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Interview with Norman Augustine
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Cameron: This is an oral history interview with Norman Augustine, former OSD Assistant Director of Defense Research and Engineering, and Assistant Secretary for Research and Development and Under Secretary of the U.S. Army. Mr. Augustine has served on numerous boards and commissions related to defense and national security issues and has written on the subject. He is retired chairman and CEO of Lockheed Martin Corporation. This interview is taking place at his office in Bethesda, Maryland, on Friday, December 14, 2001. Interviewers are Drs. Alfred Goldberg and Rebecca Cameron of the OSD Historical Office.

Goldberg: What we are interested in is your early government career—positions that you held, your responsibilities, and functions that you performed.

Augustine: I began working for the government in November 1965 in the Office of the Secretary of Defense. McNamara was Secretary of Defense at that time. I happened to be a Republican in a Democratic administration.

Goldberg: There was no political test for your job, was there?

Augustine: One of the nice things about the engineering part of the Pentagon is that it has always been very non-partisan, and we as a group of people who worked in that community have always worked together and helped each other, no matter what the administration. I served in both parties' administrations and it was not politicized, and by and large still isn't. In those days it was even less politically inclined. I worked in the Office of the Director of Defense Research and Engineering, DDR&E, which in those days was a very small office.

Goldberg: Had John Foster taken over by then?

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Augustine: John hired me when I was waiting for my wife to have a baby. We lived in California and I couldn't move until the baby came. The baby was late, and by the time we got there John Foster was running the organization. DDR&E in those days was very powerful. The name has suffered [inflation? Deflation?], or something, over the years. DDR&E is still a singular organization, but in those days it was one of the two most powerful elements of the Office of the Secretary of Defense, the other being Systems Analysis, run by Alain Enthoven. When I first came, I was about 30 years old; I had been working for Douglas Aircraft. I was visiting with a friend who worked in the secretary's office, and was well aware of the aerospace industry and the enormous impact that DDR&E had. I assumed that there were about 700,000-800,000 people there. I was to work in the Defense Systems office, and I asked my friend how many people worked there, and he said, "Well, there is [REDACTED]. There were only about five of us. It was a very small organization. It was a sub-element of DDR&E.

Goldberg: They had tactical, strategic, and so on.

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Augustine: Exactly. I am rambling.

Goldberg: That's all right, we are interested in your assessments and notions of what DDR&E was like.

Augustine: There were two groups that worked for Secretary McNamara. I can best compare it to my area in the west, sheepherders and cattle ranchers, mostly. The Systems Analysis people, with whom I made lasting friends, were the smartest I have met to this day, but there wasn't an ounce of common sense in the whole place. That's an overstatement, but they were brilliant analysts, and the DDR&E people tended to be a little more pragmatic. The organization at the time was very powerful in terms of how it was

composed. It was about one-third civilian that lent continuity and knew the history. There was about one-third uniformed military, who had fought in wars and knew what it was like to get shot at. About one-third were people like myself, who agreed to come for a couple of years, big career, young and energetic, and were there to contribute and learn and then go back to their real lives. I was one of those. Today, unfortunately, the latter group is largely excluded because of the conflict of interest laws. I think we've lost a great deal. It was an outstanding group of people that I worked with in those days.

It was an exciting time. Ballistic missile defense, as it is today but even more so then, was a very hot topic. The arguments were identical to what they are today, 40 years later. The same people, and nobody's moved an inch. The Vietnam War was just exploding at that time. I can remember going each Wednesday morning to the intelligence briefing on video from Vietnam. It was from the Secretary's staff. Even at that time, when there was still great hope of winning the war in a very convincing manner, I was troubled because the reports would come that we had flown some number of sorties and dropped so many bombs but we never talked about what we were accomplishing, or what the impact was. It was a discussion of the amount of effort rather than results.

Cameron: The Secretary never really communicated on that level?

Augustine: The Secretary didn't tend to brief at my level at that time. I will say that never did I see any evidence that he had misgivings about the war. I know that later he wrote about his misgivings, but I never saw any. I wasn't part of his inner circle, so there was no reason for him to share that with me.

Goldberg: There is documentation on that.

Augustine: He didn't make that evident to the people who worked for him.

Goldberg: That's typical, the public face and the private face.

Augustine: Absolutely. It's like running a company—once you commit to do something, you do it. You don't want to take a hill and ask if it is the one we wanted to take. It was an exciting time to be in the Pentagon because so much was happening. It was a depressing time to be in the Pentagon because there were demonstrations around the Pentagon. I remember one time there was a fellow who set himself on fire on the steps of the River Entrance. I recall going down into the concourse one time when there were some people down there reading something. There was a big crowd. There were three people demonstrating and about forty reporters and TV cameras. I was struck by that. Remarkably, the Pentagon was open in those days. Anyone could walk in and walk through the Pentagon.

Goldberg: Just into the concourse?

Augustine: No, you could walk through the corridors. When you went into an individual office, each was responsible for its own security, but you could walk through the building, even park your car in the tunnel. There was a war going on, and that always amazed me. I was in that office for a while, mainly concerned with strategic matters at the time, ballistic missile defense. Some of the others worked on the space program, air defense, Patriot missiles, just getting started, and so on.

Cameron: Did you have certain programs and systems for which you had oversight? How did you relate to the services that were in testing or R&D?

Augustine: Our principal impact was to put the budget together, and doing that we monitored the programs to see how they were going, were they progressing well. Our interface with the services was through the R&D organization of each service—OCR&D in

the Army, the Air Force civilian equivalents. We had a lot of interface with the military.

DDR&E tended to work very closely with the military departments. I would say there was a good relationship there.

Goldberg: Better than Systems Analysis?

Augustine: Far better. Systems Analysis had problems. I particularly recall one contribution I made had to do with the Patriot missiles, called the SAM-D in those days. Secretary McNamara was getting ready to go to Congress and had to make the decision whether to start Patriot or not. I was given a weekend by Johnny Foster to write a twenty-page paper on whether we should or shouldn't, and go through the options. I remember that twenty pages was sacred. I wrote the paper, and tried to make a very balanced argument, and not be biased going in. There were good arguments not to. McNamara liked it so well that Johnny called it a development concept paper, DCP. That became McNamara's decision memorandum for research and development decisions. Someone got the idea that we should have one for every project. We went through three miserable months when everybody hated me because we worked day and night writing these twenty-page documents. They were the decision papers, and the idea was to have all the arguments put down straightforwardly with backup data and have a record of the conditions under which a decision was made, the criteria. And it had to be coordinated by everyone in the Pentagon, it seemed. If you changed one word after it was coordinated, you had to go back and start over through the process, so it was very difficult. I remember one occasion, I think it was the AWACS, when I wrote the concept paper to approve the beginning development of AWACS. It was for the Air Defense Command, for the strategic defense of the continental United States. We tried to get the Tactical Air Command

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interested in it, but they had absolutely no interest whatsoever. Of course, as it has turned out, it has been just the opposite. The Tactical Air Command is the one using it. Writing that paper, I wasn't able to get Alain Enthoven to concur, when everyone else had. I wrote the paper to McNamara. Finally I went to Johnny Foster and told him I was at an impasse. I had done everything I knew to do. He asked if Alain had had the opportunity to read it and study it, and had he made comments. I said, yes, and I had put them all in. He asked if Alain's option was there, and I said, yes, it's option 3. John took out his pen and wrote Alain Enthoven above option 3. I was afraid I was going to jail. But the paper went up that afternoon and came back with the option that the services and DDR&E wanted to go ahead with the program, and I never heard another word about it.

Cameron: Was it option 3?

Augustine: I know that we had signed the right option for him, the one Enthoven wanted. It wasn't the one we wanted. The Secretary did choose our option. I never heard an explosion about the fact that John had signed Alain's name to the document that Alain wouldn't coordinate on.

Goldberg: Foster had enough stature to get away with that.

Augustine: He did, and I think Alain figured this wasn't the one to pick the fight on.

Cameron: He was difficult, wasn't he?

Augustine: Yes—difficult, brilliant, ascerbic, arrogant. That was also McNamara's management style, which was different, not like David Packard and Mel Laird. Bob's was so different. All fine people, and I have high regard for them all, but McNamara's style encouraged confrontation. It encouraged conflict, and I believe he must have thought that it tended to sharpen arguments, brought out arguments from people, and also causes people

to be very careful to get their facts right. There was no quarter given if you caught someone in the other group on an error. Things had to be done right. The only problem was that it destroyed teamwork. There was no sense of teamwork.

Goldberg: McNamara was an impatient man. So was Enthoven. I think they have both mellowed since, that's to be expected.

Augustine: DDRE wrote the decision documents, all of them, and Systems Analysis made one input. They did their own analysis on the same program. We worked on the same programs but did our own analyses. Perhaps one reason that Johnny and the services liked this was because it put the pen in the hands of DDR&E instead of Systems Analysis.

Goldberg: Enthoven had some engineers working for him there in Systems Analysis.

Augustine: Yes, very good ones, and a lot of them have done very well in life. A lot of them are friends of mine to this day. I think I was one of the few in DDR&E who had good friends in Systems Analysis. It served me well, because I talked to them. Unfortunately too many folks got to where they were so locked in that they just disagreed for the sake of disagreeing.

Goldberg: Enthoven had particular trouble with the military people.

Augustine: Very much so, far more than with DDR&E.

Goldberg: I still hear it from McNamara and Enthoven to this day. There are people who still fulminate against them.

Augustine: Bob worked for Enthoven . In the great surge to write development concept papers that DDR&E undertook, we were saturated, we weren't getting them out. Finally McNamara said if we couldn't do it he would get from

Systems Analysis to sign for DDR&E to oversee what we were doing for three months.

You can imagine the explosion that caused.

Goldberg: He had a habit of doing that sort of thing. He did it with others, too. Including my office. I wasn't there at the time and my predecessor wasn't getting out the Secretary's annual reports fast enough, so he sent Henry Glass to do it.

Augustine: I remember Henry, too.

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Cameron: What about the Director, DDR&E, how did you work with him?

Augustine: It was such a small office, there were so few of us that it tended to be very informal. There were layers of management, but only a couple—Van Zandt, Bert Fowler, [REDACTED] and a few others. I had always worked on strategic systems in my life—missile defense, strategic deterrence, etc. It occurred to me that the likelihood of a war with the Soviet Union where we fired large numbers of nuclear weapons at each other was pretty small. I decided in 1967 that actual war was more likely to be fought with conventional forces on a much smaller scale, and that when I went back into industry I was going to work on tactical systems rather than strategic systems. I thought that was where the impact was likely to be. Just before I was ready to leave they asked if I would lead the Tactical Missiles Ordnance Office. With the Vietnam War going on, that office was busy, so I joined that. I decided to stay two more years.

Goldberg: Where was this office located?

Augustine: It was part of DDR&E. I had been in the strategic part of DDR&E and went into the tactical part of DDR&E. It was an unusual switch, people didn't generally make that switch. When I got there, Bert Fowler was my immediate boss. He decided to reorganize, not along lines of hardware, but along end results or missions. It had always been

airplanes, ships, etc. Tactical missiles and ordnance, which included tanks and artillery, etc. It was interesting. [REDACTED] ran the shipping part of the business, and I was running the land [coordinated?] missile ordnance. No, it wasn't land, it was all surfaces. Burt told [REDACTED] he wanted [REDACTED] and me to sit down and reorganize the office along mission lines and assign every project to a mission category. The mission categories we defined were land warfare, global warfare, sea warfare, etc. It was closely aligned with the services, in fact, but that wasn't our intent. OSD 5 U.S.C. § 552 (b)(6)

Cameron: The Air force has always organized by function rather than by system.

Augustine: Absolutely, it makes a lot more sense. [REDACTED] and I sat down and did that, but Burt did a very smart thing. It was like when a mother wants to share a pie with her children and has one of them cut the pie and lets the other one choose first. He didn't tell us which part of the organization we were going to be responsible for, he said to design the organization and he would figure out later who would run what. That was clever.

Goldberg: You asked earlier what these oral histories would be used for.

We have two volumes underway right now on the Vietnam War period, '65 to '69, and '69 to '73. What you are talking about now is going to give the author of the '65 to '69 volume a feel for what was going on in DDR&E and in the Office of the Secretary of Defense that would be difficult to get from the documents. It would take much longer time to dredge it out of the documents than getting it from you now. This is very pertinent and is going to help us with several volumes.

Augustine: It was a hard time.

Goldberg: That's to the point.

Augustine: When I came back to the Pentagon the second time people asked what was different. The biggest difference was that the Vietnam War was ending at that time. During the first time we used to travel a lot out of Andrews Air Force Base, and every time we did there were a couple of medivacs there bringing guys back from Vietnam to go to Walter Reed or Bethesda. It was heartwrenching. (The second time, those medivacs weren't there.) We were constantly reminded of the war. My office looked out over Arlington Cemetery, where the long lines of graves had been dug. It was a very difficult time.

In 1967 we were having trouble with some of our equipment in Vietnam and I was sent over with a group from outside the Pentagon, the Blue Ribbon Panel, to look at the equipment. We spent a couple of weeks in Vietnam. We came home with the impression that we were getting a lot better at running the war in Vietnam than we were in Washington. Coming back, on a Sunday, we landed at Andrews and I went to the Pentagon to pick up my car. I went to my office to call home, and the corridors were full of soldiers in combat gear because there was to be an anti-war demonstration in Washington that they thought might get out of hand. The 82nd Airborne Division was there and the courtyard was full of jeeps and the like.

Goldberg: That's correct.

Augustine: It was done so quietly, I don't recall it hitting the papers. When I got to my office the corridors were full of soldiers lining each side with their gear.

Goldberg: This history of the Pentagon has an account of that.

Augustine: It was very depressing to come home from Vietnam and see the Pentagon occupied by soldiers ready to take control of Washington. Like today, when we have

airplanes flying combat air patrol above us right now to shoot down our own airliners. It is hard to believe.

Goldberg: I think we over-reacted.

Augustine: Could be. But at that time the troops weren't needed, so they went back to Fort Bragg.

Cameron: Did the political atmosphere affect your views about your work?

Augustine: In terms of me, personally?

Cameron: Yes. Did the protests make you uncomfortable doing what you were doing?

Augustine: Quite the contrary. I thought we were doing the right thing. The environment at that time was that the Soviet Union was on a roll, and I remember giving speeches where I had charts to show that every five years for the last thirty years part of the world was red or pink, and the blue was diminishing. I know many people would discredit the domino theory, but to me it made a lot of sense that somewhere we had to draw a line. I had gone off to World War II when I was young, and it had a big impact on my generation. Studying that after the fact, it always seemed clear to me that if somebody had drawn the line a little bit earlier that war might have been prevented or diminished. I felt we were doing the right thing. It was clear to me as it was, I guess, to most people, that we weren't winning decisively. There was enormous personal tragedy associated with it because of people losing family members. It seemed to me then, as it does today, that there are some bad people in this world. If you ask if the world would be better today if we hadn't stood up to Hitler, Saddam Hussein, and go down the list, the answer I think is that it is good to stand up to those people. If so, I see no reason why we shouldn't give our troops the best equipment possible, costing a lot of dough.

Goldberg: That brings you back to R&D. What were the major programs that you associated with in the tactical side?

Augustine: The ones I personally got involved in were things like the Patriot, Aegis, AWACS, the MBT-70 tank, the Cheyenne helicopter. There were a lot of failures in this period, as you know. I was involved in the very early versions of what is now called the Defense Support Program, DSP. They were all highly secret at that time. I was involved in the SR-71 program at the time. Then when we reorganized, I had close air support, responsible for the A-10 and the Harrier.

Goldberg: Did the services give you any trouble on those systems?

Augustine: Not really. We often disagreed, but my relationship with the services was very good. I had very high regard for the people I knew in the services. They were extremely dedicated and competent people. On average, they were better educated than the civilian experts were, which always amused me.

But there were times when it was frustrating. I remember one time when we were trying to destroy trucks on the Ho Chi Minh trail, and not doing very well at it. Someone came to me with an idea that seemed ingenious. It was a little bit like the recent terrorist attacks, to use the enemy's resources. Instead of using our bombs and incendiaries, use the fuel in the trucks themselves. The idea was to use a fragmenting bomb to make a hole in the fuel tank and have a delayed effect where a few seconds later another set of bomblets would go off and burn like a flare at very high intensity. They would land in the fuel and set the trucks on fire. We could not get the Air Force to even look at it. Finally, after a lot of pressure, they decided to do it. The test was to be at Eglin, and they asked me to come down and witness it. I think they thought it would fail and they could get rid of it. The

general in charge of Air Force R&D flew down with me, and when we got there, a truck was sitting there. They were going to start out in the closest position just to prove it would work. I said no, I wanted it at the hardest position, which surprised everyone. They set it off and the truck went up in flames in an instant.

When I got back to the Pentagon, no one ever discussed it, as if it never happened. There wasn't a word about why we had gone down there. With the Air Force cuts those R&D items just died. The things they were already building had so much momentum, nothing ever happened to it.

Cameron: You had no large hammer that you could use on the Air Force?

Augustine: I probably could, but it was a one-man battle and I left the Pentagon about that time. That's the bad side. On the other hand, ninety-nine percent of the time people were responsive and tried to do their job and win the war. I relate that story because there were frustrating times.

Goldberg: Those things happen throughout history; it is not uncommon.

Augustine: I suppose.

Goldberg: It's difficult for the military to make a change of that kind, they resist it for a while, until they have no other choice. Going back to the Civil War, you find instances of reluctance of the ordnance people to adopt something new. It takes a couple of years of experiencing a war before they get around to it.

Augustine: One thing I worked on very hard was precision-guided ordnance, which I became convinced was the answer, and of course in those days it was just an idea. We built fifteen laser-guided bomb kits and sent them to Vietnam. General Levell, who has in a sense been somewhat discredited, used to come by my office and we agreed that we

spent a lot of money on airplanes but not on the ordnance they dropped. We sent the fifteen kits over there, and waited with baited breath to hear how they did. Nothing came back. A few weeks later we sent a message over asking how they were doing. They hadn't used them, and they cost \$15,000 apiece. They had to have high targets for them. I did an analysis that showed them how much it really cost to destroy a target with 500-pound bombs costing \$500-\$1,000 each time. But that was not the point, the point was the total cost of getting rid of the target. We went back and asked them to use them, and of course once they started dropping them they couldn't get them fast enough.

Goldberg: You left in 1970, and came back three years later.

Augustine: Yes, I went back to industry for three years.

Goldberg: So you worked for a short time under Laird and Packard.

Augustine: Yes.

Goldberg: Mel Foster stayed on until about 1974. He had a long run, 1965-73.

Augustine: I left in 1973 and came back 1973 to 1977. At that time they had talked to me about the R&D job and [most of the Air force scenario?]. The Army job particularly appealed to me because frankly, I thought the Army was doing the poorest job of getting equipment. The Army had a long string in those days of starting programs, getting halfway through them, running into a little trouble and stopping, and then starting all over for some great new idea. They didn't seem to be able to get any out in the field. When I came in I vowed that even though there were a lot of systems whose design I didn't exactly agree with, unless I strongly disagreed I would stick with what we had and try to get it through the system. We were just starting the big five—the Apache, Black Hawk, Patriot, Abrams, and the Bradley—and we were trying to get the Stinger going at the time. The Dragon was

coming along. By now the war was grinding down, we were basically out, it was Vietnamized, so to speak. Opposition was building up to building weapon systems, there was a very [anti?] military behind defense atmosphere in the country and somewhat in Congress. All the systems ran into troubles at some point while I was there. As is going to be the case, I think, when you are working at the edge of the state-of-the-art, which we were. Fortunately we didn't make the mistake of stopping and starting over, we toughed it out. I take a great deal of pride in the fact that the Vietnam War, and somewhat the war in Afghanistan, were largely fought with those systems. In every case it would have been easier to cancel than continue at some point. In every single case.

Goldberg: This question has to do with the initiative for these weapon systems, the conceptual initiatives. Where did they usually come from? I would guess from different sources, but from your experience and background, where did the ideas come from for the different systems, ordnance, and all the rest of it?

Augustine: There was a rather formal system, whether it was a requirements generator worked on by half of the users, or technology organizations in each service that spoke on behalf of the engineers. They sent papers back and forth, fancy documents, but in truth, I think the thing that made it work was people informally talking to each other about problems they had and what they could do. I think DARPA made major contributions. It was a thorn in the services' sides, but a very healthy thorn. It was a relatively new idea at the time, it came out of [Spectic ?], as I recall.

Goldberg: In the late 50s.

Augustine: There would be a formal requirement written, usually based on the engineers.

Goldberg: Engineers from government and industry, interactive?

Augustine: Yes, but unfortunately too often industry was treated as a second class citizen, told what we needed and told to respond. Industry went out of its way to come in and share ideas, but the process at that time was pretty much DoD figuring out what it wanted and sending a letter to industry asking how to do it.

Goldberg: Was that true during your whole experience with DoD?

Augustine: Pretty much so. It became less so as the years went on, and industry had more impact with conceptually creating systems than it did in the late '50s and '60s.

Cameron: Did it vary by service? I would think some, like the Air force, would have a closer relationship with industry.

Augustine: The Air Force was much more receptive to ideas from industry, in my experience. Of course, I worked on both sides of the fence. The Navy in those days was not particularly receptive. They just told us what they needed.

Goldberg: Did they tell the other services how to fight the war, too?

Augustine: Yes. The Army, frankly, just wasn't able to get its act together. They would start something, a new general would come in, and they would stop it. In my first tour in DDR&E General Cy Vetts (a wonderful man, a great gentleman) ran the Army's R&D organization. He came to see me and said the Army hadn't had a new howitzer since World War II and they had to have one. I was an aeronautical engineer, I didn't know which end the bullet came out of a howitzer, so to speak. But General Vetts said they really needed it and that was good enough for me. I went out and carried out a huge campaign to get a new artillery piece in the budget for the Army. I fought it through Systems Analysis, through our own budget process, got it in the budget, the president and Congress approved it, and the next year the Army budget submission came in and there was no howitzer in their request. I

asked Cy what happened and he said they had some new people in force development and they thought it was the wrong artillery piece. They were going to study it for a while and start again. They just sawed me off and it made me a lot less enthusiastic about going to bat for them.

Cameron: But you came back to work for the Army.

Augustine: I did, for that reason. I believed then and to this day that we don't win wars without putting people on the ground, or control populations without having people on the ground. I've always been in airplanes, missiles, and space, but if you want to make a contribution, the place to be is in the Army. That's why I went.

Goldberg: In 1973 you became an assistant secretary. What were your main projects and problems then?

Augustine: The main challenge I saw was to institutionalize a process so that we didn't keep starting and stopping, but picked things we believed in, got them through and out in the hands of the soldiers where they would do some good. The projects were the ones I named before, the main ones that we are fighting with today. There is a very good relationship between the OCR&D, the R&D part of the uniformed Army, and my office, as assistant secretary. Jim Schlesinger was Secretary at the time. He came up with a management idea that was one of the most brilliant I've ever seen. Bo Callaway was Secretary of the Army, and at the time the Army had a very small tooth-tail ratio, a large tail-to-tooth ratio, if you want, and everyone was worrying about it. Jim made an arrangement with the Army that for every person we took out of the tail of the Army he would fight to the death with Congress and the President to get that person transferred to a new Army

division. We stood up a new Army post newly equipped. I remember we added three and a third divisions to the Army in brand new [post?] active divisions.

Goldberg: Schlesinger was pushing that, wasn't he?

Augustine: Schlesinger, Bo Callaway, General Abrams, General Weyand,[Weyland?] and General Rogers, everybody in the Army got on board with this idea. I cut the staff in my office significantly and depended more on staff support from the uniformed part of the R&D organization. There was one general in the Pacific who recommended shutting down his command, a four-star general. It was an amazing period. Jim had the right carrot and stick idea.

Cameron: What change did becoming under secretary bring to your responsibilities?

Augustine: I became under secretary in 1975. The thing that happened there is that the volunteer Army had just come into being a year or two before. Most people don't realize that Congress never voted for the volunteer Army, but, as I recall, just let the draft act expire. For those of us there, the issue became to have a volunteer Army or no Army. I remember when we were trying to pitch the volunteer Army and at the hearings it was said that the only way we could get a volunteer Army was to draft them. So that made the challenge of the volunteer Army very important.

Goldberg: What was your position on that?

Augustine: As under secretary, I was kind of backup for that sort of thing. Bo Callaway was Secretary. Being under secretary was harder than being Secretary, I'm convinced.

Goldberg: You do all the work.

Augustine: It wasn't that, but that anything you did you had to ask yourself if the boss would be happy with it. Later I was acting Secretary for four months, and it really was easier, because I knew what I wanted.

Goldberg: We've heard this from many deputy secretaries.

Augustine: Really. I was very fortunate because Bo said we would split the Army in two and I would do the business part. So I had financial management, R&D, and logistics, and Bo did basically the personnel, civil works, and the day to day operations of the whole Army. We each did what we were good at.

Goldberg: Did you have a good relationship with him?

Augustine: Great, I am on the board today of his Calvin Gardens.

Goldberg: Was Marty Hoffman Secretary for part of the time?

Augustine: Bo was asked by President Ford to become his campaign manager not long after I had become under secretary. The assistant secretary job with R&D, which I had just left, was still open, we hadn't yet filled it. When Bo left to be campaign manager, that made me acting Secretary, so for a brief period of time I had all three jobs.

Goldberg: A triple threat.

Augustine: We really got things done. Things really breezed through the coordination, I could sign my name three times. It took one briefing, that was it.

Cameron: Were you considered for the position permanently?

Augustine: At the time I didn't think much about it. I am not a political type. I didn't have any great interest, I was happy doing what I was doing. I was going to leave with the end of the administration anyway, and my life was in industry, as far as I was concerned. But I was considered, and have been told by various people who were there that it was discussed

with the President and that he was hoping to find somebody who might help politically. I sure wasn't that. There were a lot of people in the Army, I have been told since, who were afraid I would resign or something. That never occurred to me. I was there to help for four years and when that was done I was going back to my real job.

Cameron: What was it like working for Rumsfeld?

Augustine: It was great. I didn't know either Marty [Hoffman] or Rumsfeld. All three of us had gone to Princeton at the same time. Marty and Rumsfeld were very close. Marty and Schlesinger were very close. But I didn't know any of them before I started working there. I was an engineer, I built things. Don was a great boss, he was a man of conviction, very determined, he delegated, he backed you up, he would take on a tough battle, he's a damn good boss. You can see that today.

Goldberg: He had that saving grace of humor.

Augustine: He does. He's probably a better wartime secretary than a peacetime Secretary. He takes no prisoners. At that time there was a big controversy within the ground warfare world. France, Great Britain and the U.S. were all building new tanks. They were all different; they even used five different caliber rounds, so we couldn't even exchange ammunition. Each one loved its own tank, as you can imagine. I was under secretary of the Army at the time, I think. Don sent me to Europe to try to come up with a standardized tank. I more or less did. The problem was that it appeared to me that the British had the better gun, a 152-millimeter, as large as the 105. That doesn't sound right.

Goldberg: The 55 perhaps.

Augustine: 155, I guess. The Russians were all 52, I guess, and we were 105.

They were trying out new kinds of armor that looked like we might want to have bigger guns, particularly on a brand new tank that was going to be around for 40 years. So the agreement that we cut was to use the foreign gun, and of course the U.S. gun was built at Watervliet Arsenal over in Sam Stratton's district, and there were hearings.

Goldberg: New York, Albany.

Augustine: Yes. Stratton was a tough guy. By now Bill Clements was deputy secretary, as I recall.

Goldberg: He was all the way through.

Augustine: Stratton called hearings to find out why we had given away the store to the foreigners, because we were going to use the German deal track and the British gun. Stratton was so unhappy that this hearing had to play against the Watergate hearings. The deal was that Gen. Depuy and I were the Army witnesses; Bill Clements left the first day. The hearing went on for about three days, but it began with the first ten minutes introducing Bill Clements. We sat down and Sam Stratton called the hearing to order and told us to stand up and raise our right hands. Both of us were stunned, because that had never happened before. There was also a problem tied in with this because we had chosen a gas turbine instead of a diesel, and some people weren't happy about that. Bill asked if Sam was thinking of swearing us in and Sam said yes, he was. Bill said it was an affront to the administration, and Stratton told him to raise his right hand. Bill said it was an insult to us personally and implied he didn't trust us. Stratton said to stand and raise his right hand. Bill sat there and Stratton said if we didn't to it voluntarily, he could force us to do it. So with that, I leapt up and raised my right hand. So Bill did also. They swore us in. Bill was a feisty Texan, I admire him a lot.

Goldberg: I'm going to check the hearings on this.

Augustine: I'll bet you it's not in the transcript, somebody takes this stuff out.

Goldberg: They put things in, too.

Augustine: It might be in there, you can check it. Anyway, it got off to a terrible start, Bill made some comments to the committee. He finished his statement and then he left, and I sat there for three days and got shelled.

Goldberg: Did they use a 155 on you?

Augustine: They used a 355. There had been a conversation between Gen. Depuy and myself, a phone conversation, the night before I signed the agreement on behalf of the U.S. I asked Gen. Depuy if I was doing the right thing. He said he felt we were, and we had agreed on compromise. This came up in the hearing, and Gen. Depuy testified on what he had said, and I also testified, and that we were in total agreement with what had taken place. Stratton didn't believe us and asked if someone could corroborate it. I said it was a phone conversation, and we were the only ones on it and had testified to the same thing. Stratton said we needed somebody to corroborate it. Sitting right behind me was the Russian military attaché, and I was sure he had heard our conversation. I started to say if they didn't trust us, they could ask him. But I thought better of it.

Goldberg: It's a matter of congressional committees becoming involved in decisions of this type, major weapon systems decisions. You encountered a lot of that, I presume, over the years.

Augustine: Things changed so much. The first time I was in the Pentagon, if you wanted to see if Congress was with you on an issue, you could go over and talk to four people. If they said it was OK, you could go with it.

Goldberg: The war was on.

Augustine: Yes, and also at that time the seniority system of authority in Congress was very much in place.

Goldberg: They changed that in '73 and '74,

Augustine: It was when they got Eddie Hébert, Pat Schroeder, etc., and that tax issue. The authority in Congress broke down. Instead of having four powerful committee chairman that dealt with the DoD—the two appropriations and the two armed services—they now had a situation where there were thirty-five individuals running the Department of Defense. They had huge staffs. The members of Congress were mostly lawyers. If you were designing a high-energy laser and went over and told them it would work in your opinion, the lawyers would turn to their staff members and ask if the laser worked. If they said no, the senator didn't argue. He was a lawyer, not a scientist. There was a real disconnect where the staff had a disproportionate impact, particularly in the R&D area.

Goldberg: They still do.

Augustine: There were people there at the time who had a huge impact, they were very involved in micromanagement. The relationship between the Pentagon R&D organization and Congress, particularly some of the staffs, was much like that between Systems Analysis and DDR&E had been in my prior incarnation. Dave Packard and Mel Laird put an end to that. They wanted a team. So when I came back the second time it had reverted.

Goldberg: To what extent do you think Congress affected the development of weapon systems and their deployment.

Augustine: To a rather considerable extent. They would affect the budget, prolong the development programs, and cancel programs.

Goldberg: They would force programs on you?

Augustine: They would. When I worked for McNamara, Congress wanted the SR-71 to be used for continental air defense. I had done a study and recommended that it not be used. Congress appropriated money and McNamara didn't spend it. What a contrast with today, that he didn't spend it. I think that led to the Anti-Impoundment Act, where you have to spend the money Congress gives you or go back and get permission.

Goldberg: McNamara had plenty of precedent for that, too.

Augustine: Up to that time he sure did.

Goldberg: Truman and Eisenhower did a lot of that.

Augustine: So Congress to this day delays, accelerates, and stops programs, addresses requirements, gets into the deep technical issues. In my judgment, Congress should play a role more akin to the board of directors of a corporation. The analogy is not perfect, but it's not that bad, either. The board of the company that I serve, Lockheed Martin, or any other board I've been on, would never get involved in giving day-to-day direction.

Goldberg: Would you say that, on balance, congressional influence on development of weapon systems and their deployment has been more negative than positive?

Augustine: Yes.

Cameron: Were there specific programs that you were unhappy to see cut or eliminated, that you saw as very important, during your second tenure?

Augustine: During my life there, we really didn't lose any major programs. That was my major goal, to get something done. The ambulance helicopter was canceled, which I

regretted, but it wasn't the end of the world. The one regret I had was when I was assistant secretary for R&D for the Army, the Patriot missile was in dire danger of being canceled. The compromise struck to keep it alive was to have a latent ballistic missile defense capability. Basically, we were instructed, via the Systems Analysis compromise route, to take the tactical ballistic missile defense capability out of it. Even when you got a latent capability for almost no money, you almost automatically got a certain capability with a phased rate radar and a fairly capable missile. We went out of our way to design it out. That was always troubling to me. In the Persian Gulf War it came back and bit us.

Goldberg: To what extent do you think that weapon systems development was politically influenced, either within the administration or because of congressional pressure or other issues?

Augustine: I guess you have to lay down the various facets of the project. One area always suspected to have great political influence was source selection, what company won the contract. In my experience, to this day there is only one program in which I suspect a lot of political influence, that was the F-111. Other than that, I must say I never saw a lot of political influence. We got a lot of phone calls from congressmen, and they made a lot of speeches, and the Pentagon did very dumb things. For example, we had a practice in those days that before announcing the company that won a contract to tell the congressman of that local district an hour in advance. The first thing he would do was call the newspaper. Since he was the first one to know, the presumption was that he was on the inside of the deal. In truth, they had almost no impact. Putting on my hat from the industrial world, I am the only one in the whole aerospace industry that believes this, but I have seen it from the other side. When it came to affecting budgets and schedules, Congress had a major

impact. When it came to subcontract awards, there was political impact in getting funding to keep a program alive. It was good to put work in a certain congressman's district, there were fewer problems if we did that. I think the principal impact was not so much politically motivated as it was meddling. It was very disruptive. I don't think they appreciated that. On a major development program you have 10,000 subcontracts. When the budget gets cut in a major way you have to break most of those subcontracts, and it is very disruptive and costly.

Goldberg: What were your relationships with Schlesinger and Brown? What was your impression of Schlesinger?

Augustine: Every one of these people you mention is a friend of mind today. We socialize and Jim, Marty, Bo, down the line, and also my counterparts in the other services. So I don't forget, the assistant secretary for R&D for the three services, and the DDR&E, and DARPA to a lesser extent, they worked together in those days. We were friends, and there was a great sense of cooperation. Most were mid-career, mid-40ish, and all from industry with the intent of serving a term and leaving. We had been asked to serve the nation, we were proud to do it, and were truly motivated by that. As our tours ended, that group of four became CEOs of , Hughes, vice chairman of General Motors, and myself, and today none of us would take those jobs because of conflict of interest requirements. Once you leave, you have to become a brain surgeon or something, you can't practice your profession any more. I make this point because I think we have lost something. By and large today those jobs are populated by former congressional staff members, which is fine, but I don't think you get the kind of talent I had the privilege of working alongside in those

days. I am not arguing in favor of conflicts of interest or immorality, but I do think in solving the problem we have eliminated a lot of talent.

Goldberg: The acquisition jobs for a number of years have been held by people from industry, almost without exception.

Augustine: Most of the R&D jobs in the services and the other assistant secretaries in the services, many of them come from Congress. The acquisition heads themselves, you make a good point. But talking about those jobs as a group, over the years of working with the people trying to populate those jobs, they are not getting their first choice any more. They are not getting their second choice, either.

Goldberg: But throughout the history of the Department they have all had to take their second, third, fourth, and tenth choices, back to the 1940s.

Augustine: My experience of the 1960s is that you would be hard pressed to name anyone in that era who turned down a request to come and work for the government. Today you are hard pressed to find someone who will. Your point is probably correct, but I think there has been a trend to where there is less willingness to serve. It is very hard to get a Dave Packard to work in the government today.

Goldberg: He said he had to quit when he lost \$20 million for serving for three years. He is a very impressive man.

Augustine: I'm surprised that's all he lost. He is a hero of mine, he was one of my mentors. You were asking earlier about my relationships; they were generally very good. It was good with the uniformed military as well.

Goldberg: How about Bill Clements?

Augustine: We were very close. Bill was an individualist. He saw the world in black and white. I enjoyed working for him.

Goldberg: We went to Dallas and had a good interview with him.

Augustine: I didn't know any of these people when I came to the government. The R&D community within the Defense Department, the civilian part, is a non-partisan group of friends. Whether the Democrats or Republicans come in or out, everyone helps each other and the people coming in. This isn't necessarily true of other jobs in the government. There is camaraderie among the people .

Goldberg: Some people coming in don't want to talk to the ones who were there before. A lot of secretaries don't bother to talk with their predecessors.

Augustine: It's amazing. But in the R&D world, everyone is friends, teach each other's classes, and it was natural to talk to each other and get advice.

Cameron: In 1971 Lockheed was given a loan guarantee whereas in 1998 Lockheed wanted to merge with Northrop Grumman and was turned down. Do you think those differences in outcome are a result of the political situation, the changed nature of the defense industrial base, or the changed relationship of people in the Pentagon and industry?

Augustine: I have never thought about that. I was outside the government when Lockheed got their loan. I was with Martin Marietta at that time, and had no affiliation with Lockheed. Lockheed took a loan guarantee, which they paid for. They paid off the loan and the guarantee, and I think the government made money on it. It probably saved Lockheed, because there was a war going on but winding down, a cold war going on. Lockheed was one of the primary contractors, with great technology, the Skunk works, the C-5, going

down the line, and I suspect the people in government could not afford to lose them. Today I think the attitude would be to let them sink. Not with regard to Lockheed, but there are so many companies building airplanes, and there are less requirements for security. The pressures of the world to support national security are less, and a lot more support of the free enterprise system. With regard to the Northrop Grumman situation, which I think was quite different, DoD made it apparent it wanted the industry to downsize.

Goldberg: Perry started this?

Augustine: The famous dinner in the Pentagon, when I was running Martin Marietta. Perry was deputy secretary, Les Aspin was Secretary, and John Deutch was under secretary for acquisition. They invited about a dozen CEOs to dinner, which was uncommon. I sat next to Les.

Goldberg: Aspin had been in Systems Analysis, and he went to the Hill.

Augustine: A lot of those people in Systems Analysis left and took on significant responsibilities. They were a talented bunch. After dinner we went to another room and Bill put up a chart showing companies in the industry building materials, and a column of what was needed. The two columns differed by a factor of two or three or four. Perry made it clear that DoD couldn't afford them all and sent us out to solve the problem. Some of us would have to go. We all were CEOs, and we were looking around to see which ones were going. As we went out, I referred to it as the last supper, which was immediately picked up on. I took it very seriously, because I thought they were right. At Martin Marietta we combined with Lockheed and other companies bid them up. Lockheed-Martin-Marietta were equals. Northrop-Grumman was in a position where they felt their future was not viable, particularly as a prime contractor to build airplanes. AT the time Grumman's CEO

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said they had lost their capability as a prime contractor, particularly for airplanes, but DoD didn't agree with that. So the company was combined with Lockheed Martin, saving DoD \$1 billion a year, and that's a big deal. Everything was going fine, and in the middle of it John left and Jack Ganzler came in. I think that it why the deal was killed. I agree on different opinions, but I had my own opinion, had the DoD come to us and said it was bad for the country, we would have dropped it immediately. Previously we had checked deals to be sure they were all right. My only complaint with the handling of the Northrop-Drummond deal was that they never told us they were opposed until one day they stopped it out of the blue. To me that was unconscionable.

Goldberg: What was Gantzler's objection?

Augustine: His principle thrust was that Northrop Drummond was indeed a prime contractor for airplanes, and secondly that we were too vertically integrating the electronics sector. We had no indication there was anything wrong with vertical integration. A couple of months Bolling had bought Rockville's rocket engine business and were trying to buy McDonnell Douglas. The Europeans had raised questions about McDonnell Douglas becoming part of Bolling, but the U.S. said they wanted it that way. I can argue about vertical integration, but someone should have told us.

Cameron: There was a big CSIS study at that time, saying that it was good for the country, referring to vertical integration.

Augustine: It was the biggest business disappointment of my career, and the day they told us I was very angry. My regret was not so much that they had stopped a transaction that we had worked on for years, but that they had blindsided us.

Cameron: Did you take this up with Gantzler?

Augustine: We never discussed it. I had retired and was an unemployed chairman, not caught up in the day-to-day things. I was so mad I didn't say a word. Finally John Hamre said, "Norm, say something." Jack and I are friends, and our wives are friends, and we don't discuss that.

Goldberg: If Kaminsky had stayed, do you think it would have gone through?

Augustine: Without question, and if Bill Perry had been there, I would bet my bottom dollar on it.

Goldberg: Let's get back to 1977 now. Did you have Brown sound you out about staying as Army Secretary?

Augustine: No, I had announced my resignation before the election. I wanted to make it clear that I wanted to go back to industry.

Goldberg: You did stay around for some time.

Augustine: No, I left on January 4th, before the new administration came in. There was a period of time before January 20th when the new administration took over. Harold would be Secretary, and they needed an office for him in the Pentagon, and since I was the first one to leave, they gave him my desk and my office. I left him a note that said "welcome to the Pentagon," or something like that.

Goldberg: He was a much less accessible man than, say, John Foster, or others that you served under or with.

Augustine: They were different personalities. Harold and Jim Schlesinger were more alike, more scowly and distant. Johnny was somewhere in the middle. Rummy was easy-going. Not in the sense of being tolerant of sloppiness, but he was accessible, candid,

friendly, outgoing; they were all brilliant people that I admired, but all very different. Packard was totally different from any of them, as was Bill Clements.

Goldberg: And Mel Laird.

Augustine: Yes. I think the Laird-Packard combination was probably the best we've seen yet. We've seen good combinations, but they complemented each other and worked in a way to maximize that scenario.

Goldberg: Laird knew what he wanted to do when he came in, and he stuck with it. He turned a lot of the rest of it over to Packard to handle and concentrated on things he really wanted to get done, particularly in connection with Vietnam.

Augustine: He did that, and I also give him a lot of credit that DoD was never tarnished by Watergate.

Goldberg: He wasn't exactly on the best of terms with the White House during his time as Secretary. He kept his distance.

Now we can get to the post-DoD period and get into a subject that you are very much qualified to speak about. This is acquisition, of course, and the relationship between industry and government and particularly the Department of Defense. Presumably your experience in the government was helpful when you went back to industry. It gave you some knowledge and insight into the way the Department was working that perhaps others in industry didn't have to the same extent.

Augustine: I think it was very helpful, but generally not for the reasons that most people would think and certainly not for the reasons the media would portray. The media would portray my contacts as my buddies and would give me contracts for a pat on the back. That was absolutely not true. For one thing, it would have been an insult to people of that

caliber to do anything like that. I can't imagine people like Bill Perry ever doing something like that. Also, the people changed so fast that the power structure of the Pentagon in both the uniform and civilian, turned over so fast, that the buddy system is not as advisable as it's cracked up to be. The thing that was so helpful to me was that having walked a mile in the other guys' shoes, seeing what drove them and what problems they faced, and understanding what their concerns are. Having read proposals a company had made and realizing what people want on that side of the fence. A contractor setting up a proposal says they are the greatest company in the world. It sounds good when you are running a company, but when you are sitting in a chair in the government it is offensive. You say, "tell me what you did, and I will decide how good you are." It was very helpful to have a perception of the other persons' problems. I like your question because it raises the thought that the opposite should be true, too. Wouldn't it be nice if people in the government had to walk in the shoes of the people running a company that had to make a profit, had to borrow money, had to have your stock price hold up; because if you can't borrow money and you can't make a profit and your stock price doesn't hold up, you can't buy new labs, do R&D, or attract talent. Unfortunately, there is a minimum of understanding in the government today of what it takes to make a company viable. Without these viable companies we would have no acquisition process, we would have to use the Russian system, the arsenal system, which I think is a poor choice.

Goldberg: So what many people feel, that government doesn't have enough benefit of people who have industry experience, is probably so, that indeed it would benefit from having more such people in positions of authority.

Augustine: It would, and not just at the top level. If there were a way that people working their way up to careers in government service and acquisition could spend a couple of years in industry and come back it would, but by and large that doesn't happen. There is a training with industry program that the services have where they take mid-ranking military officers and assign them to a company for one year. That's probably too short a time, but it changes those people. One year we had an officer from each of the three services assigned to us. They were there for a year and came in to see me as they were leaving. A lot of companies would put them in a rotational program, moving them around. We didn't do that, we gave them a job, as employees, and assigned each of them to be in charge of a small depot we were trying to win with competition from the government. We gave each one a service different from their own. The three of them lost their competitions. We gave them programs we could afford to lose, because we knew it was high risk. On the other hand, we wouldn't have been bidding and spending money on them if we didn't want to win them, so we were disappointed. These fellows were so annoyed that the government had cheated them, were not open and honest with them. It was amusing to hear them talk about how badly they had been treated. I'm very confident that those three men are serving the government a lot better today, because they understand the problem the industry has and how hard it is to bid when you don't know what you are being asked for and don't get straight answers. I think a guarded amount of this interchange would help all around.

Cameron: Consulting industry people by the same token at that level, an engineer, say, who knows what the requirements are.

Augustine: It would help so much. The best way to transfer technology is to transfer people. I think we don't do enough of that.

Goldberg: Most of the roadblocks have been established by Congress, haven't they, not so much by the executive branch?

Augustine: I think that's true. The acquisition process has been much maligned over the years; I certainly have been an outspoken critic. The amazing thing is that it's somehow produced the best equipment in the world. Part of the reason for that is that it relies on the free enterprise competitive system with its strengths. Part of it is the really dedicated people, particularly in the military. In almost every major system that I can think of I can name an individual who was project manager at a key time, in uniform, who put his career on the line and were more interested in getting the project done than they were in their own futures. In some cases, they wrecked their careers, and in some they didn't. The system itself could use a lot of improvement, still. It has gotten better, but there have been some remarkable people working in it.

Goldberg: That's true of civilians, too, isn't it?

Augustine: I think it is true that you can usually point to an individual or a few who had a major impact, like the RF-22 program, that our company. One man had a major impact on that. But I like to think that in the things we do in the commercial world our processes are a lot better than the government acquisition process.

Cameron: Reading about acquisition becoming a stronger community in the government and the services, the acquisition people want the core of people who are trained in the field and know the issues, and the Department services don't think that the money types know what the requirements are from the field perspective. This apparently is an ongoing tension within DoD. Who do you think is the ideal program manager?

Augustine: I think the ideal program manager usually wear a uniform, they do know what it's like to actually fight a war, they need to be technically qualified to be an engineer, probably, they should stay in their jobs for a considerable period of time, which wrecks their career. You are not going to run the JSF program for 8 years and wind up as chief of staff, probably.

Goldberg: We had one technical man who got to be chief of staff.

Augustine: We did, indeed, Lew Allen, but that's the only one from the services, I think. Lew is an extraordinary man. He also didn't stay in one job for 8 or 10 years running a program or project. He was a technical man, but not a program manager. You have to stick around, and if you do, it wrecks your career. You can put civilians in those jobs, but I think you lose the conductivity to the services and the operations, so I wouldn't do that. As you say, there is a certain tension there.

Goldberg: There's tension within the service, also, as between the operational people who have their requirements and the technical people who think they know what is needed. You get a continuing interaction there, too.

Augustine: I've always thought there was too much formality in that process that always amused me. For example, when I was assistant secretary of the Army for R&D, there would be a general sitting there representing the users and a general sitting there representing the technical people. The general representing the technical people didn't dare to have an opinion about how fast the helicopter, for example, should go, that was the province of the other general. The irony was that the general in charge of the R&D part of it, for example Gen. Jack Deen, had been in wars just like the other general, but the day he became head of R&D he also became an imbecile in terms of anything to do with the real

military. I could never understand why we couldn't put engineers and operators together in a room and instead of sending letters of requirements back and forth sit down and iterate ideas.

Goldberg: Staff work is staff work, they have to do it that way. Channels, and all the rest of it, has been that way for ever and ever. When Eisenhower became president he tried to institute the same kind of military staff system in the White House, and extend it elsewhere, too.

Augustine: I have seen companies try to institute pieces of the staff system, and it doesn't work. One of the best management techniques in DoD that is not present in industry, in my opinion, but is good, is the executive officer. My executive officers were marvelous, and their role was not speak or make decisions for me, but to organize and know everything I thought and wanted, and after the meeting they knew who to call and what to tell them to do and when. It's a wonderfully efficient system. The problem is that if you did that in the private sector the person would be viewed as a body guard and the whole system would turn on him.

Cameron: To be less than the boss, in other words.

Augustine: That's right, it's a barrier, whereas in the industry or government everyone had these people and everyone talked to each other, relayed things, and everything happened, so when you walked out of the meeting you could go to another meeting. In industry you walk out of a meeting and call 27 people to tell them what they need to do and what was decided. It's just a great system that doesn't work in industry.

Goldberg: The executive assistants were usually superior officers. Many of them got to be four-star, chiefs of staff, chairmen of the Joint Chiefs, right up the ladder.

Augustine: It was used as a great training ground. One year when I was assistant secretary of the Army I decided that during the summer I would invite three cadets from West Point as volunteers to work in my office as interns, that it might be a useful experience for them. I sent a message to West Point to find three typical random cadets, and they sent me three who two years later were Rhodes Scholars and so forth down the line. The military is very good at that.

Goldberg: They are a lot better than they used to be. In the past when they assigned people to OSD, for instance, they were people they didn't really want. Not until McNamara did they begin to realize they needed smart officers in OSD.

OSD
5 U.S.C. § 552 (b)(6)

Augustine: The Army in those days was caught up in a big battle with the Air Force over close air support. The Army had the Cheyenne and the Apache, the Air Force had the Attend, the Marines had the Harrier, and no one could agree. I had been in the middle of that and I was in OSD three years earlier. My exec in the Army, Col. [REDACTED] a wonderful man, was a helicopter pilot and had fought in combat, but also was carrier qualified in F-4s. The Army had gotten smart and during the years I was there trying to referee that battle, and Gen. Glenn Kent of the Air Force and Gen. Auberdet of the Army, the finest people you could dream of, couldn't even agree on how to punctuate the lines we were writing. The Army would ask why a fixed wing wouldn't do something, and the Air Force would say the Army would never understand because they never flew a jet. The Army went to the Navy and asked to send three men through flight school, qualify them on jets, and have them land on carriers. The next time there was an argument they told of their experience landing on a carrier. It was fun.

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Cameron: You mentioned the story of the having pieces of tanks from different places. Do you think that has changed for the better these days, with the move towards more interoperability and joint ventures?

Augustine: It does work better today. One reason is that instead of having government people trying to hammer together agreements, they tell industry to find partners who want to work together. Industry is used to work together. The other part of it is that the budget pressure has gotten to be so great, both here and in Europe. It used to be that the services new we could agree to disagree and get what we wanted. With the budgets the way they are today people understand that they had better do this together. There's another factor, and that is that there is good technology in other parts of the world. It's as good as, or better than, what we have here, and we have more willingness to accept this. We still have a ways to go, but we are much better than we used to be. I remember one time during the war in Vietnam, I was writing the ordnance and other things for DDR&E. There was a situation where Navy had an excess of 20 millimeter ammunition for the F-4. The Air Force was flying F-4s and were very short of 20 millimeter ammunition. They were flying with partial loads over Vietnam. McNamara was having a fit that the Navy ammo wouldn't fit the Air Force, they were different lengths, I think. He was so upset, but it happened way before I got there. With NATO ships at that time, there were 23 different fittings to fuel ships, so when you went to different countries you couldn't refuel. That's much better today.

Cameron: Are there different radio communications?

Augustine: There, it's not so much better.

Cameron: They operate on different channels.

Goldberg: It's as bad as different railroad gauges, isn't it?

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Augustine: Exactly so.

Cameron: If you could suggest a fundamental in defense acquisition procedures--?

Augustine: How many tapes do you have in that machine? There are so many things I could suggest. It's not what gets attention. During my career there has been so much attention by the media and others to toilet seats that cost too much, screw drivers that cost too much, fruitcakes, and down the line, but one thing we could do is to add some stability to the process. Stop the business of constantly turning programs on and off and accelerating or changing the budget and the people, the constant turmoil that we try to manage in. We have 22 programs, and one of the most successful from a technical standpoint during the years I was at Lockheed Martin working on the F-22. We totally revamped the program due to budget changes at least twice. We had more people replanning the program than we had building airplanes for a while. In spite of that, the program is a great success. There are a lot of other programs like that. How do you add stability? You keep people there long enough to be accountable and have an impact; recruit reserves in the budgets so that when things go wrong there is money to get out of it--no commercial program will ever start without a budget reserve. You fund programs not by the year but with the reserves. You put enough money aside in the federal budget to build what you want, or develop it and build it separately. The way we do it, it is more like building a house by the year instead of the complete job. The best thing we can do is stability, and everything else is wrapped up in that.

Cameron: Is anybody listening?

Augustine: I think everybody knows that, it is not an original idea. Where I first got convinced of it was in a DSB 1943 summer study that Dick DeLauer ran.

Goldberg: How do you convince Congress of this?

Augustine: I don't think it will happen unless there is a major disaster. Congress doesn't want to give up its prerogatives, the services don't want to give up their prerogatives, and industry doesn't want to give up its prerogatives. We could do better, and we are, but we are still tinkering at the margins.

Goldberg: We could do almost everything better.

Augustine: We had made progress in recent years, during Bill Perry's regime and others, but I have always said there should be a special place in hell for people who serve the government, don't solve problems, and then go outside and criticize those who are still trying.

Cameron: Do you think an out-range R&D budget change or funding would be a major step?

Augustine: It would help a lot. We are the only major country in the world, that I know of, that does it on an annual basis. In the UK they make it very hard to start a new program. Ensure that the technology, requirements, and money is there. Once you have done that, put the money aside, improve it and don't tinker, let the people work their way through the problems. Once something fails, unless it's clearly violating the laws of physics or the requirement has evaporated, tough it out and make it work.

Goldberg: Instability and uncertainty are part of our society, our whole way of life. Our whole governmental system depends on checks and balances, divisions of power and all the rest of it. It's always changing--the executive branch, members, Congress, all are changing. The Greek philosophy that all is flux, is still right.

Augustine: It's true in our commercial business, but we take steps to manage those uncertainties and to minimize them. The government acquisition process doesn't do that.

Goldberg: You can get fixes from time to time.

Augustine: You can hedge your bets. Just the simple matter of financial reserves and schedule reserves. We wouldn't start a commercial program without reserves. We know we will have problems, we are not the smartest people in the world. In DoD the presumption is that you will never make a mistake in the 18 years it takes to develop the system. You spoke about the checks and balance system, because one of the times I have gotten in a fair amount of trouble was on a TV thing of some kind having to do with the role of the presidency. My piece was the presidency as it relates to financial acquisition parts of things from the government as a whole, not just DoD, and I made the comment that our founding fathers had come up with a system of checks and balances with the three branches of government that worked extremely well in terms of managing political things, butt it's a rotten way to manage a business. The next day there was a picture in the paper of President Bush, with a statement by me that "Augustine says that the presidency is a sorry way to run a business." It implied that I was part of a coup, and that was the last thing I needed, working for Martin Marietta at the time. I felt terrible about it. We tried to get a retraction, but the retraction sort of said that "Augustine said all three branches are a sorry way to run a business."

Goldberg: You can't win.

Augustine: No, it's kind of a funny ending, and the chief of staff was John Sununu, and I told him how badly I felt and tried to explain the context. I didn't think anything would come of it, but later I got a handwritten note from President Bush saying I didn't need to explain, and if I

didn't think he didn't understand about being misquoted in the press I was more naïve than
he thought. I felt better about it.