?

Jim Bexfield: No, it was more like crude Internet or e-room. This was back in 1987–1988. We did a lot with some companies that were at the cutting edge of research in this area.

Bob Sheldon: Were there some early successes or failures on that program?

Jim Bexfield: We didn't have a lot of successes and didn't have a lot of support among the other O-6s in AFSA. The effort was disbanded when Col Shinol retired. He had a good idea but it was outside the AFSA portfolio and before its time.

Bob Sheldon: Were you involved with other modeling and simulation (M&S) developments?

Jim Bexfield: Yes, we got involved in the development of several models, including TAC Thunder, some electronic combat models and a model of JSTARS.

Bob Sheldon: Can you comment on any of the model development efforts at the time—what your philosophies were when you developed the models?

Jim Bexfield: We thought a lot about the appropriate use of analytic models, expected value, and Monte Carlo simulations. We stressed the need for the analyst to understand why the results occurred and never say, "because the model said so." We stressed the importance of good data and we often suggested that the analysts build a notional final brief before they ran the models.

I want to mention another area that Hank Shinol really pushed—advanced technology. We'd spend a lot of time doing research into the potential of advanced concepts like high-powered microwaves. What money we didn't spend on information sharing was spent in understanding advanced technologies.

I do have an interesting Clayton story. One of our responsibilities was to support professional OR organizations like MORS and ORSA/TIMS (now INFORMS). At an ORSA/TIMS meeting in Denver I chaired a panel that included Clayton on how to do better analysis. Clayton, as a three-star equivalent civilian, was entitled to a military aircraft when he traveled. At the end of the meeting we drove to Buckley Field in Denver to board the T-39 to return to DC. We got to base ops and they pointed to his aircraft. We walked out to the aircraft, boarded, and flew to Omaha to refuel. After landing there we noticed a red carpet. There's a three-star general standing at the bottom of the ramp to greet Clayton. Clayton was ushered into a VIP room where the general entertained him. When we landed at Andrews there was no one to greet us. I was fascinated by the contrast in the way Clayton was treated at SAC Headquarters and at the other two occasions. Clayton preferred not getting the special attention.

Bob Sheldon: As Chief Analyst, did you work more with the tactical side as opposed to the strategic?

Jim Bexfield: No, it was fairly even with perhaps a little bit more time on the tactical side, probably because I knew the strategic side better so I could do the reviews faster.

Bob Sheldon: Were there some of your former AFIT students in AFSA at the time?

Jim Bexfield: Yes, there were a few. I recall Lance Roark since I was his thesis adviser.

Bob Sheldon: Did you provide mentoring in your role as Chief Analyst?

Jim Bexfield: A lot of mentoring occurred when Clayton and I reviewed study plans and study results with the analysts. The Chief Analyst's job now is very different from the job that I did, which was more technically demanding. I was involved in recruiting and gave talks at AFIT on what a great place AFSA was to work. But there wasn't an Air Force OR Symposium to run and AFSA did not manage the OR career field for the Air Force. I did get special projects like the time Maj Gen Carr asked me to help retired Lt Gen Howard Leaf prepare a brief on the use of M&S in the Air Force acquisition process for a conference in Georgia.

Bob Sheldon: Any major studies other than the big bomber study during your tenure at AFSA?

Jim Bexfield: Not in the Bomber Division, although I do recall a study on the advanced cruise missile. I did review a number of major studies as Chief Analyst, which I assume you did too since you became the Chief Analyst not long after I left.

Bob Sheldon: Yes, I became the Chief Analyst in 1994.

Jim Bexfield: I think it was still mostly a technical advising job at that point.

Bob Sheldon: What years were you the Chief Analyst?

Jim Bexfield: It spanned the summer of 1986 to late 1988. At the end I led a special project that gave me some time to prepare for the transition into civilian life.

Bob Sheldon: What was the special project?

Jim Bexfield: It was the ACA project that Col Shinol started that we discussed earlier.

Bob Sheldon: Were you still active in MORS when you were the Chief Analyst?

Jim Bexfield: Yes, I was still going to the symposia. I was elected to the Board for a second tour in June 1988, two years after leaving the Board in 1986. It was more common to have re-treads than it is now.

Bob Sheldon: Did you notice any difference in the tenor of the Board in those two tours?

Jim Bexfield: Not really, the issues changed but the general quality of the Board remained high and this trend has continued up to the present.

Bob Sheldon: Let's talk about your transition to military retirement. What kind of job were you looking for?

Jim Bexfield: I wanted to do analysis and I did not want to be used as a marketer. I explored several options. One was to work as a contractor in what is now J8 for a company called Potomac Systems Engineering. I had the opportunity to move to California to work in Lockheed's Skunk Works. Other California options were RAND in Santa Monica and Astron Research and Engineering in San Jose. Scott Meyer, someone I worked with during my first AFSA tour, had started a small analytical firm named STR. He had hired Leon Goodson and Lou Finch—working with that group was very appealing. Synergy, located near the zoo in DC, offered me the opportunity to do a lot of work at home. I also considered

becoming a government civilian. Mr. Vandiver had offered me GS-15 at CAA. I decided not to accept due to the long commute to Maryland and the retirement pay offset that existed then. Then there was IDA (the Institute for Defense Analyses), which was interested in leveraging my bomber study background.

I ended up choosing IDA and becoming the lead analyst for their major B-2 study.

Bob Sheldon: When did you start at IDA?

Jim Bexfield: I started in April 1989.

Bob Sheldon: Your first project was the B-2 study?

Jim Bexfield: Yes. This first one was a SIOP study with an objective to identify the preferred mix of bombers and cruise missiles. About a year after the Cold War ended in late 1991 we did another B-2 study. This time the main objective was to estimate the number of B-2s needed to support major regional contingencies (MRCs). We ended up recommending 20. Lots of B-2 studies were being done at that time. One of our products was a review and comparison of those studies. This study was briefed to the House Armed Services Committee that Les Aspin chaired. This was my first visit to the Hill.

Bob Sheldon: For your B-2 studies at IDA, were they doing simulations, doing quantitative analysis?

Jim Bexfield: IDA didn't have the computer power to run a model like the APM. I ended up developing and coding a stochastic model using ideas from my earlier work in AFSA and some insights provided by the prime B-2 contractor, Northrop at the time. Getting and defending the data proved to be a challenge.

Bob Sheldon: Did you use compartmentalized data?

Jim Bexfield: Oh, yes. I was once again in a SCIF (sensitive compartmented information facility) with no windows for most of the day. We had a very good senior review group, which included Paul Kaminski, later the head of AT&L, General Dougherty, Commander of SAC from 1974-77, and Bill Delaney, a VP at MIT Lincoln Labs.

Bob Sheldon: When you worked at IDA, were you working solo or on a team?

Jim Bexfield: We worked in a small team. George Koleszar was the team lead. Bob Bontz and Bert Barrois were the ECM (electronic

countermeasures) and stealth experts, Chris Zimmerman worked IR (infrared) issues and Scott Berg, an ex B-52 pilot, provided the operational data and helped with mission planning. I was the analyst that produced the results. Dick Nelson led the cost estimating team.

Bob Sheldon: Was the Pentagon handing you your questions and telling you which issues and variables to study?

Jim Bexfield: We got our guidance from Mike Leonard and Barbara Faulkner in OSD/PA&E and George Schneiter in AT&L.

Bob Sheldon: Did you have to coordinate through the Air Staff?

Jim Bexfield: We did not coordinate with the Air Staff as we were conducting an independent study. We dealt a lot with the special access office in Air Force Research and Development. They provided a lot of data on the B-2.

Bob Sheldon: Were your answers consistent with what the Air Force was providing?

Jim Bexfield: I don't recall the Air Force objecting to our findings.

Bob Sheldon: What other kinds of studies did you work on at IDA?

Jim Bexfield: There were lots of them. One of my favorites was concerned with our ability to respond rapidly to crisis. In 1995 I led a study for the Commission on Roles and Missions (CORM) on the future bomber force. Then-Col Dave Deptula (later Lt Gen) was the customer. It was an unusual study in that my team consisted of Dave Perin from the Center for Naval Analyses and Jim Winnefeld from RAND.

Another study I really enjoyed required IDA to win a competition with other federally funded research and development centers (FFRDCs). Congress passed a law that required an FFRDC to do a study on the troubled C-17 program. OSD decided to have a competition to decide which FFRDC would do the study. I played a major role in the IDA proposal, which I like to think resulted in a win over competing proposals from RAND and Logistics Management Institute (LMI).

The study showed that the C-17 had viable competitors, namely the C-5B and the B-747. As a result, McDonnell Douglas changed management, putting their A-team on the C-17 program, which I believe is a major reason it's a success now.

Bob Sheldon: Did you use the metric million-ton-miles for your cargo studies?

Jim Bexfield: Million-ton-miles per day was our most used metric. We used a model called MASS (Mobility Analysis Support System) that was developed by Air Mobility Command (AMC) at Scott AFB to calculate this measure and others such as aircraft utilization. The model was fairly detailed, including aircrew rest, airfield parking capacity, refueling, and much more.

Bob Sheldon: You were still on the MORS Board when you started at IDA?

Jim Bexfield: Yes.

Bob Sheldon: What issues did you tackle in MORS during your second tour?

Jim Bexfield: As a retreat I was not asked to lead committees. I was on a lot of the planning committees and smaller committees like ethics. Of course, I was always on the Rist Prize review. I was more of an advisor versus a leader or someone who made things happen.

Bob Sheldon: Were you on the Board when they instituted the Fellows?

Jim Bexfield: Yes.

Bob Sheldon: What was the attitude of the Board members toward establishing the Fellows?

Jim Bexfield: It's easier to talk about my attitude. I initially thought it was a silly idea, feeling that MORS already had enough awards.

Bob Sheldon: So you were the minority?

Jim Bexfield: Yes, I was a minority. My perception is that Clayton also wondered whether it was a good idea. However, there were lots of people pushing it and there wasn't a strong reason to be opposed so I stayed on the sidelines neither supporting nor opposing the concept. It passed and it came to be.

Bob Sheldon: Has your opinion changed since then?

Jim Bexfield: I have a much different attitude now. Fellows are great. I think the Fellows produced a benefit that I didn't anticipate when I first thought about it. It helps keep people that have served on the Board and made significant contributions to both MORS and analysis involved in MORS. It provides a fellowship that both encourages and makes it easier for Past Presidents and others to stay involved with the Society. Without the Fellows I think a lot of these people would not make nearly the contributions that they do today, like running workshops or

managing publications. I think the Fellows have been a huge success.

Bob Sheldon: Let's get back to IDA.

Jim Bexfield: I'll finish my IDA experience by describing the activities I led and the studies I worked on. A couple of years after I joined IDA they asked me to chair an M&S working group. All of the divisions contributed one person. We met about once every four or five weeks. Our main objective was to coordinate the use of M&S across IDA. We brought in speakers, created a website with brief descriptions of the models that were being used in IDA, and encouraged the sharing of data and models. I think it was a useful endeavor that was still being carried on five years later.

Regarding studies, I did a lot with the C-5 airlifter that answered questions like should we re-engine or make structural improvements? I was also the analytical lead for a C-130 study along with a couple of studies that were spin-offs of the C-17 Cost and Operational Effectiveness Analyses (COEA) mentioned earlier. There were also a couple of B-1B studies that focused on electronic countermeasures and one that supported the Missile Defense Agency on SIBRS-Low (Space-Based Infrared System—Low Earth Orbit). One of my favorites was concerned with rapid crisis response—how capable are we to respond to an unexpected threat. Those are the big study areas that I was involved in. Several of them were at the special access level.

Bob Sheldon: Was the technical aspect of working those studies in IDA similar to what you did in AFSA?

Jim Bexfield: It was similar. In some cases, because of the qualifications of some of the individuals at IDA, we were able to get a little deeper into some of the physics than we did in AFSA. In addition, at IDA there is less use of Monte Carlo simulations and more use of expected value approaches.

Bob Sheldon: What are your thoughts on Monte Carlo versus expected value models?

Jim Bexfield: I tend to think that often you can represent more detail when using the Monte Carlo approach, but they can take a long time to develop, are data intensive, and can demand substantial computer assets (which is less of a problem today). Expected value models can provide some unique insights and it is often

easier to understand results. I think they should be used as complements to each other. Another big effort at IDA that I forgot to mention earlier was a task to help with the verification, validation, and accreditation (VV&A) of the JWARS (Joint Warfare System) model, a large campaign model being developed by the Pentagon. This task gave me some background in JWARS when I later transitioned to the Pentagon.

Bob Sheldon: How far along was JWARS when you started the VV&A?

Jim Bexfield: This was back in the 1999–2000 time period, about 4–5 years after the start of the project. It was probably too early to start to do serious V&V, as so much of our work was associated with planning and concept development.

Bob Sheldon: Was the concept of VV&A fairly mature at that point?

Jim Bexfield: I think the problem was more the maturity of the model than it was the maturity of the VV&A concepts. However, the size and the complexity of the model made VV&A a challenge.

Bob Sheldon: Had you attended some of the MORS VV&A workshops?

Jim Bexfield: I don't think so. It was hard to get to workshops at IDA unless you had a major role. For example, I co-led with Mike Leonard at IDA two workshops. One was on QDR (Quadrennial Defense Review) lessons learned after the 1996 QDR and the other was about a year-and-a-half later on analytical preparations for the next QDR.

Bob Sheldon: IDA has always been good about hosting MORS events and Board meetings. Also, I've known a handful of IDA people who show up at MORS regularly. How do you view IDA's support to MORS?

Jim Bexfield: I think it's strong. Larry Welch, the President of IDA, gave the keynote at a symposium a few years ago. I don't think there was any reticence to support MORS from IDA's standpoint. If a staff member has a role to play at an event, they're going to get strong support from the organization, or at least they did back when I was there; and I think they still do based on what I know about Tom Allen and the work he did there.

Bob Sheldon: Let's talk about your role in selecting Dick Wiles' replacement.

Jim Bexfield: When Dick Wiles decided to retire as EVP, we had to go into the hiring mode again. I was the only one available who had been involved with hiring Dick in 1984. As I recall, this was somewhere around 2000.

Bob Sheldon: Yes, because I was MORS President at the time.

Jim Bexfield: I chaired a committee and, unlike the first time, we did not have a lot of applications. People were surprised that I wasn't interested, but I wanted to continue to do technical work, and the MORS EVP doesn't get that involved in that area. We did have a strong candidate, someone who had served as a MORS Secretary-Treasurer, Vice President for Administration, and Vice President for Finance. After interviewing Brian Engler, the committee felt that he was a real solid candidate and offered him the job.

Bob Sheldon: I recall a lot of us felt comfortable having you lead that committee because you made it seem easy, the whole process.

Let's pick up with your transition from IDA to PA&E. What drove your decision there?

Jim Bexfield: After about 12 years at IDA, while still enjoying the work, I started to get this itch to get back into government. I felt that I could have more impact in the government. In addition, the easy access to my home was no longer necessary. I lived about two miles from IDA and my route home was across traffic so my drive was always quick, usually less than 10 minutes. This was important as I coached my daughter in soccer, softball, and basketball through high school. This need for a quick access to home disappeared when she left for college in the fall of 2000.

I started looking around and in 2000 was offered a position as the lead of the JDS office (about 30 contractors at that time) in PA&E as an IDA IPA (Intergovernmental Personnel Agreement, where I would remain an IDA employee but would work at JDS and would have the status of a GS-15 in the government). However, Dave Randall, my supervisor at IDA, did not think it was the right thing for me at the time, feeling that if I was interested in moving to the Pentagon that I should be seeking a higher-level position. About the same time IDA started a new task associated with the SBIRS (Space-Based Infrared Radar System) and made me the lead

analyst under Tom Allen. I turned down the JDS position and did the SBIRS work.

Shortly after 9/11, Jim Johnson, a Deputy Director in PA&E, was over at IDA and mentioned that he was looking for good candidates to apply for Kevin Saeger's job as the Director for the Planning and Analytical Support Division. Kevin left that job shortly after the Deep Attack Weapons Mix Study (DAWMS) and had just accepted a position at Los Alamos National Labs in New Mexico. I knew Kevin quite well because we were both in a men's group that met monthly to play team duplicate bridge.

Although I wanted to apply, my father's death about three weeks after 9/11 made it difficult for me to adequately complete the application by the due date. I was very involved in taking care of his funeral arrangements and helping Mom get settled. I turned in a very crude application, about two pages long. Most SES applications run about 20 pages and address in some detail one's technical and leadership capabilities. Fortunately for me, about two weeks after the original due date they decided to reopen the position. This gave me time to prepare a much better application. In January of 2002 I interviewed with Barry Watts and Tom Hone, the Director and Principal Deputy Director of PA&E (Jim Johnson's bosses). About a week later Barry Watts called and offered me the position. I said, "Let me think about it over the weekend." I called him back the following Tuesday and said, "Great. I'll take it."

Then I went through the process of improving my ECQs, executive core qualifications. All SES applicants must be approved by the Office of Personnel Management (OPM) before they can assume their position. They base their decision on your ECQs, basically your leadership skills. Ultimately, I was approved with a start date of April 6, 2002.

In my new position I oversaw PA&E's computer systems (roughly 50 people, mostly contractors), an internal software development organization (about 20 people), JDS (about 35 people) and a small group of three people that did PA&E's contracting.

A big surprise occurred when I was at the MORSS in June 2002 when it was announced that Barry Watts had been fired and Dr. Steve Cambone was the new Director of PA&E. In

addition, PA&E was moving from being under the Comptroller to reporting directly to the Secretary of Defense. In July Vice Admiral Stan Szemborski became the Principal Deputy replacing Tom Hone. These changes greatly increased PA&E's visibility and potential for impact.

Dr. Cambone immediately initiated daily staff meetings that started at 7:00 a.m. My first exposure to him was at one of those staff meetings. I recall watching the July 4th fireworks from an airplane that was landing at Reagan the night before. I had just finished seeing my mother in Albuquerque. The next morning I represented Eric Coulter, my boss, at the staff meeting.

I wanted to stay active in MORS and one way of doing that was to become the Sponsor's representative for OSD. Someone else had that position when I arrived. When that person retired in 2003, I was designated as his replacement. In some ways I felt like I was following Clayton Thomas' footsteps and that he would be pleased.

In late 2002 there was another change. Dr. Cambone wanted a single point of contact (belly button) for all of the administrative aspects of the organization. At that time about two-thirds worked for me (computers, contracting, and software development) with the other third consisting of personnel, the editor, and the library reporting directly to Dr. Cambone. I was responsible for leading this reorganization. Everyone that worked for me except those in JDS became part of the new admin division. In turn, I was given the 40-person Simulation and Analysis Center (SAC) that performed studies that supported other PA&E divisions and the 50-person JWARS office.

It takes a while to hire a SES so I led both divisions for the last eight months of 2003. These were real crazy times as I was learning about the SAC and JWARS while continuing to manage JDS. On top of this I was learning about the personnel function and continuing to manage the computers, contracting and the software development organizations. It seemed like I was always going to meetings, one of which was the senior staff meeting where I would give the admin report and Eric Coulter would report on the analysis work I was doing for him.

My new division was called the Studies and Analytical Support Division (SASD). Perhaps

our most significant early achievement was the creation of the Analytic Agenda, an activity to improve the consistency and quality of strategic studies throughout the Department of Defense (DoD). This was a joint effort with OSD Policy and the Joint Staff J8. We created the directive and the instruction that implemented the concept. In my view this has been a huge success and continues to help analysis DoD-wide.

The next big event happened in December 2004/January 2005, when the President directed a major defense reduction. Ken Krieg, as the Director of PA&E, was leading the effort to identify where to take the reductions. He had only one program underneath him—JWARS. JWARS was behind schedule and over budget. The Joint Staff did not support JWARS and the Services thought it was too hard to use and that it would ultimately give PA&E too much leverage as results from studies that used JWARS and negatively impacted Service programs would be hard to counter. In addition, Mr. Krieg felt that he could not keep a program that was not viewed as a success when he was cutting a lot of other over-budget behind-schedule programs effective FY 2006. We used the 2005 funds to transition JWARS to JFCOM (Joint Forces Command) for use in experimentation. This was contingent on successfully completing two activities. One was to successfully build a major database, and we did that inside PA&E. And the other was for JFCOM to use it successfully in an experiment. These two tests were passed. JFCOM took over management of it in early 2006 and changed the name to JAS (Joint Analysis System). In 2008 JFCOM ceased using JAS, but recently the Simulation & Analysis Center (SAC) has used it for a couple studies. JAS continues to live and may in the immediate future, although it never achieved the lofty heights that were envisioned when it was first developed.

Bob Sheldon: Before you came to OSD PA&E, how many people were working for you at IDA?

Jim Bexfield: IDA is a matrix organization. Everybody worked for the division director. During some of the major studies like DAWMS or some of the bomber studies I had anywhere from 8 to 20 people matrixed to me. Some were matrixed full time, but many were part-time, providing 25–50 percent of their time.

Bob Sheldon: Was it a steep learning curve to pick up responsibility for managing a whole bunch of people at OSD PA&E?

Jim Bexfield: Yes. When I had both divisions, I was managing somewhere around 250 people. I was very fortunate to have some excellent group leaders. Jim Stevens has been the head of JDS since 2000. Dave Markowitz, who is now a senior SES in the Army, led the SAC in the early days. Al Sweetser replaced Dave when he retired as a senior full colonel from his position as the lead of the analysis division in J8. Don Bates led the JWARS group, Michelle Greene and Tammy Shelton were my leads for personnel, Tom Dufresne led the software development group and So-Mai Christensen and Dan Risacher were chiefs of the computer group. My hours were long, probably 65 hours a week on average. But since my three kids were now adults out on their own, I could work those hours for a few months.

I had roughly 100 contractors and nine government people reporting to me after the transfer of JWARS to JFCOM. So there were a fair amount of personnel actions. It's not my favorite thing to do, but well worth it as we were making valuable contributions to analysis and decision making in the DoD.

Bob Sheldon: Did you get some SES training?

Jim Bexfield: Yes, three stand out. One was a course at the Federal Executive Institute (FEI) in Charlottesville, Virginia. The course was for GS-15s on an SES track and recently appointed SESs. I went to the four-week course in the fall of 2002. You learned a lot about yourself, leadership, and the right way to maintain your health and physical fitness. In a lot of ways the course changed my life. I had maintained fitness during much of my adult life by participating in or coaching youth sports, but in 2002 all I was doing was playing racquetball on Sundays. The fitness program at FEI taught me how to stretch and introduced me to pilates and yoga, which I continue to do on almost a daily basis.

The second one was Seminar XXI, a course offered by MIT to provide senior defense people with an understanding of the current international environment. I was a member of the 2005–2006 class. The nine-month course consisted of evening lectures once a month and three weekend off-sites. The lectures were by top-notch political scientists

and the discussions were outstanding. It compared favorably to the two-week National Security Leadership course I took in May 1999 while at IDA. This course was offered by Johns Hopkins and Syracuse universities and took place on the John Hopkins campus in Baltimore.

The third course was APEX, which consisted of a week of classes in the DC area and a week of travel to several joint commands. I attended the September 2006 class and met several contemporaries that I interacted with later.

Bob Sheldon: Can you say more about your later involvement in MORS?

Jim Bexfield: I helped lead two major workshops on capability-based planning (CBP), which was something that Ken Krieg, who was the head of PA&E at the time, was very enthusiastic about. I was the PA&E representative to a special group responsible for developing implementing concepts for CBP in the DoD. Mr. Krieg envisioned CBP as a way of helping the DoD make difficult trades across portfolios.

The first workshop took place at IDA in October 2004. The almost 200 registrations exceeded our expectations and the capacity of the main conference room at IDA. Luckily, IDA was able to broadcast the session live in other conference rooms. The opening session included keynote presentations from Ken Krieg, Ryan Henry, the principal deputy for policy, Glen LaMartin from AT&L and MG Ken Hunzeker representing J8. It turned out to be, I think, a very successful workshop.

The second workshop took place in April 2006 at Booz Allen Hamilton in McLean, Virginia. Again, almost 200 attended, which is a lot for a workshop—the typical workshop attracts a little over 100 people. By this time Ken Krieg was the head of AT&L, the number four ranking person on the civilian side of the DoD behind the Secretary and Deputy Secretary of Defense and the head of Policy. I sent an invitation to Ken Krieg to speak at the opening session, but felt it unlikely that he would accept—but he did. And so did Brad Berkson who had replaced Ken as the head of PA&E, Ryan Henry from Policy, VADM E.M. Chanik from J8, and Joe Bonnet from J7. The workshop helped solidify some of the key CBP concepts and helped lead to several DoD initiatives.

In addition, I used my position in PA&E to help get selected analysts from the international community involved with MORS. Australian, UK, and Canadian analysts attended some classified workshops. Individuals from several countries, including some from African nations, attended a workshop on irregular warfare (IW) and counterterrorism.

Bob Sheldon: Did you have other interactions with the international community?

Jim Bexfield: Yes. In April 2004 I gave a presentation on the Analytic Agenda at the Defense Analysis Seminar, which occurs every other year in South Korea. The seminar is hosted by KIDA, the Korean Institute for Defense Analyses. I was able to forge some nice relationships there.

When Lisa Disbrow from J8 went to the White House for a year-long sabbatical at National Security Council, she asked me to replace her as the US representative to the Joint Analysis Panel in The Technical Cooperation Program (TTCP). AT&L is the US lead for TTCP and the goal of the program is to promote collaboration and information exchanges among some of our closest allies, namely Australia, Canada, New Zealand, and the United Kingdom. The panel usually meets once a year in one of the member countries. My first meeting was in March 2004 in Auckland, New Zealand. Joe Bonnet from J8 also attended from the US. Key topics included capability-based planning and IW analysis and modeling. Ben Taylor, initially from the UK and now from Canada, spoke at both of the MORS CBP workshops.

Finally, I was the OSD rep to a Joint Staff-initiated activity that promoted an exchange of classified data with the UK. Meetings were held yearly with alternating hosts. This activity enabled me to develop several useful contacts in the UK analysis community.

Bob Sheldon: MORS is unique compared to INFORMS and other OR groups in that we have a charter to hold classified meetings. Are we also unique in holding classified international OR meetings?

Jim Bexfield: No. TTCP countries hold meetings where classified data is exchanged and I believe NATO (North Atlantic Treaty Organization) has hosted classified meetings in analysis. MORS is, to the best of my knowledge, the only

nongovernment organization holding classified international meetings.

Bob Sheldon: One of the things we have to do every few years in MORS is justify our existence regarding the monetary commitment we get from our Sponsors and our members. How do you view the value of MORS?

Jim Bexfield: At the workshop mentioned earlier on IW that involved extensive international participation, I challenged the attendees at the end to get back to MORS with something they did as a result of going to the workshop. In other words, what actions did they implement that improved their ability to do IW or enhanced cooperation and understanding of IW in their countries? I'm hoping MORS gets some good responses.

My sense of the contribution that MORS is making right now is at one of its highest levels. The reason I say that is that over the last two or three years MORS has held a set of workshops that have been extremely relevant and very useful to the DoD. I think part of the reason is the way of identifying workshop topics. It begins with a request for ideas from throughout the analysis community followed by decisions by the MORS Sponsors at a January luncheon on the four to five workshops MORS will hold in the next MORS year (September–June). Because the Sponsors have had a say in what they were going to be, they often become very active in making the workshop a success. I think that particular process is extremely healthy and is working well. I think that MORS is clearly making significant contributions to analysis in some of the key problems that we face now.

Bob Sheldon: You send a lot of your folks from OSD PA&E to MORS events. How do you view MORS as helping grow your analysts? And how do you grow your analysts in MORS and outside of MORS?

Jim Bexfield: When people go to a MORS event, in most cases we'd like them to have an active role in some way and not just go there to listen. That can be a contractor; it can be government. It's clear that having the MORS experience—and this is especially true for contractors that rarely get to brief their work in the DoD because in most cases it's the government person that does the briefing on it. For the contractors it is a real nice way of maturing them and giving

them some exposure to the outside world, outside of the PA&E world.

Contractors will brief internal to PA&E, but if they're going outside PA&E, it's rare that we have a contractor brief. It's almost always government.

Bob Sheldon: What advice would you give to young and mid-grade analysts as they pursue their careers in OR?

Jim Bexfield: I think one needs a solid base in the OR skills (e.g., probability, statistics, optimization, and simulation) and an understanding of what it means to think like an analyst (e.g., ability to use the scientific method to solve problems). The Washington, DC area has several universities with excellent OR programs. Military analysts may want to go to AFIT or NPS or a private institution to get their master's degrees. You need to have a basic foundation in order to do well.

Next, the junior analysts should look for and take advantage of mentoring opportunities. I was fortunate to have Jasper Welch and Clayton Thomas as mentors when I was a Captain in AFSA. At present, I'm lucky to have two very experienced analysts as the heads of the JDS and SAC—James Stevens and Al Sweetser. They are natural mentors and I try to be a mentor too. Another key is to work for someone you respect and can learn from. Finally, the Educational Colloquium at MORS has been hugely successful and I encourage my junior analysts to attend. They always come back with glowing comments. Perhaps MORS should do more of that.

Another opportunity to learn occurs at the junior and senior analyst exchange at the annual symposium. MORS has used a couple of different approaches in the past; one uses mid-level analysts who may be able to more effectively relate to the junior analyst as they are closer in age. The other approach uses the senior analysts, those with 25–40 years of experience who may be better at explaining the politics of analysis. I think both approaches have merits—perhaps MORS should rotate approaches, using mid-level analysts one year and senior analysts the following year.

Finally, a lot can be gained from historical readings from World War II, Vietnam, etc. I frequently refer to some of Clayton Thomas' works. When you read something that Clayton

wrote, it's always understandable and insightful, so I'd encourage that.

Bob Sheldon: Can you tell us about the transition of the Defense Modeling and Simulation Office (DMSO)?

Jim Bexfield: About three years ago, there was a lot of concern that DMSO wasn't providing useful services to the DoD. Although DMSO was doing little for the analysis community, I took a hands-off approach since analysis is such a small part of the DoD's M&S. I reasoned that they were probably making their customers in training, testing, and acquisition happy. I was surprised to learn that this was not the case and that there was little openness and transparency in the way that DMSO was being run. As a result, there were a lot of new initiatives during program review that used DMSO funds as an offset. Consequently, three of us—Fred Hartman from training, Al Shaffer from the research side of AT&L, and I—led an effort to re-define and save DMSO.

We formed a steering group that has grown to about 15 SESs and a one-star general from J7 to help manage and coordinate M&S in the DoD. The three of us served as tri-chairs with Al Shaffer being the lead since DMSO worked for him. We also established six communities: analysis, acquisition, training, testing, experimentation, and planning. Each community was led by an SES or general officer who was responsible for developing a business plan for his area. The steering group, which met monthly, established a vision and outreach plan, and decided how to allocate the DMSO budget to best improve M&S in the DoD. We stressed increased collaboration across and within the communities. This emphasis was reflected in the new name for DMSO—the M&S Coordination Office (M&SCO). I feel the new approach was a success.

Bob Sheldon: This is June 20, 2011, and we're here continuing an oral history interview with Jim Bexfield. Let's pick up where we left off in the fall of 2007. Talk first about how your job played out from that time.

Jim Bexfield: In the fall of 2007, Brad Berkson was the Director of PA&E and his deputy was LtGen Emo Gardner from the Marine Corps. I still worked for Eric Coulter. Shortly after the 2008 election, Brad Berkson left and Emo Gardner became the Acting Director for almost a year.

His interest was mostly programmatic, so I had limited dealings with him. In June, Congress changed the name from PA&E to Cost Assessment and Program Evaluation (CAPE) with the Director now needing Senate confirmation. I was disappointed to see that analysis was no longer in the title of the organization. In November 2009, Christine Fox, who was then the President of the Center for Naval Analyses, was confirmed as the first Director of CAPE. Emo Gardner retired about three months later and was replaced by VADM Steve Stanley, who at the time was the J8.

I continued to work the Analytic Agenda and had several significant interactions with the international world. In April 2010, I again attended the Defense Analysis Seminar hosted by the Korean Institute for Defense Analysis. Tom Allen led the US delegation; he was in J8 at the time and still is. The keynotes were given by a senior person in the Korean military and General Sharp who was the Commander of US Forces Korea. I co-led, with Dr. Moon, the M&S working group.

After the seminar we briefed General Sharp on the results of the seminar. I enjoyed talking with him—I worked with him in the early 2000s when he was the two-star deputy in J8 chairing a senior group that validated new combatant command (COCOM) requirements. He arranged for us to visit two major sites in Korea so we could appreciate the issues associated with the reposturing of US forces on the peninsula. The biggest change was moving forces from Seoul to Camp Humphreys and allowing families to accompany the soldiers if the soldier was willing to serve a longer tour. A helicopter took us first to Osan Air Base and then to the camp where several large buildings were being constructed to accommodate the families.

Bob Sheldon: Is that the same function with the Koreans that CAA goes to?

Jim Bexfield: Yes. Walt Hollis was the Sponsor for many years. After he retired CAA led the US delegation in 2006, Jackie Henningsen was our lead in 2008 and, as mentioned, Tom Allen led the delegation in 2010. It will be interesting to see who the US lead is in 2012.

Next I left Korea for New Zealand to go to a TTCP panel meeting where I chaired a workshop on IW M&S and presented the US perspective at

two other workshops, one on fast OR and another on a cost estimating issue. This was followed about six weeks later by a TTCP group meeting (the panels report to groups) in Ottawa where I led another IW workshop—this time with more senior participants, including Al Shaffer, who was the US group lead.

In early June 2010 I was asked to chair a NATO specialist team charged with improving data collection and data sharing for our operation in Afghanistan. The charter was expanded to include identifying metrics and associated data to support decisions on when provinces and districts in Afghanistan are ready to transition from Allied leadership to Afghan leadership—an important question as NATO forces leave the country. This turned out to be a pretty major endeavor requiring lots of time and energy as results were needed quickly.

Our first workshop occurred in late August in Brunssum, Netherlands where the NATO headquarters for operations in Afghanistan is located. The workshop attracted 175 people, including several from the International Security Assistance Force (ISAF), the headquarters in Afghanistan for all allied operations. The ISAF delegation was led by an Australian general who led their assessment group. Our primary customers were MG Bagby, the Director of Operations at Brunssum and ISAF. The week-long event produced several products including a data card that helps one discover data sources, a best practices guide for assessments, and suggested metrics and data sources to support transition decision in the areas of security, governance, rule of law, and economic development.

In early December 2010, we held another workshop, this time at the NATO Consultation, Command and Control Agency (NC3A) in The Hague, Netherlands. The 115 attendees included 14 individuals from the Afghan government. At this workshop we incorporated the Afghan perspective into our metrics and matured our data discovery and guide initiatives. Many of us came away with the feeling that the Afghans would benefit a lot from a better understanding of how metrics could help them assess progress both in the transition and later in their government. After all, transition decisions were the purview of President Karzai. As a result, we began making plans to hold

the next meeting in Kabul in Spring 2011. Unfortunately, after briefing General Petraeus and Dr. Ghani (Karzai's lead for transition) on our results and plans, they did not support such a large event in Kabul at that time. As a result, the NATO effort transitioned into a documentation phase, and that's the phase that we're in now with a writers workshop scheduled at the National Defense University at the end of July.

Bob Sheldon: Any update regarding CAPE?

Jim Bexfield: The legislation that formed CAPE also specified that CAPE would consist of at least two major components—one for cost assessments, and one for program evaluation. In the reorganization all programmatic divisions were assigned to one deputy director, Scott Comes. This left the other two deputy directors with small staffs. One of these deputy directors was Eric Coulter, my boss. My division was the only large entity still working for him so he moved the SAC to be a direct report to him. This left me with JDS. This reduced management burden enabled me to take on this very large NATO task. Then in March 2011 Eric Coulter left to work for the Department of Homeland Security. Shortly thereafter there was another shakeup where Eric's organization was disbanded, JDS was given to another deputy director and I became a special assistant working for Matt Schaffer. Several of my duties transferred with me, including the NATO work, the lead of the IW M&S Senior Coordination Group which involves allocating some MSCO funds in this important area, and the US lead to the TTCP panel on joint analysis. We just hosted the annual meeting in the JDS facilities in Crystal City.

In addition, I am arranging for an information exchange between US and Indian analysts. This came about after a brief on analytical capabilities I gave at the last meeting of the Joint Coordinating Group, a group that fosters technology exchanges between India and the US. The current plan is to have analysts from India visit the US in the late fall.

About a month ago, I hosted the annual TTCP joint analysis panel meeting. One of the topics was to compare the role and organization of analysis in the five countries. The UK has a scrutiny group composed of senior analysts that reviews all major analyses before results are presented to senior leaders. More results should

appear in a *Phalanx* article soon (published in *Phalanx*, Vol 45, No 3, September 2012, page 20).

Bob Sheldon: You ran that NATO meeting in Munich?

Jim Bexfield: Yes, that was in March 2009. One reason I was asked to be the chair of the 2010 NATO activity was due to the success of this meeting. The goal of this meeting was to share IW analytical concepts among NATO nations. The meeting took place in IABG facilities in Ottobrunn, which is just outside Munich. The 125 attendees came from 18 countries. We produced a useful report, fostered several collaborations, and resulted in the formation of a couple of new NATO specialist teams. One which is going on right now is developing a common way of preparing analysts from NATO countries to deploy to places like Afghanistan. That summarizes what's happened to me at a very macro level over the last three years.

Bob Sheldon: Let's discuss MORS again. What's your view of the transitions in MORS since 2007?

Jim Bexfield: The transitions have been relatively stark—in some ways good, and in some ways bad. About three years ago, Brian Engler, the MORS EVP, decided to retire. We went through another hiring process, but this time solicited applications not only from MORSians, but also from people with experience running a society that had no military background. There were several good candidates and much debate. Ultimately, the MORS leadership decided to hire Krista Paternostro. Although she did not have a MORS background, her ideas about how to market MORS, how to automate some of its processes, and how to improve its publications changed the whole atmosphere associated with MORS. It made the society look much more professional.

The only negative is that she doesn't understand military OR. This puts more reliance on the MORS Board of Directors to fill that role. Although they are doing a good job filling that role now, it may become more difficult in the future as interpretations of some of the ethics rules have made it much more difficult for government people to serve on the Board of Directors. Basically if they do serve, they need to do it on their own time, the government will not pay for travel, they will need to take leave during

Board meetings, etc. Initially this reduced government participation rather drastically, although I think now government people are becoming more accepting of the process with many willing to serve on the Board which I think is very healthy. I'm also seeing government people more willing to serve on the EC which is very positive.

I do worry about MORS finances after a symposium where we did not charge a registration fee. I think the quality of the presentations and the interest in MORS and the tutorial sessions is strong and I think my old mentor, Clayton Thomas, would be proud. He would be especially pleased with the winner of the 2011 Clayton J. Thomas Award, that being you, Bob Sheldon.

Bob Sheldon: Thank you. You knew Clayton quite well too. Do you have any comments?

Jim Bexfield: I think it's worth mentioning that after Clayton died in 2000, Bob and I made several visits to Clayton's house to sort through his professional files. Clayton was a packrat; he had bookcases and boxes full of military OR items. Jerene, his widow, appreciated our efforts as she wanted his important work to be preserved. We saved about 10 percent and some of it is at the MORS office right now.

Bob Sheldon: Some of it's in my garage.

Jim Bexfield: And about half a box is at my house. And although it was a sad time, it helped me reach closure and probably you too with Clayton's passing.

Bob Sheldon: What are your plans for the near future?

Jim Bexfield: That is a very good question. I could stay as a special assistant for an extended period of time as a roving ambassador for the international world in OR. I could retire from the government and go in a different direction, perhaps in Europe or as a consultant for an FFRDC. Lots of possibilities.

I continue to enjoy cochairing the IW M&S Senior Coordination Group. At our monthly meetings we develop criteria and manage a budget of about \$2,500,000 of MSCO funds as we try to improve our ability to do IW analysis and IW training. Results of the projects we fund are briefed at our meetings. For example, next month we will have a brief from a Joint Staff person who is the US manager of PSOM, the Peace Support Operations Model. This is a UK developed model that is helping us evaluate plans in Afghanistan.

My other cochairs are Tom Allen, the Deputy Director for Studies and Analysis for the J8, and Patrick Mason, who manages the Human Social Cultural Behavior (HSCB) program for AT&L. Our group provided a user perspective for his work.

My involvement with the Analytic Agenda continues, but with a name change to reflect a different emphasis. The leadership in CAPE felt that the Analytic Agenda had developed a reputation with the senior leadership of being too slow and unrealistic. They pushed hard to increase the role of current Operation Plans (OPLANs) developed by the COCOMs in future scenarios to more accurately reflect the true needs of our armed forces. The new name is Support for Strategic Analysis (SSA).

Another change to the Analytic Agenda, now SSA, was in the way force needs were estimated using future scenarios. Previously we estimated our force needs by adding projected force demands for (1) two major wars, (2) protecting the homeland, and (3) conducting foundational activities such as noncombatant evacuations and foreign humanitarian assistance. The result was that almost every system was overstressed. The leadership did not find these results very useful in a constrained budget environment. The solution was to develop a new product called the integrated security construct (ISC), where we manage our future force like we manage our forces today. Each ISC contains at least one major war together with homeland security and foundational events. The difference is our programmed future force is allocated to the events and analysis is used to estimate the risk associated with meeting our war-fighting goals. We identify situations where we have high risk because we don't have enough

force. The forces needed to mitigate this risk are potential areas where we may want to increase our capability. In addition, forces underutilized may provide offsets.

We're in a much better situation. Three ISCs are being developed in an open and collaborative way with the Services, COCOMs and other organizations in the Office of the Secretary of Defense.

Bob Sheldon: I can remember 10 years ago, when we talked about open and collaborative studies, many analysts had negative feelings about that. But now, we hear less resistance in the community. Care to comment on it?

Jim Bexfield: I think people are very receptive to the products we're producing. One big advantage mentioned by the Navy analytical leadership is that their internal analyses are more believable to their leadership because they are realistically representing the contributions of the other Services.

Post June 2011 Update: In CAPE Jim Bexfield completed the NATO study, which won a NATO achievement award and helped organize and conduct a CAPE-sponsored MORS workshop on analytical methods for airborne ISR (Intelligence, Surveillance, and Reconnaissance). Since retiring from OSD in late April 2012 he wrote a chapter for and helped edit a NATO monograph on recent advances in operational assessments, taught a course in military M&S in Singapore, co-led a MORS workshop that supported the 2014 QDR, and consulted with a couple of FFRDCs. Jim remains very active in MORS, participating in numerous workshops and conducting a major review of MORS Special Meetings in the context of the new government restrictions on meeting attendance.