

## Charting a Technical Revolution

# An Interview with Former DDS&T Albert Wheelon (U)

Ed Dietel



Albert "Bud" Wheelon, 1966. (U)

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Ed Dietel served in CIA’s Office of General Counsel.

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*Editor’s Note: Albert “Bud” Wheelon only worked in CIA for four years, first as Director of the Office of Scientific Intelligence from 1962 to 1963, and then as Deputy Director for Science and Technology (DDS&T) from 1963 to 1966. Nevertheless, his contribution during that period was so important to the Agency’s subsequent development that he was named a Trailblazer during CIA’s 50<sup>th</sup> Anniversary celebration. Among his other accomplishments, Wheelon conceived and put into development three new satellite systems that formed the backbone of the Agency’s overhead program for the next several decades. Perhaps even more extraordinary is the fact that Wheelon was only 34 when he became DDS&T. (U//FOUO)*

*The son of an aeronautical engineer, Wheelon grew up in Los Angeles and earned his B.Sc. from Stanford in 1949, and his Ph.D. in physics from MIT in 1952 at the age of 23. He amazed his professors by passing the two-day Ph.D. qualifying exam soon after arriving at MIT, despite the fact that he had not taken many of the courses ordinarily needed to prepare a graduate student for the grueling exam. Wheelon was not without outside interests. He first got to know MIT’s influential President, James Killian, by working with him to form a rugby football club, which is still a part of student life there after 50 years. (U//FOUO)*

*In the following interview excerpts, Wheelon discusses his early work on ICBM guidance systems for the Air Force, (b)(1)*

*CIA’s role in satellite reconnaissance in the 1960s, and the three new overhead systems he set into motion while DDS&T. (S//NF)*

*Ed Dietel of the CIA History Staff’s oral history program interviewed Dr. Wheelon on 17 October 1998, in the latter’s home in Santa Barbara, California. (U//FOUO)*

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*Shortly after graduating from MIT, Wheelon joined the newly created Ramo-Wooldridge Corporation, a high technology firm in Los Angeles founded by Simon Ramo and Dean Wooldridge. (Ramo-Wooldridge merged with Thompson Products in 1958 and renamed itself TRW in 1965.) The Air Force’s advisory “Tea Pot Committee” of prominent scientists and engineers called for a crash program to develop an ICBM in 1954, and the Air Force responded by creating the Air Force Western Development Division (WDD) in Inglewood, California, under Brig. Gen. Bernard Schriever. WDD, in turn, employed Ramo-Wooldridge to provide systems engineering and technical direction for the entire project. (U//FOUO)*

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DDS&amp;T Wheelon

When I went to work for Ramo-Wooldridge, their only job was to support the Tea Pot Committee, which was chaired by [former AEC commissioner and world-renowned mathematician] John von Neumann. It also included Prof. Clarke Millikan of Cal Tech, Ramo and Wooldridge, Charles Lindbergh, Jimmy Doolittle, [MIT professor and, later, Special Assistant to President Kennedy for Science and Technology Jerome] "Jerry" Wiesner, and [Hughes Aircraft General Manager and member of President Eisenhower's Scientific Advisory Committee Laurence] "Pat" Hyland. A breakthrough in the H-bomb design had just taken place, and so they were chartered to rethink the ballistic missile program that would carry such weapons. This was von Neumann's charge. The committee was all very top secret, but it needed some staff work done. I was the only one available. It was like being the only graduate student with 10 full professors, with each one giving me an assignment once a day, and then I would work all night trying to get the answers. It was a lot of fun, and I learned a lot. I also got to know these people. To be in on that activity from the first day was really exciting, although I was just out of school, and they were all quite senior. (U//FOUO)

Talk about youthful hubris! I worked for the Tea Pot Committee for about a week, and then got my clearance. I asked, "Okay, what's the job around here?" Wooldridge answered, "We are going to build a missile that's going to go 5,000 miles, and it is going to hit within a mile of the target." I was

so inexperienced and optimistic I said, "That's a good idea, let's get started." I had no real idea how hard it would prove to be. (U//FOUO)

I spent nine years working on the long-range missile project. It began in a clandestine way and was actually run out of a former Catholic school in Inglewood. Closed by the diocese, the school was rented by the Air Force, and about 20 of us started Atlas, Titan, and Thor programs there. Jim Fletcher, who was twice the head of NASA, was my boss. I worked on guidance systems and tried to understand how to guide long-range rockets. I made some fundamental contributions, and I still get requests for the work I did during that period. (U//FOUO)

There were two main efforts to build ballistic missiles, and they were competitive. The Army's at Huntsville, using the German group out of Peenemunde around von Braun, and the Air Force effort to make long-range rockets under Ben Schriever, with Wooldridge and Ramo as architectural advisers. The factories that built components were all over the country for both teams, but those were the two centers. The Navy later got into the business with the submarine-launched Polaris, Poseidon, and Trident missiles. The Air Force long-range missile program was centered in Inglewood right by the airport. I was one of the foot soldiers in that operation. Occasionally, I would brief the von Neumann group, because of the work I was doing. (U//FOUO)

### First Contact with the CIA (U)

My connection to the Intelligence Community (IC) began in 1957 and was the result of improbable coincidence. We had worked hard since November 1953 trying to make our missiles work. For several years, it had not been going well because we had not yet learned how to build long-range rockets. Although I was far from an executive during this time, my visibility was a little higher than one might have expected. (U//FOUO)

CIA had been running U-2 missions since 1956, but I had no inkling of that program. At that time, photo interpreters were primarily converted forestry majors from college and had little technical experience outside of photogrammetry. Someone finally went to [DCI Allen] Dulles and [DDCI and Air Force General Charles] Cabell and said, "Look, we are running these incredible risks to fly these missions, and yet we are not getting much in the way of technical information." They argued that "We simply must get some people who are building our own missiles to come in and look at this material." Dulles agreed, and they formed JAM SESSION in September 1957, working at the Steuart Building, downtown at the old National Photographic Interpretation Center (NPIC).<sup>1</sup> (U//FOUO)

<sup>1</sup> JAM SESSION invited 26 US experts on nuclear and missile technology to Washington to work alongside Agency photo interpreters for three weeks to maximize exploitation of U-2 photography on the Soviet nuclear and ICBM programs. (U//FOUO)

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Schriever's ICBM group on the West Coast was asked to send somebody. As they always do, they selected two fellows who were senior but who ran into some sort of difficulty on the way to Washington. At the last minute, I was selected and went to Washington. I had no idea what I was getting into until somebody handed me a briefing form for TALENT KEYHOLE and other materials. I was suddenly parachuted into the wonderful world of NPIC. They also gave us access to COMINT and the telemetry data, which they did not know what to do with either, by the way. So it was purely accidental that I became involved in intelligence activities. (b)(3)(c)

“Well,” I thought, “thank heaven the government has the wit and the courage to create a U-2 program and is willing to run these risks.” I kind of knew where we were in the missile business, and was amazed at how far along the Soviets were. It looked to me like we were in a real horse race. It also seemed to me that there was a lot of good information that needed analysis. A lot of good data was being taken, and not much was happening to it. Everybody is kind of a photo interpreter, and you know what it means if you have got the background. It is like reading X-rays. If someone has looked at lots of cases of lung cancer, he can spot it pretty accurately. My sense was that a lot more could be done with the telemetry data that was being gathered. It was a gold

mine waiting to be developed, and it seemed to me that a real contribution could be made in that area. (C)

I thought the people at NPIC and CIA were terrific. The dedication and the commitment of the career intelligence officers were quite remarkable. It occurred to me that doing intelligence analysis was a lot like doing crossword puzzles. It is also the closest thing to doing physics that I have ever found, which is probably why I was attracted to it. Let me explain how physics is done. You do an experiment and get a result. You usually do not understand it completely. You think a little bit and generate an explanation for the data. You go back and forth between theory and experiment to do physics. It seemed to me that the intelligence business was just the same. You have a lot of incomplete experimental data. One has to work with only a small fraction of the puzzle pieces and try to establish a hypothesis that could explain the data at hand. This model usually makes other predictions which can be compared against other data and suggest further collection efforts.

The intellectual challenge is the same as doing science. (U//FOUO).

#### **The Soviet Missile Telemetry Puzzle (U)**

We all worked hard at the Steuart building for a month, and then I went back to Los Angeles. Schriever and Ramo asked me about this experience. I responded that, “I thought we did some good. We lifted up the tent flap and saw what was inside. There is a lot more that can be done there, but that is not our job.” But Schriever picked up on this. He had been part of the U-2 development and had a keen interest in reconnaissance. Schriever said, “That was a good effort, but we ought to keep this going.” He arranged to have the Air Technical Center at Wright-Patterson Air Force Base create an intelligence cell at BMD, Ballistic Missile Division [as the Air Force's Western Development Division was now named]. They assigned a project officer, a communications person, and security guy full time to us. Ramo directed me to find good people in our organization to become cleared. When we started working on the data, it was really a continuation of JAM SESSION on the West Coast, and we called it WESTWING. We had the U-2 photography and some COMINT. One

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community effort, like doing a family crossword puzzle at Thanksgiving. Gradually, we got all

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**CIA and TRW (U)**

Our relationship with this group at Wright Field was not going well for several reasons. They felt that our work should not be distributed if it did not support the Air Force position in USIB [the United States Intelligence Board]. They felt that our job was to support their policy positions and not to do research. They refused to circulate work that we did that did not agree with their official position, whatever it might be. (U//FOUO)

There was an important debate going on at that time, as to whether

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but the Air Force position was that it was large, perhaps because they wanted to build MX. So they suppressed our results. Finally [Ruben] “Rue” Mettler [director of Space Technology Laboratories, a Ramo-Wooldridge subsidiary] and I and Jimmy Doolittle—who was then involved—said “We just cannot go on like this. We are not here as part of a propaganda machine; we are here doing serious analysis. Our standards and theirs just are not the same.” TRW withdrew from the program, and that was difficult. Mettler and I put our important relationship with the Air Force on the line and lost some friends in the process.

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Director of the Office of Scientific Intelligence (OSI) Herbert “Pete” Scoville and Deputy Director for Intelligence (DDI) Robert Amory had known of our work and stepped in. They said, “We will

Much to its credit, NSA [with the Air Force and the Army Assistant Chief of Staff for Intelligence] organized a community effort to solve this problem in 1958, drawing largely from nongovernmental groups. This led to the establishment of TEBAC [Telemetry and Beacon Analysis Committee] in 1960. It was then that I first worked with [future Secretary of Defense William] Perry. Actually, we had been classmates in school at Stanford, but we met in this business when Bill was at Electronic Defense Labs. Future DDS&T Carl Duckett was involved down at Huntsville and had been part of the JAM SESSION operation. This group met every three months and provided an important clearinghouse for new results and difficult problems.

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I still had another job at TRW designing guidance systems for the missile program, and we started the Minuteman program in 1960. And I had a larger hand in that program than just guidance. I might add that I had no relationship to the CORONA [satellite reconnaissance] program during this period. I was just working on the missile programs; only a few people were involved in CORONA. (U//FOUO)

sponsor your analytic effort as a service of common concern for the Community." We had to think hard about that because our primary customer was the Air Force. It seemed to us that CIA understood what the problem was. They offered, "Look, we will publish your work, whether it agrees with our position or not. We will simply fan it out to the Community for whatever constructive purpose that serves. We will try to get you the raw data. All we ask is that you have integrity in the research you do." That sounded pretty good. It was also clear to us that they had a good deal more influence in terms of getting us data than the Air Force had, or were at least prepared to try a lot harder. So, in the summer of 1960, we started. This effort became Project EARSHOT, an OSI project that became a Community asset. (S//NF)

There was another issue for the analytic effort that we had been fighting and losing. NSA had been collecting data but did not know what to do with all the information. We learned that it was sitting in a vault at NSA

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Well, Scoville solved this problem almost immediately when EARSHOT began. Pretty soon we could

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photography. It was an exciting enterprise and did a lot of good for the estimates. (S//NF)

#### Joining the CIA (U)

*When Wheelon agreed to join the Agency in 1962, he did so with the understanding that it would be for at least three but not more than four years. (U//FOUO)*

I still had a job to do at TRW. I was by now director of the Radio Physics Lab, but my heart was really in this intelligence analysis. When Pete Scoville moved up to become Deputy Director for Research, he and Bob Amory approached me, saying "Will you come back and fill in for Scoville?" This was in February 1962, and I thought about it hard and finally said, "Okay, I'll do it." I had missed World War II and Korea. World War II because I was too young—16 when it was over. During the Korean War, I was a graduate student at MIT. I went down at my own expense to Washington to volunteer for the Air Force. MIT President Killian and others in the physics department found out about it. They said "This country needs nuclear physicists, not second lieutenants in the Air Force." They called their friends in Washington and killed it. They

were probably right, but I had not served in the military. I thought, "Well, it is my time to go." (U//FOUO)

I was awfully young—just 33 at the time. I was also pretty brash. People at CIA knew of the work that I had done before coming, so they were accepting. I believe they were also a little concerned that I might make unaccustomed demands. A mixture of applause and apprehension marked my arrival. Others in the Directorate of Intelligence were very welcoming. Paul Borel [Director, Office of Central Reference] and Otto Guthe [Director, Office of Research and Reports] and Jack Smith [Director, Office of Current Intelligence] were saying, "Good, got a real scientist around here, a real technologist." They saw it as strengthening the intellectual capital of the Agency. For the people within OSI, it was a time of adjustment. Pete [Scoville] was a comfortable person. They knew him well and enjoyed a warm relationship with him. By contrast, they had none with me. So that was different. Several of them thought they might have succeeded Pete. (U//FOUO)

The biggest problem was that I had been told that OSI would go with Scoville to the Directorate for Research [which was renamed the Directorate of Science and Technology in August 1963]. That was my understanding when I accepted the job. I arrived in Washington to find that Ray Cline had replaced Amory as DDI and was successfully insisting that OSI not be moved. I suddenly found myself working for a man I had never met and, frankly,

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I did not much care for. I admired his intellectual gifts, and he worked hard. On the other hand, he felt that analysts are fungible and that an economist could do just as well on a scientific problem as a scientist. He may have been right, but that was not my belief. Had I known that this was the situation, I certainly would not have joined the CIA. (U//FOUO)

All of a sudden, I had transported my family across the country, taken a big pay cut, folded up my house in California, and rented a place in Washington, and I was working for a man who really did not understand what I was trying to do. Instead of working for Scoville, who understood perfectly and would provide support, I needed to persuade a stranger that what I was doing was worthwhile. (U//FOUO)

In addition, OSI was a little edgy with a new, young director. There was obviously a lot of talent in the office, not all of which was being used effectively. Future DDI Sayre Stevens was a good example. When I arrived, I asked him, "What are you working on, Sayre?" He responded, "Soviet windmills." I said, "You must be kidding." He said, "No, this is my assignment." I said, "Look, there is a real job to be done around here. We have to start doing it." Future DDS&T Les Dirks was a Rhodes Scholar and a MIT-educated physicist. He was quite young but obviously talented, and I soon found important things for him to do. (U//FOUO)

I went around re-aiming people. That irritated some folks, but I felt that we had a lot of important

problems to solve. I felt that the EARSHOT group I had left on the West Coast was going pretty well in the missile area but that we needed to generate similar activities drawing in national expertise and couple it with the Agency, rather than occasionally interviewing people. I went to the Livermore Laboratory of the AEC and set up a project to evaluate Soviet and Chinese nuclear weapons activities. We set up a similar project at Sandia.

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[redacted] There was a pattern then of trying to augment the indigenous CIA capabilities with outside expertise. I believe that went okay. It seemed to go well and did not crowd the old hands in OSI. (S//NF)

Still, someone from the [Office of] the Inspector General (IG) showed up to interview me. He said in essence, "We have got some unhappy campers in OSI. What do you have to say?" I responded, "Well, I guess you are probably right. There is a land shift going on here." Inevitably, some people feel discomfited, but I was hired to accelerate this activity and make it more relevant, and OSI under me was nowhere as comfortable as it had been under Pete. It was also doing a lot more intelligence analysis and doing it better. (U//FOUO)

**The Cuban Missile Crisis (U)**

I worked long hours during my first summer at CIA. I was there until about 10 p.m. almost every night. My wife and kids were still on the West Coast, because we could not sell our house, and I was living at Howard Roman's house while he and his family were away. I did not have much to do at night, so I started reading clandestine reports, which I had never seen before. Although many were uninteresting for our work, I became convinced during those summer months that something was going on in Cuba. There was one report that really caught my attention, but the sheer number of reports indicating missile deployment on the island bothered me. (U//FOUO)

An estimate underway by Sherman Kent's Board of National Estimates was addressing the question: Will the Russians put missiles in Cuba? The estimate was clearly coming down on the side that they would not. That was the signal that President Kennedy hoped to hear from the Agency. DCI John McCone was getting married again after losing his wife during his first year, and he was out of action. He had disagreed with this approach, but he was not around to enforce his view. DDCI [and Army Lt. Gen.] Marshall Carter was left to deal with whatever came up. The estimate was rolling forward on this basis. I was reading the clandestine reports, but I was not central to estimates on Soviet intentions. Nonetheless, I went to Kent and had a long discussion. I said, "Sherm, look, I am new around here, so you should discount a lot of what I say. I am

not a professional intelligence person, but it looks to me like the evidence is overwhelming that they have missiles down there." It was late, but we talked for several hours. Finally, he said, "I respect your view, but this is the way we are going." (U//FOUO)

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It said that they were moving large, trailered loads at night. These loads were so long that they could not make the corners and had to remove the corner mailboxes that are used in Cuba and other countries. The report said that they had to cut the posts down to get the trucks around the corners. I thought to myself, "People do not make that up, it must be real." I then concluded, "If he has got that part right, he has probably got the rest of it right. It looks to me like they are putting missiles in there." I mentioned my concern to Carter, "I think we are heading down the wrong track on this estimate, but I am pretty new around here." We actually had a debate in the Guided Missiles and Astronautics Intelligence Committee, where I was chairman, but I was alone in my view on Cuba. Sidney Graybeal was the Agency rep and he argued against me, taking Kent's line. He said, "Oh, you can't believe those clandestine reports anyway." I had brought the reports with me. I said, "It looks to me like they are putting in missiles," but everybody hooted me down. I said, "Okay, I am just the chairman." (S)

When it was over, McCone invited me to his office and said, "You and

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I were the only ones that got that one right. I will tell you how I got my answer, if you will tell me how you got yours." I told him the story I just told you, and he told me his version. He explained his view: "They put SA-2s in Cuba first to keep us from learning about something important. The only thing that important was nuclear rockets." We had quite a conversation at that time, and I believe he judged that I was prepared to take an unpopular position. I believe he liked that in me. (U//FOUO)

Following the missile crisis, another fellow from the IG staff came to see me. In essence, he was there to scold me, saying "How come you broke ranks with the DDI and the Office of National Estimates? How come you went against the grain?" I said, "You ought to be glad that somebody around here is yelling fire when there is a fire going on. You have got a nerve coming into my office and trying to brace me with an organizational loyalty issue. Where do you get off?" He was stunned, and left. There was the fraternal, go along, get along attitude in many parts of CIA. (U//FOUO)

#### **Taking Over the S&T (U)**

*Pete Scoville resigned from the Agency in 1963. He had become*

*frustrated with what he perceived was lack of support from DCI McCone for his agenda in the Directorate for Research. In addition to impressing McCone during the Cuban missile crisis, Wheelon had the backing of James Killian and Jerome Wiesner. One of Wheelon's first acts as DDS&T was to urge McCone to reverse the erosion of CIA's responsibilities for overhead systems, which had been losing influence since the foundation of the National Reconnaissance Office in 1961. (U//FOUO)*

I made the following case to McCone, "There are a number of important things in this Agency. Killian and Land have urged you to build up the technical capabilities of the Agency. Of those activities, the most important thing is overhead reconnaissance. In my view, only that collection technique can really answer the tough questions we face. We need to do more and better reconnaissance. And there is a lot more that can and should be done. CORONA only scratches the surface, and we cannot use the SR-71 [the supersonic spyplane, also known as the Blackbird] and the U-2 over the Soviet Union because of the Eisenhower commitment. Satellites are not only the best way, they are the only way we are going to get those answers." (U//FOUO)

I expressed my belief that, "The Pentagon—not necessarily the Air Force—the Pentagon wants to take over this activity. They want the Agency out of it. Secretary of Defense Robert McNamara has made that plain to you. He sees the Agency as a hobby shop doing some R&D and generating

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DDS&amp;T Wheelon

requirements." McNamara had told McCone that is how he saw the Agency role, so there was no dispute about that. (U//FOUO)

The Pentagon's own space programs were not going well. They had just canceled the ADVENT communications satellite program. They had also canceled the SAMOS reconnaissance satellite program. By contrast, CORONA was going well, and space was becoming a big thing. From McNamara's point of view, he was working hard to consolidate space activities under the Air Force. The other services kept saying, "How do you reconcile that edict with CIA programs?" I think he saw the CIA role as an untidy arrangement. He and McCone differed on Vietnam. I also believe that McNamara was the consummate empire builder. He believed in tidy government, and found this collaborative arrangement between the Agency and the Air Force as silly. Perhaps it had made sense originally, but it no longer did, now that he was there and doing things properly. Assistant Secretary of Defense for Research and Engineering Eugene Fubini aided and abetted that view, as did future Secretary of Defense Harold Brown. (U//FOUO)

Back to my conversation with McCone. I said, "When you get right down to it, the NRO is really a post office box for the Air Force. The only capability that the NRO has is the Air Force, and they in turn rely on industry. I know how that system works. The question before the country is simple: "Do we want to go to a sole-source arrangement and grant an

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exclusive franchise for reconnaissance to the Air Force? Or do we want to have competing activities? The fact is that the Air Force has done a miserable job with its own space programs. SAMOS has been an unqualified disaster. By contrast, the Agency's program in this area has been an unqualified success." (U//FOUO)

Then I reminded McCone, "When you were head of the AEC, the Air Force approached you and said that the people at Los Alamos are fighting the development of thermonuclear weapons. We need them." So you created Livermore out of whole cloth. Lawrence, Teller, Herb York, Johnny Foster, and Harold Brown got some plutonium and started designing weapons in Pleasanton, California. All of a sudden, Los Alamos was bringing out new designs, and things started to move. I said, "You went along with that decision. I believe that strategic reconnaissance is even more important than nuclear weapons right now. I believe that, for the good of the country, to turn this thing over as an exclusive franchise to the weak player is a disservice to the country. I believe that we should be

willing to bear the burden of untidiness and duplication in the government in return for getting good reconnaissance. You can decide it either way. If you decide that you want the benefits of competition and want to keep the Agency in this business, then you will have to do things entirely differently. The course that you have followed so far has been facilitating this drift toward an exclusive dependence on the Air Force." (U//FOUO)

I did not frame it, "You have to do this, if I am going to do that." I said, "This is the national policy issue." I said, "If you come to the belief that the country needs two [programs], and you want to keep the Agency in, and you are willing to commit every bit of your prestige and energy to that end, then I will help you. I believe I can do the technical part. But you must reverse course and run the risk of sacrificing your prestige on this altar." (U//FOUO)

I believe my argument was also that the Air Force inevitably is going to come up with other solutions that are tailored to its needs—not national needs. I said, "The Air Force cares about the country, but they fundamentally have a different job. Therefore, somebody has got to worry about what the President needs before the war starts, and that is our job. And we need a different mechanism that is tuned differently, that is aimed differently to do that job. And the Agency three times now has shown it can do it—U-2, SR-71, and CORONA. It is likely to keep on doing it unless

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the flame is snuffed out, and we are at the eve of snuffing out that flame, Mr. McCone. Scoville's resignation forces that issue on you. What role do you want the Agency to play? I believe you must make up your mind. What is good for the country here? I will go along with whatever you say." I did not threaten to quit; there was none of that. But I said, "The most important thing this Directorate can do is to support a continuing reconnaissance program. If you do not want to do that, then you have to think long and hard about what you *do* want the Directorate to do, and then we will talk further. But the first issue and the one that really matters, is, what about reconnaissance? What about reconnaissance, Mr. McCone?" (U//FOUO)

He was persuaded by those words, and said, "I will throw myself into this battle." His last words at the Agency, on the last morning he was there at the morning meeting, were, "I want to apologize to you folks for not having done more to fix the NRO problem." I believe that that was the burden on his heart as he left. (U//FOUO)

### Developing New Overhead Systems (U)

Let's talk about three systems, each of which originated in my first six months on the job as DDS&T. This began in July of 1963. Hughes had been working with NASA and DoD to put Syncom-II into a stationary, geosynchronous orbit. When I read on the front page of *The Herald Tribune* that they had succeeded, I thought, "This has a lot to do with

our business. For a first time, we

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There were a good many technical questions that had to be answered. One was the antenna design. [Future Associate DDS&T] Lloyd Lauderdale gets a lot of the credit (b)(1) I will never forget the day when they finally came in with a model and manually cranked it up—the thing actually deployed. I said, "Come on, let's go up and see McCone." We showed it to him, and he agreed to go forward. (S//NF)

The second problem posed a far more subtle question. If you stand on a high place, you will hear everything in addition to what you are looking for. The question is, would the other transmitters that we were not interested in swamp out what we were interested in? In

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It was a go/no go question. We gave that job to Bill Perry, who had just left EDL to set up his own company in Palo Alto. I went to Bill, for whom I had a high regard, and said, "The key question in this new project is whether or not we can do this. Will you please go off to one side and work with NSA to see what the background data look like. Please tell us whether we are on the right track? There is no point building this system and having it be a flop." After about six months, Perry took us through it all and the answer was

yes, we could make it work. On that basis we proceeded. (S//NF)

The second system was generated by a need that came out of my Cuban missile experience. We needed to build a system that could provide pictures in near real time. On one of my few days off, I was watching a professional football game from San Francisco. I remarked, "If I can watch a football game from San Francisco, we can get pictures back from the satellite! Technology has come along sufficiently to do so." I put Dirks to work on that with the mandate "to build a near real-time system and bring photography into the current intelligence arena." (S//NF)

Dave Packard took it upon himself to come around and talk to people who were to be involved in the project when he was Deputy Secretary of Defense. He came to see me, and he asked me what assurance could I give him that we could do our part. I was able to say that we could do our task with confidence. This depended on building a new and much more capable traveling wave tube. This program was primarily Dirks's success, although Duckett and Helms deserve much credit for pushing it along. (S//NF)

System number three was a CORONA improvement, which is to say a new broad-research system. CORONA was having some troubles, and we got [Stanford Professor Sidney] Drell and his group to come in and take a look. We finally solved the problem. (S//NF)

SECRET

(b)(3)(c)

DDS&amp;T Wheelon

Independent of that problem, it was clear that the photointerpreters were having trouble finding some facilities in the miles of 70mm film that we were bringing back [from CORONA missions]. I went to NPIC head Art Lundahl and I said, "Art, what is the problem? Do we need to give you better resolution?" He said, "I think so." We decided to do some experiments. We took some high-resolution SR-71 pictures and degraded them to various levels. We gave these pictures to the photointerpreters and found out how many times they got the right answer as a function of what the resolution was. They evidently needed something a good deal better than CORONA was then delivering to make a significant improvement in their performance as photointerpreters—who I figured were my consumers, even though they did not work for me. (S//NF)

Because the Drell panel was then meeting, I asked, "How hard can we push CORONA by the product improvements that we have been making?" The same answer came back from our own people, from Itek [which built the CORONA camera], and from the Drell group—that we had pushed CORONA about as far as we could. It has a focal length that could not be changed. The film is what it is. To build a high-resolution search system, we would simply have to start over. I believe I talked that over with [Polaroid Corporation President and member of President Johnson's Science Advisory Committee Edwin] Land, and he agreed.<sup>2</sup> I got chief of the Special Projects Staff Jackson Maxey and

future chief of the Office of Special Projects John Crowley involved in this. I said, "How do we build a search system, same coverage, but with a lot better resolution?" (S//NF)

That began the search for a new search system. Our first move was to place a contract with Itek, to see if they could design a new system. They worked under our funding for most of 1964, trying to develop a follow-on to CORONA that would have the improved performance. (U//FOUO)

The relationship with Itek was a rocky one. One, they were not making much headway. Two, Jack Maxey was a strong-willed man, and I believe he tended to give them a good deal more direction than they felt they needed. Behind the scenes, Fubini had approached Itek and said, "Look, CIA is not going to build satellite systems any more. You are wasting your time. If you jump ship with the Agency and work with us, we will make sure you are the contractor for an Air Force-sponsored system like this."<sup>3</sup> (U//FOUO)

During a meeting of the Land Panel of the President's Science Advisory Committee, Land was called out of the meeting. He came back about a

<sup>2</sup> Land chaired the "Land Panel" of the President's Science Advisory Committee. The panel had as its responsibility oversight of the country's satellite reconnaissance program. (U//FOUO)

<sup>3</sup> According to NRO's historian, Dr. Wheelon's recollection of events in Itek's withdrawal from the NRO/CIA follow-on imaging system is not shared by company executives, who fault business practices in connection with the contract. (U)

half hour later and said, "I have to tell you that Itek no longer wants to participate with the Agency on the Advanced Search System, they want to have the contract terminated and cease work." We were dumbfounded. It was like the day Kennedy was shot; everyone remembers where they were. I asked Land if they had given any reason but he said, "No, not really, they just want out." It was not clear whether it was a technical problem or in the management capability, but they wanted out. (U//FOUO)

[Franklin] "Frank" Lindsay [Itek's president], who had once been at the Agency, said, "We have got a mess here that I need to straighten out." So he came down to have lunch with McCone and me. McCone was a lot rougher than we thought. Lindsay gave an explanation that did not make any sense at all. About the best he could say was that the working relationship had a lot of friction. I had not been working with them, so it was not an attack on me, but he said the people who work for Wheelon were tough to get along with. McCone did not buy it at all, and Lindsay was ushered out of the lunch without having his hand shaken. (U//FOUO)

I said, "Mr. McCone, I believe we have to take this seriously. It may be that, unbeknownst to me, our people are heavy-handed. They have a lot of other contractors in various parts of this. With your permission, I would like to go around and check on them and see if there has been any trace of this elsewhere." He said, "I believe that is exactly right, you go and check." I

40 SECRET

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started going around to all the contractors that worked for the Agency. I found that, whatever the merits of the Itek problem, no one else was experiencing it.  
(U//FOUO)

I came back and gave my report, and I said, "It looks to me like this is an Itek-specific problem." It is clear that they had been under a lot of pressure. Under Secretary of the Air Force and NRO Director Brockway McMillan had made it absolutely clear that McNamara did not want the Agency developing new systems. The only question was, had they pulled the trigger or had Itek sensed where their best interests lay? (U//FOUO)

Meanwhile, with Itek out of it, the need remained. Dirks, Lauderdale, and I began to think about it. The reason for starting this system was not a desire to build a new system but to meet a need. We were working with Perkin-Elmer at the time on the SR-71 camera, and I asked them if they had any ideas. They said, "Coincidentally, we have an invention in the lab, which might be of interest to you." So with that, we began to work with Perkin-Elmer. (S//NF)

#### Some Observations on DCI John McCone (U)

(b)(1)

**“  
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”**

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(b)(1)

John McCone was an aloof guy. I believe he had the finest mind of anyone I have ever worked for. He was an excellent analyst. He had an incredible memory, and was intellectually tough and honest. Having said that, I will tell you that he was not a good manager of people. He was billed as a manager, but had no sense of how to motivate an organization. (U//FOUO)

The U-2 mission (b)(1) was a high-priority effort. When they put pressure on me to plan it, I had counseled McCone and Kennedy that it was a long way in, and I was not sure we could make it. Air Force Brigadier General and Director, Office of Special Activities, Jack Ledford and I were at a Christmas party at McCone's house on a snowy night. McCone dragged us into his study to say, "I just want to reiterate to you two how important this thing is." I responded, "I know that, and I want to reiterate to you that it is a long way in, and I am not sure we are going to make it." The Taiwanese U-2 pilot was about

ready to take off. I had been asleep for about three hours, and the phone rings. It is the Ops Center in OSA [Office of Special Activities], and this plane has been shot down going in. I joined Ledford and the Ops people in our control center.

(b)(1)

As usual, I went to the morning meeting and asked Ledford to come with me. John McCone walked in and looked around the room with those blue eyes of his and said, "Who authorized that mission?" I made a quick calculation. I said [to myself], "Well, today is as good a day as any to quit this outfit." I responded, "I have a piece of paper with your signature, and Mac Bundy's, and Bob McNamara's, and Dean Rusk's, on it telling me to do it." DDCI Carter said, "That's right, sir, you ordered that mission." One could have heard a pin drop in that room. McCone closed his book, got up, and left the room. The subject was never mentioned again. Do not ask me, I cannot explain it. He was a great director, but he had a few little shortcomings here and there.  
(U//FOUO)

Most people were scared to death of John McCone, but I was not—perhaps because I was not trying to build a career in CIA. I will tell you this story. Helms and I ran a (b)(1) operation in Cuba as part of the MONGOOSE program to destabilize the Castro regime. I was involved in it because of some technical things we were doing. It

was a mess, with high-speed boats firing .50-caliber guns. And one of John McCone's J.P. Hendy freighters sailed right into the middle of this. It was shot up by being in the wrong place at the wrong time. The next day, McCone got Helms and me in his office to say, "You guys almost sunk my ship yesterday down there." I looked at Helms, who was senior to me by quite a bit, and I thought, "He knows how to handle these things." Helms did not say a word. So, finally, I said to myself, "Well, it is another good day to quit." I said, "Mr. McCone, you knew that operation was going down. A lot of good men got killed down there yesterday. It is up to you to keep your ship out of the way." McCone said, "I guess you are right," and that was the end of it. (U//FOUO)

I do not mean to paint myself as a hero; it is just that on a number of occasions I stood up to McCone on a matter of principle. I thought it was important, and I believe he responded well to that. But I did not see anybody else doing it. I believe that people more directly involved were just intimidated by him, his wealth, and the fact that he was all business. I was young and brash. (U//FOUO)

### On Cooperation (U)

Why is it that people like [IBM physicist and longtime government consultant Richard] Garwin, and Perry, and I spent so much of our life working for the government instead of doing science? You learn physics like you learn to be a silversmith: through the apprentice

process. You cannot read a book and become a physicist; you have to work with a physicist. Our contact with our professors was a feature in our maturing, in our becoming physicists. (U//FOUO)

Many of the faculty at MIT had been deeply involved in World War II, and they continued to serve the government after the war. They were much in demand in Washington and were constantly going back and forth. Their advice was wanted because they were the high priests of a new era. They had developed a conviction about what government plus science could do together. They had a feeling that nothing was more important than national security. We got all that from them during our apprenticeship. We watched them make choices on how to spend their time, and they always spent it for the country. Each one of us came away from those relationships feeling that the country came first. (U//FOUO)

Before the war, science was supported by private money. The Palomar telescope was built with private money. The Mount Wilson telescopes were built with private money. Ernie Lawrence's cyclotrons at Berkeley were built with private money. There were no R&D contracts, except those that kept a couple of airplane companies going with development programs. We learned that lesson for the first time in our country's history. After the war, we said, "Look, we have got a good thing going here, let's keep it going." So the National Science Foundation was born, the Office of Naval Research, all the funding at

Lincoln Laboratory, Los Alamos, Livermore, and so on. We said, "Look, we have a winning formula here of extraordinary technologists plus government funding." And it really worked. (U//FOUO)

I believe that game plan has pretty well run its course. What started out as a fantastic adventure has gradually become trench warfare involving procurement regulations. Grants are becoming just another paper translator and doing things by the numbers. So I think a lot of the excitement has been lost. Men of good will and great ability once did amazing things together at incredible speeds. That does not describe the defense industry today. Where you do see that today is in Silicon Valley and the software firms. They have that kind of verve and acceleration, but the government is not part of that. (U//FOUO)

In a way, I believe this golden moment of partnership between the government and science has grown tired. The Agency was always a little different. It worked with Kelly Johnson at Lockheed and others in the way things had been done during the war. That is why people wanted to work with the Agency, because it was a carryover from an era that had been lost at DoD. (U//FOUO)

### Reflections on the Agency (U)

*After leaving the Agency, Wheelon joined Hughes Aircraft, where he eventually became Chairman and Chief Executive Officer. He also served as a member of the*

*President's Foreign Intelligence  
Advisory Board from 1982 to 1988.*  
(U//FOUO)

When you go to work for the Agency, you have to admit that you are not going to have it all. Never have a yacht. You are not going to have your own jet. But there is a camaraderie and a sense of commitment and dedication and being with other people who are really superior to those on the outside.  
(U//FOUO)

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**I was really spoiled by  
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I was really spoiled by the Agency. Spoiled by its integrity. I had a good deal of trouble adjusting when I left the Agency. Not being able to depend on people. Always having to recalibrate. My time at CIA was just the best four years of

my life. It was the highlight of my life. Not before or since have I had that kind of feeling of commitment or bonding or confidence in my colleagues. I simply never worked with such a fine group of men and women. (U//FOUO)