DANIEL GREEN
NORC

Introduction:	MUSIC Welcome to the Dahlgren Centennial Celebration – A Century of Innovation. We hope that this and our many other products, events and offering will showcase what Dahlgren has accomplished during its last 100 years. Throughout our history, we've interviewed some of the most prominent minds, leaders and innovators that have been here, and we're opening up the vault to share them with you this year. Today we are honored to listen to the story of Daniel Green. Mr. Green came to Dahlgren in 1958 as a computer programmer working on the Naval Ordnance Research Calculator, the first supercomputer.
Harman	We're here today to talk to Dan Green about his experience on the base here at Dahlgren. Dan, let me just start with some simple questions about your background. Where are you from? Where did you come from?
Green	Philadelphia. In an area called Bridesburg. You might call it in the industrial heartland of Philadelphia, about ten blocks from the Delaware River surrounded by Philadelphia Coke, which spewed coal dust in the air, Charles Lenning, which put sulfuric acid into the air. Charles Lenning, which manufactured articles from coal, coal tar, like roofing tiles and had an internal fire department because they didn't trust the city fire department; the city sewer works, an area where one of the doctors once told my mother that he didn't have much business because no self-respecting germ would live in the area.
Harman	Well where'd you go to school, Dan?
Green	Well, grammar school was All Saints Grammar School, since closed—Northeast Catholic High School, since closed, and I entered a catholic religious order, and they sent me to college at Niagara University in Niagara Falls, New York. From there, I progressed to Catholic University and received a master's degree in mathematics from Catholic University and I think it was a bachelor of arts from Niagara University. And when I was in the Navy I took all sorts of interesting courses. They actually sent me to Case Institute of Technology for a nine month tour.
Harman	Is that how you came to be a computer scientist?
Green	No, I came to be a computer scientist because I when decided that I really couldn't be a

	teacher, which is what the religious congregation I was involved in was mostly involved in, and that missionary work didn't really attract me, so I left. And I interviewed at Catholic University, and I interviewed with a couple people, and I could spell the word programmer. And I thought it was better to say "I wanted a job as a programmer" than "I want a job," and the rest is history.
Harman	Well what was your first job then?
Green	Well my first job here was at—well depends on whether you mean—my first job actually was helping in my uncle's grocery store as a delivery boy at probably the age of thirteen or so, and then I had one summer's work at… That would've been at which one? Lenning as an assistant to the gardener because they did have somebody try to keep the grounds looking decent. [I] taught two years in high school, which I hated with a passion. One year in Philadelphia and one year in Detroit. And then my first job here was as a computer programmer, and John Walker, who was a Division Head, introduced me to the computer and gave me some time on it and a few books like *Faster and Faster* [*Faster, Faster: A Simple Description of a Giant Electronic Calculator and the Problems it Solves* by W. J. Eckert and Rebecca Jones], a couple program manuals, and… Let's see. What was the first program? Probably the first program that I worked on was to generate random numbers, which at that point in time was a significant piece of work.
Harman	How'd you hear about Dahlgren?
Green	When I decided I wanted to leave the religious congregation, I was still enrolled at Catholic University, and like every place else, they had recruiters come, and one of them was a recruiter from here. I really have no idea who it was. I don't remember anymore. So I interviewed there; I interviewed with IBM; I think I interviewed with UNIVAC and probably one or two others. And the only one that really came up [*laughs*] with an offer was Dahlgren. And at that point in time, Dahlgren had just recovered from a downturn, and it was on the upswing, so I got here at just about the right time.
Harman	What year was that?
Green	1958 in April. April of 1958. And I guess Dahlgren had swung getting the NORC [Naval Ordnance Research Calculator] shortly before that. I think arrived probably two years or so after the NORC arrived, and that was one of the big ins for business because at that point in time it was a supercomputer. And I arrived [with] probably something in the order of thirty programmers, preparing programs for the computer and another twenty or thirty people who were responsible for the maintenance and operation of the computer. It was in operation twenty-four hours a day, seven days a week, 365 days a year. I think occasionally they may have taken Christmas off. That would've been the only day, if then, that they weren't in operation.
Harman	Ray Hughey says that that the machine was the fastest machine in the world for longer than

	any machine ever been the fastest machine in the world.
Green	Could well be.
Harman	Does that make sense?
Green	Yeah. It could be. It was a one-of-a-kind machine made by IBM. If you look at *Faster and Faster*, it gives you some of the timing in it. The figure I remember is about 50,000 operations a second at its best. By today's standards, that's extremely slow.
Harman	Who was your first supervisor?
Green	Well actually the first supervisor was John Walker, the Programming… Let's see. I guess he was Division—no, Programming Branch at that point in time.
Harman	In K Department?
Green	Yeah, in K Department. It had four sections in it. John was the Branch Head. Dave Eliezer was one of the Section Heads. Bill Slusher, John—Walt Warner and Bob Learn. And after John Walker tutored me for a little bit, I was assigned to work under Walt Warner in what was the Programming Systems Branch or Section.
Harman	When did you come to Dahlgren?
Green	In 1958, April of '58.
Harman	What was your first project?
Green	I really don't remember the first one. I know one of the early ones was, as I said, generating a random number generator. Another early project was working on a program for the Bureau of Indian Affairs where they were trying to keep track of the records for who owned what and the Indian territories. I don't want to say the *only* large computer within the government, but it was certainly one of the largest available within the government. As far as I know, most of our work was for the Navy. Let's see. Some of the early other work I did was on spotting doctrines for naval gun fire, and the FBM [Fleet Ballistic Missile] Program came along, which I think was shortly after I arrived. I worked on some programs to try to optimize aim points for missiles, where we would try to put them where they would cause the most damage. As I said when we were talking about the documents, one of the changes they made to the NORC was that they could eliminate the need to put so many punch cards on the submarines by putting on this cathode-ray tube printer. Oh yeah, I also worked with—who was in charge of the maintenance section... Bob Ryland was one who was responsible for

	the overall hardware maintenance. I'm trying to think of the name of the person who was responsible for actually the advancement of the computer. But I did some programming as they brought in the core memory to generate routines which would test the core memory.
Harman	Well you were doing things for the first time back in those days, weren't you?
Green	Early on at any rate. Not necessarily for the first time. The Compiler—the FORTRAN Compiler, which I had nothing to do with. It was really a copy of something which was already in use commercially. But it became very popular because even though coding on the NORC was relatively easy, it was still kind of difficult to translate mathematical statements into what would amount to machine language.
Harman	What can you tell us about some of your supervisors here that you dealt with? Have any nasty stories to tell about them?
Green	No, not really.
Harman	John Walker, for example? He was your first supervisor.
Green	Yeah, John lived off the base. Let's see. A couple of the people—actually, I lived for the first year and a half, until I got married, in what was called the Civilian Dorm. Yeah. And who was there? I think Gene Gleissner was there in the Civilian Dorm, if my memory serves me correctly. The computer group had two main parts. One, if my memory serves me correctly, Bob Ryland was in charge of. He had the hardware end of the business. And John Walker had the software end of the business. And above them was Gene Gleissner, who had the overall supervision of the computers. And he worked for—. The head of the computational—Ryland. Oh no, [Ralph A.] Niemann. So as far as I was concerned—. Oh, this was interesting. One Christmas when I was here—I guess it must've been the first Christmas I was here—I didn't have any leave, so I couldn't leave, so I was in charge of K Department for about a week.
Harman	Well what do you remember about Ray Hughey? What can you tell us about Ray Hughey? He was—
Green	--He came in—
Harman	--He wasn't in programming.
Green	No, he was in the analysis group, I presume. As I was rapidly rising in the ranks of the programming area, he was rising a bit more rapidly than I in the FBM Program. He was with it, I think, right from the beginning. And I don't know whether he was in charge right from

	the beginning or not, but if he wasn't in charge, he rapidly got to that point. If you want, he and I were competitors because I can remember Mr. Niemann apologizing to me once because Ray made GS-15 before I did. And his excuse was that he could only get one person through and that the FBM Program was a bit more important than the programming group. No, Ray and I were… I don't know whether he lived in the dormitory or not. His wife and my wife lived in the dormitory together for a while, so we were fairly friendly.
Harman	How about Bill Slusher?
Green	Slusher. He was one of the—I think I have the term correctly Section Heads in the programming group when I came there. And if my memory serves me correctly, he was working with a group that had to do with gun ballistics and things of that nature. Bob Learn was doing some of the business sort of stuff we did. And what was David Eliezer doing? I really don't remember what Dave was doing, but he was another Section Head.
Harman	Bob Ryland you mentioned. What was your relationship to Bob?
Green	Um, when I was doing hardware-related programming, I would've had minor contact with him. Let's see. I'm trying to remember who was on the trip out to CDC. It was probably Ryland, Gleissner, myself… I don't remember who else, but at one point when CDC was trying to sell us the 6700, they invited us to fly out to their home base. And I remember it because it was when the airlines were on strike, so they rented a plane. They were kind of anxious for us to see the computer, and we flew out, and that's probably the major contact I had with Ryland. I'm almost certain he was on that trip. I know Gene Gleissner was on it, and I know that I was on it, and I really don't remember who else. Probably John Walker.
Staton	And you said we were kind of forced to go with the 6700?
Green	Well, we were entering negotiations. I think we really liked the IBM computer better because we had one that worked just neat and we were used to the people and their maintenance policies and so on, and the Washington office says—they didn't use these words, obviously—but essentially they said, "You're prejudiced. We don't really know whether we want to approve your contract or not. But now, if you go with CDC… You can have it." That's an impression, okay?
Staton	Well now, we ought to make—
Green	--No one said that we *had* to, but at least I, at my level, was sure left with the impression-- And how Walt Warner or Gene Gleissner or Ryland or Niemann felt about it, I can't speak for them. That was definitely my impression. I was one of the people on the evaluation group.

	CDC actually did deliver. They had some troubles, but probably if we'd gotten the IBM computer they would've had some troubles too. Oh, it was a good machine. For its time it was an advanced machine. Probably it had the capability of a modern tablet computer and much harder to use. I never cease to get amazed at the advancement in this field. It just fascinates me.
Harman	So you were in K Department your entire career?
Green	No. From K Department when Aegis program came, they generated what was called N Department, if my memory serves me correctly. And I was one of the plank holders in N Department. I was in charge of an analysis division in N Department. I guess in K Department at that time I had moved out of the programming field and was in charge of an analysis division, if my memory serves me correctly.
Staton	In K Department?
Green	In K Department.
Staton	Yes, I believe that's the one time we crossed paths. I know I was working with Bernie Duren, and I believe you were Bernie's Branch Head—Department—Division Head at the time. Yeah, you were his Division Head at that time.
Green	Yes, and they moved that whole group into the Aegis department, I became one of the plank holders—unless he was head of Aegis department at the time. I can never remember his name. I should. He became one of our—
Staton	--Was Tom Clare one of the—
Green	--Tom Clare.
Staton	Tom Clare. I remember him being one of the first—
Green	--If my memory serves me correctly, Tom for a short period of time worked for me.
Staton	Yes. He started in K Department.
Green	It was a placeholder. They needed a place for him, and they put him in my division, if my memory serves me correctly
Harman	I think Niemann had something to do with that [*mailroom bell rings*].
Green	Probably. But Tom worked for me only as a placeholder position.

Staton	In the analysis group.
Green	Yeah. And then when they formed the Aegis—
Harman	--Was that when he went away to school?
Green	Oh no, I went to school in—I think it was ’63.
Harman	When… Tom Clare.
Green	Oh. I don’t remember him going to school here while he was at Dahlgren. He left the base’s employ, I guess, after he was head of the Aegis division, and he went to work for private industry for some short period of time, then he was brought back as the Laboratory—or whatever they called it then.
Staton	The Technical Director. I think he was a department head when he left.
Green	Yes, he was Department Head of the Aegis department. And then he left for some—what was it—maybe a year or two, and then they brought him back in as the Technical Director. But he graduated, I think, from Notre Dame. Yeah, he and I were fairly friendly, but I didn’t really have that much interaction with him as the Technical Director. Even when he was Department Head, I didn’t really have that much—had no more interaction with him than any other division head would have. But I was responsible for an analysis division. And then when they formed—I guess it was N Department, wasn’t it?
Staton	Yes.
Green	Or B Department. B Department. They moved that analysis group, or a major portion of it into B Department.
Harmon	So you’re from N to B
Green	So I went from K to N to B.
Harman	And you retired from B Department?
Green	Yes. And my retirement income was enough to meet my demands, and they gave me a $25,000 bonus, so who was I to refuse it? You might say that… It was a clever saying. I can’t think of it. It’ll come to me later. But I was sick and tired of working [*laughs*]. Anyhow, one interesting thing is that I did live on the base for the first… From 1968 until I

	think about ’72. We got married in—’58. ’58. From 1958 to about ’72. I can’t remember when we built our house off the base. But for the first year and half or so I lived in what was called the Civilian Dorm, and my wife-to-be also lived there. We met at some function or other on the base. I forget exactly where or how.
Staton	Now, by ’72 weren’t they trying to push the people off of the base?
Green	They were trying to push people out, and at that point in time, my family was growing to the point where the housing available wasn’t really adequate anyhow, so the two things came together, but we lived in one of the houses which was recently torn down which was about two doors from the chapel. Well that was the last place we lived. We lived in Boomtown first, and the only thing I really remember about that was we had a second floor apartment in Boomtown, and my wife’s father had a rather large house in Towson, Maryland. I don’t know how many bedrooms. It had about six or eight bedrooms; this big three story house. And one day we happened to be comparing what we paid for oil to heat the two places, and he was paying a little bit less than I was [*laughs*].
Staton	Oh wow. Tells you how well it was insulated, right [*laughs*]?
Green	[*Laughs*] That’s the only thing I remember about it. We moved to one of the places here in what was then called Terrytown. I think it’s still in use. It’s right across from what used to be the commissary. I’m not quite sure what it is now.
Harmon	I’ve heard of Terrytown, but I’ve never knew where it was.
Green	Boomtown was the area where all the buildings are now, where all the office buildings are.
Staton	Where all the office buildings are now.
Green	And that was composed of houses which, I was told, were shipped down from Indian Head [Maryland] by barge.
Staton	By barge, yes.
Green	Terrytown was the rest of the living area, where the more permanent housing was.
Staton	On the way to the Administration Building [Building 101].
Green	In that area. Outside of what was the restricted area fence. So in Terrytown, we first lived in an apartment, which was right across from what used to be the commissary. There’s still some service buildings there, and I think that place is still in use as living quarters.
Staton	Right. There are still housing. Especially along the road that leads on out to the Administration Building, there’s still housing.

Green	Right. And then we moved to the place which is about two doors down from the chapel. I think that was ripped down four or five years ago and now is a parking lot. So we lived there, and I guess we had two or three children. I'm not quite sure. I'd have to look at some of my other records to be sure. But I think a couple of our kids actually started school in the school here on base. That was kind of nice because we had the swimming pool right across from us, and the grammar school was right across from us. The chapel was two doors down from where we were. When I came to work here, we had the Marine guard force. An interesting story, they were noted for checking on security, and I never had it never happen to me, but I'm told they would actually carry a ladder around, and in the old Building 218, they would prop the ladder up against the building and see if they could get into the second floor window, and if they could, you were accused of a security violation because the windows were supposed to be locked behind [you].
Staton	[*Laughs*] Never heard that story!
Harmon	Never heard that one.
Staton	We just recently did some research on when the security change from the Marine force to the Security, and I believe it was around 1958 that they disestablished the Marine Corps—
Green	--Must've been after that because they were here for at least a couple years when I was here—
Staton	--A couple of years when you were first here. But you would've living on base when it switched from—
Green	--Yes—
Staton	--The Marine Corps to the civilian security force.
Green	Yeah, when I lived in the Bachelors—Civilian Quarters, as they were called then, I didn't have a car, so one of the places where we could eat was in the Navy Enlisted Mess. I forget what they'd charge us—some nominal fee, a quarter a meal, something in that order. That was kind of convenient. Food was… good. Not outstanding but good. And plenty of it.
Harman	Can I go back a little bit? You mentioned Jack Cunlow. Why did you mention him to us? He knows something about something.
Green	If my memory serves me correct, and it's not—Jack was here at least as long as I'd been. And if my memory serves me correct, he was in one of the engineering groups here on NSWC when they established NAVSPASUR [Naval Space Surveillance System]. Again, if my memory is correct, he was one of the original people who worked in NAVSPASUR. So if

	you're interested in getting some information or stories about that.
Staton	That group grew out of K Department.
Green	Yes.
Staton	That was K Department folks that initially manned the NAVSPASUR facilities.
Green	And I think that was absorbed into something else a long time ago.
Staton	Yes, it's gone through several reorganizations.
Green	Well they're a separate command on the base and their overall responsibility was to prepare programs for and do some monitoring in what was called the space fence across—the line of radars across Texas. And now you've about exhausted my knowledge. But there was a… Why can't I think of his name? Hasenfus. Howard Hasenfus [*The name is actually Harold Hasenfus*]. Hasenfus was in charge of it.
Staton	Yes, Howard Hasenfus. I came across his obituary not too long ago. In fact, he died not too long ago [12 June 2014].
Green	Not too long ago, no. He and my family were kind of acquainted. They lived on the base too for a long time, probably at least as long if not longer than we did. And the base was a fairly tightknit community at that point in time. And I think Jack Cunlow probably lived on the base too for a while. I'm not really sure of that.
Harman	Well I know it used to be that the base never talked to anybody, never talked to the press, never talked to anybody. I've been reading *The Free Lance Star* from World War II, '39 to '46, and there's just nothing in there about Dahlgren at all.
Green	Interesting because even then it was one of the major employers.
Harman	Yeah, but that was wartime, and there was definitely—everything was classified.
Green	One of the interesting stories I was told when I came here, and I don't know whether either of these is true, but they're interesting. One is that at one time one of the naval officers was in charge of firing I guess it was an 8" or a 16" gun, and the shell landed in somebody's backyard in Colonial Beach, and they tried hard to exonerate the man, and they found out, lo and behold, that the shell had landed exactly where it was aimed.
Harman	Now I never heard that about that story.
Staton	There is for sure a shell that landed in the Colonial Beach area that they tried to recover, and they were not able to get it. The landowner said, "You don't have to get it. Just give me

	another one right there as a—”
Harman	--The lady said that—
Staton	And they did, and that shell is there. We have photographs of the shell in the yard. They just brought another 16” projectile.
Green	The story I heard is that unfortunately the gun fired the shell exactly where it was aim. It wasn’t a mistake.
Harman	Well that’s a—
Green	--Well, it was a mistake—
Staton	--It was a mistake, but yeah—
Harman	--Which is a good thing for some people but not a good thing for…
Green	Well it wasn’t good for the officer who was responsible for it.
Harman	That’s right. Well is there any other story you can think of that you might like to tell us that might be interesting here?
Green	No. I was trying to think of that other one, but I can’t really think of it. I know when we were living on the base when they were firing off the tests at Pumpkin Neck, once we lost a picture off the wall because it shook the place so bad that it… They were doing a cookoff test, and it didn’t work quite as they expected.
Staton	Well my house, my current house, is across Machodoc Creek from the Pumpkin Neck test facility, and in the thirty years, thirty-five that we’ve lived there, I’ve had one broken window. One window broke in the garage one time from a blast. But I didn’t even bother to report it. I figure one window in thirty years is [*laughs*] within the acceptable…
Green	Well I can’t think of anything else at the moment…
Staton	I would like to capture a little bit more about what you told us before we started recording on basically printing the data to the CRT [cathode-ray tube]. That was the NORC?
Green	Okay, if you were making use of the NORC, okay? To prepare a program, you use punch cards. They had a small staff, I don’t know, perhaps a dozen or so. I think they were all women at that time. These punch card units were sort of like a typewriter, but instead of producing paper, it produced an 80-column punch card.
Staton	Yep, I used those when I came to work here.

Green	I don't have any examples of them.
Staton	We have some.
Green	At least none that I can interpret. Okay, then to feed and put it into the NORC, you would prepare your program or the data that went into the program on the punch cards. And they would take them to an IBM card reader, which was connected to some electronics and that module I gave you actually [was] physically taken from that, but I'm told that it's physically identical to ones that are already used in the NORC. And this was called a card-to-tape-to-card machine, okay? And what it did was it took the punch cards, read them in through the IBM card reader. There was the electronics which change this and put the data onto a magnetic tape, which was a reel-to-reel tape. The NORC itself had eight of these tape drives on it, each reel-to-tape held 2400 feet of tape. Look at *Faster and Faster*. they give you the exact data on it. My memory says that there were 400 characters per inch, and these were arranged in blocks of some varying length with a protocol which told you what was the head of the block, the first word of the block told you what was following, and then there was some what we called check digits to make sure that the information was recorded properly and wasn't spoiled in transit or something. So then the information was put on the cards to the magnetic tape, and then the magnetic tape was taken to the NORC, and the operator would mount it on the NORC. Then you had a program which would read this in, so you might call it a very primitive operating system, extremely primitive, which actually read the program in and then sent it to execution. Now an awful lot of this was under the hand of the operators. They had two or three people operating the machine at any given point in time, and they were busy. They weren't just sitting around doing nothing. Most of your data was stored on tape, and even at that point in time they had vast amounts of data, like they had range data, or they had input data from satellites, this kind of thing. So there was typically vast amounts of data to be processed, so they were continuously mounting and dismounting tapes because the main memory in the machine, as I said, its normal mode of operation was 2,000 16-digit words, which would amount to 16,000 bytes, a byte is being eight bits, and two decimal digits would require one 8-bit word essentially. And then for output, if you wanted to see something, then you would write this –you had two options. The first option was you could write it onto a magnetic tape, and then they would take the magnetic tape to the card-to-tape-to-card machine, this was card-to-tape-to-card, and they would produce punch cards from the card-to-tape-to-card machine, take those to an IBM set of gear, which had a card reader with a printer attached, and that was the preferred way of getting your printout. If you were in a real hurry and had more machine time than most people were allocated, then there were two online printers on the NORC, mechanical printers, and you could print data directly to the printer. However, this took up a lot more computer time than putting the same data onto a magnetic tape, so it was not encouraged. One of the advances they made in the NORC was they brought in a Stromberg-Carlson CRT

printer. And essentially it was a cathode-ray tube with appropriate electronics, and instead of writing the data to a printer or to a magnetic tape, you could write it to this machine, and it essentially would display it on the machine. Now, this had some other advantages in that it is basically a dot matrix device, so in addition to printing text, you could really draw a map or print anything that you liked. One of our more ambitious people, Dr. [Allen V.] Hershey, actually decided that he didn't like the standard alphabet that came with it. The printer had a little silver screen in it, and on the screen was a number of characters, like the letters A, B, C, D, and other common characters, and one of the characters was a dot, a period, if you wish. So if you didn't like the standard characters, you could draw your own characters using these dots, so Dr. Hershey made up a wide variety of alphabets, including, I think, Russian and a few other things using these dots, which was really a—if you think about what was involved in using the NORC to do something like that, that was an impressive feat of programming. It was non-trivial.

But the important thing is that this device would take data as fast as the machine could feed it, so it was no slower than using the magnetic tape. I don't really know, but I wouldn't be too surprised if the FBM Program didn't pay for it because, as I said, one of the uses that was made to it—or made *of* it, is that as the missiles gained range, they no longer have room on the submarines to store all the punch cards which are required to tell the missile where to go from each launch point in the ocean because for each launch point you needed a special card for each target. So the number of cards you needed as they extended the range of the missiles grew exponentially. So what they did is that for the areas that they didn't think the submarine was likely to be operating or it was less likely to launch a missile from, instead of actually printing out the punch cards, they would record the card onto microfilm, and then they'd give the submarine the reels of microfilm, and then they'd have the microfilm reader on the submarine and the little hand-operated machine to punch the cards and a few blank punch cards so that if they ever got into that situation, they would punch the cards out.

And as I mentioned earlier, that led to an interesting thing in that since all this data was top secret—and I think it was even beyond that, it was sensitive information, highly restricted—they had some of the very senior people on base who were reading these microfiche to make sure that the data was properly recorded because they didn't want to get out on the submarine, have the missile go to Paris instead of Moscow. That would've been embarrassing to say the least. Okay, but I think I interrupted myself… If you put your data on the magnetic tape and the magnetic tape is taken to the card-to-tape-to-card machine, punch cards were produced, the punch cards were taken to an IBM machine, which fed them into an offline computer, and you could get your data that way. But that meant that your turnaround time for even a five-minute run in the computer was likely to be a day or two, whereas if you use the online computer, you get results back the same day instead of in three seconds like you can off the tablet.

Well I'm glad to be of help.

Staton	We certainly thank you.
Conclusion:	MUSIC Thank you for listening to this week's Dahlgren Centennial Podcast, and hopefully you have learned another interesting aspect of what our people accomplish for the Navy and for our nation. We will continue sharing how Dahlgren is a one-of-a-kind location where innovation is heralded as the hallmark of each individual. Tune in next week to hear from Dr. Armido Didonato, a mathematician who worked on submarine computer software. Thank you for celebrating this century of innovation with us at Dahlgren.

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