Statement of Morgan Smith, President and CEO

Consolidated Nuclear Security, LLC

on

"Energy Workforce Development: Opportunities and Challenges"

Before the

Subcommittee on Energy and Water Development

House Committee on Appropriations

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Chairwoman Kaptur, Ranking Member Simpson, members of the subcommittee, thank you for the opportunity to submit this statement on the strategies and challenges involved in maintaining a robust workforce at the Pantex Plant in Amarillo, Texas, and the Y-12 National Security Complex in Oak Ridge, Tennessee. Consolidated Nuclear Security, LLC (CNS) is very appreciative of the continued support the House Appropriations Committee, and the Energy and Water Development Subcommittee in particular, has provided for the sites over the years and we are especially appreciative of the opportunity to discuss a topic that involves our most important asset: our people.

CNS is the management and operating contractor for the National Nuclear Security Administration's (NNSA) two primary nuclear production sites: the Pantex Plant and the Y-12 National Security Complex. CNS assumed the management and operating responsibility for the sites on July 1, 2014. Pantex is our nation's only nuclear weapons assembly/disassembly facility. Y-12 is our nation's only nuclear weapons secondary facility. Without the essential work performed at Pantex and Y-12, our Nation would be unable to maintain the nuclear deterrent so essential to the defense of our country. The essential, but quiet, work performed in these two facilities is an important element to the security of our nation and our allies. It is a privilege to work alongside the patriots that comprise the federal and contractor workforces in support of this vital mission. It is also a privilege to engage with our host communities as we work together to improve both the sites and the surrounding areas.

Both sites have long and storied histories of contributing to the nation's nuclear deterrent. The Pantex Plant produced conventional bombs and artillery shells when it was established during World War II, but was recast in the 1950s as a main hub for the assembly of thousands of nuclear warheads during the Cold War. Since 1975, Pantex has been the nation's primary assembly, disassembly, retrofit, surveillance, and modification center for nuclear weapons. Pantex also produces the chemical high explosives used in nuclear weapons and serves as the interim storage location for plutonium components that have been removed from dismantled nuclear weapons.

Y-12 was established as one of three Manhattan Project sites and produced the enriched uranium that fueled the Little Boy atomic bomb that contributed to the rapid conclusion of World War II. As the Cold War progressed, Y-12 served as a key cog in the nation's nuclear deterrent, and today it remains an essential component in the nuclear security enterprise. Its missions include manufacturing, dismantlement and surveillance of highly enriched uranium components, production of other highly specialized parts and material, and serving as the country's primary safe and secure storehouse of highly

enriched uranium. Y-12 also supplies the enriched uranium feedstock that is fabricated into fuel for Naval Nuclear Propulsion use. With our vast uranium expertise we play a major role in nuclear nonproliferation efforts to secure vulnerable nuclear material around the world and curb nuclear trafficking and smuggling.

The missions at both sites have evolved over time as have the threats facing our nation, and we are currently undergoing a vast effort to modernize our infrastructure. However, our dedicated people have been the constant through our long and rich history—and our most valuable resource in maintaining the nation's nuclear deterrent.

At Y-12, the hundreds of "Calutron girls" that helped tune and monitor the dials on the calutrons—the mass spectrometers that separated uranium isotopes at Y-12 during World War II—are best remembered of the many thousands of Americans from all walks of life who helped produce the enriched uranium that was used in the first atomic bomb. In the Texas Panhandle, it was the thousands of patriots that first helped establish the Pantex Ordinance Plant to build conventional munitions for the Army during World War II, and then helped the plant transition to its current nuclear weapons mission in 1951.

Today, approximately 8,300 employees work at Pantex and Y-12 – about 3,400 in Amarillo and 4,900 in Oak Ridge, and that number is only expected to grow as the scope of our work increases. No matter the location, the legacy of hard work and patriotism has been passed down, sometimes through generations in the same families, and it is our top priority to preserve that legacy and ensure that we are building our workforce for the future to continue to ensure the capability of the nation's nuclear deterrent.

On average, our employees are 48 years old, have been at the sites for 13 years, and encompass a vast array of skills; examples include skilled craft workers, like the construction workers building the state-of-the-art Uranium Processing Facility and who maintain our aged sites, security police officers that protect the sites, engineers, scientists, chemical operators, janitors, administrative professionals, production technicians, and business specialists. Forty percent are represented by labor unions (like much of our skilled craft and guards) and a quarter of our workforce is eligible to retire today; that number is expected to increase to 38 percent in five years.

Building the workforce of the future requires a broad spectrum of recruiting, development, engagement, and retention tools that we cannot, and do not, take lightly. Our mission and importance to national security is exciting, urgent, and satisfying. Through their daily effort on the job, our employees team together to maintain the nation's nuclear deterrent. Each of them has a role in maintaining and enhancing global security on a daily basis. But due to the nature of our work and the requisite protection of information and materials, most Americans do not understand or identify with our mission, leading to a significant gap in name recognition outside of the Nuclear Security Enterprise.

In addition, in order to work at our sites, employees must pass rigorous background checks and in most cases, an even more rigorous process to earn security clearances. These elements, combined with needed electronic security requirements that prohibit many employees from access to personal electronic devices such as cell phones, create significant challenges in attracting and recruiting prospective employees. The NNSA is working to address these issues broadly through its Nuclear Security Enterprise Workforce Development Strategy team, and we are building off the work of that group. This team is spearheading joint recruiting efforts, particularly for degreed employees, and

developing focused marketing and branding to increase visibility and create a consistent message of the opportunities across our enterprise.

At CNS, our strategy to overcome these challenges and build our workforce is broad. CNS's strategic academic alliances with regional and national universities, colleges, and schools allow both Pantex and Y-12 to develop strong research and development collaborations, training programs, and hiring pipelines. CNS partners with area educational institutions to promote interest in science, technology, engineering, math, and manufacturing skills and to provide awareness of job opportunities at Pantex and Y-12. Our programs engage students from middle schools through graduate-level college institutions, including outreach designed to provide awareness about the hurdles and expectations involved in working in the national security field.

Our vision is that these partnerships will positively impact every stage of the employment cycle, starting with building students' interest in critical fields at a young age, and then working with community colleges and universities to offer courses that align with future employment needs. We can then offer internships as an additional recruiting tool to expose students to our mission and processes and, finally, recruit new hires from degree and certification programs we have helped establish and support. After hire, we offer continuing education, training, and research opportunities through these academic alliances to maintain a diverse and knowledgeable workforce for our enduring mission.

In the following sections, I will detail our recruiting, training and education, research and development, community, and diversity partnerships.

Recruiting

A key aspect of setting up a robust recruiting pipeline involves building strategic partnerships with educational institutions. For example, in critical skill areas such as Nuclear Criticality Safety, CNS subject matter experts worked with Texas A&M University to create two-semester-long criticality safety courses within the Nuclear Engineering department. Similar discussions are ongoing with the University of Tennessee (UT) to adapt their criticality safety courses to align with CNS criticality safety content. Because of these partnerships, an increasing portion of CNS's nuclear engineering staff are being recruited from these two schools. Beyond this hiring pipeline, the strategic partnerships resulted in custom training courses designed specifically for CNS to further develop systems engineering, lean manufacturing, and statistical process control expertise.

Over the past five years, CNS has provided internship opportunities to students representing over 40 colleges and universities, including many from Historically Black Colleges and Universities (HBCUs) and Hispanic-Serving Institutions (HSIs). Through their personal relationships, these student interns help promote CNS's mission to a broader audience, in turn developing a robust hiring pipeline. After their internship, many students continue to support CNS projects as part of their graduate work. CNS staff participate as advisors and sit on graduate committees for these students, which in turn develops relationships between CNS staff and university faculty members.

Over the last three years, CNS has sponsored over 30 graduate students in our Graduate Assistantship Program and has authorized 10 Joint Assignment Agreements with key professors in support of our mission. Academic disciplines include business analytics; supply chain management; electrical

engineering; materials science; information science; nuclear engineering; mechanical engineering; industrial engineering; business administration; and law.

CNS Mission Engineering staff supports Fire Protection Programs and staffing plans by working with Oklahoma State University and the University of Maryland. Through these relationships, we promote CNS's special mission to the Fire Protection Engineering (FPE) audience for numerous career opportunities and internships. In addition to providing immediate help to both Pantex and Y-12, these internships help maintain a pipeline of new fire protection engineers. CNS is in the process of establishing a relationship with Eastern Kentucky University's FPE program. This small but growing program will be another university partnership to help ensure the critical FPE hiring pipeline remains a diverse, interdisciplinary group. CNS will also be working with the University of North Carolina at Charlotte and the University of New Haven as they work to establish their FPE programs and we helped establish a FPE graduate certificate program at the University of Tennessee.

Training and Education

Amarillo College and Pantex successfully collaborated in 2015 to secure a five-year, $750,000 DOE grant that supports safety training classes for DOE workers, primarily those employed at Pantex. This alliance is expanding its scope to include area industries, and employees from throughout the region may now enroll in asbestos training, and hazardous-material handling and transportation courses previously offered exclusively to Pantex workers. Local employers can realize sizable savings, paying only for tuition, not for travel and other expenses if their employees had to travel outside the area for this training.

Pantex is working with Canyon Independent School District, in Randall County of the Texas Panhandle, to establish a trades curriculum so high school students can be trained and pass the CNS qualification test to be a production technician and/or certified welder upon graduation. Courses taught through the academy are designed to equip potential job candidates with technical knowledge, leadership, and communication skills as well as an understanding of professional and safety standards.

A partnership with Texas A&M University will establish a college class at the Pantex site so workers can earn their degree in on-site facilities. They would attend their class and then go back to work to finish required work time. Similar partnerships are being established with West Texas A&M University and Texas Tech University.

A member of the CNS Mission Engineering staff supports West Texas A&M University as a board member of the engineering industry advisory council. This council provides industry needs insight, as well as feedback to support Accreditation Board for Engineering and Technology accreditation. Recent milestones include the development of an electrical engineering degree plan, which supports a growing critical need for electrical engineers at CNS and for the nation.

A partnership between Y-12 and the Atomic Trades and Labor Council, with classwork provided by Pellissippi State Community College, has graduated 97 Y-12 employees from its apprenticeship program since the program was reinstituted in 2008. In May 2018, eight machinists completed the four-year program. A similar program at Pantex is being developed, and NNSA is supporting a program that will recruit up to 45 apprentices a year (25 at Y-12 and 20 at Pantex) over the next three years to work as

steam plant operators, electricians, pipefitters, machinists, iron workers and riggers, utility operators, and air conditioning/refrigeration technicians, as well as other crafts.

The University of Tennessee has provided CNS with multiple workforce development programs and initiatives in support of CNS and its mission. These initiatives include master degree cohort programs in Engineering Management and Systems Engineering, of which CNS has more than 60 graduates and over 25 current students participating. The program is hosted in Oak Ridge, but it includes CNS participants that engage remotely from Amarillo, and there is the potential for other sites in the Nuclear Security Enterprise to participate in the future. These types of programs will serve as powerful recruiting and retention tools while also helping us develop our workers.

UT has also provided professional development programs for Y-12 employees in project management, fire protection engineering, business analytics, industrial systems engineering, and leadership/executive management. We also developed cohort-style master's degree programs in systems engineering with both UT and TAMU; CNS funds students' participation in the two-year degree program and works with both institutions to format the schedule to best fit CNS employee schedules.

Collaboration, Research, and Development

Since 2016, CNS and the University of Tennessee have collaborated on over 15 unique research and development projects. These projects range from supporting CNS and Oak Ridge National Laboratory additive manufacturing initiatives to investigating process parameters in support of the production of spherical powder particles by gas atomization. UT has supported CNS's maintenance efforts and assisted with efforts to enhance cybersecurity capabilities and platforms.

Texas A&M University (TAMU) now has leased office space in Pantex's new John C. Drummond Center to collaborate on engineering, high explosives, and emergency management projects. This will in the long term enable future employee development opportunities around the natural progression of technologies.

Community Involvement and Outreach

Y-12 is engaged with Roane State Community College in an innovative program called "Dream it. Do it.," which pairs local eighth-grade teams with area industries. The students create videos of their partner manufacturing businesses, which are then voted on by the public online. The goal of the program is to promote awareness among young people of the jobs and career opportunities available in our industry.

Morgan County's Career Technical Center took part in National Manufacturing Day on October 2, 2018. Through a program created at Y-12, the students were able to engage with our employees in a panel discussion and learn about career pathways from our workforce in the crafts and trades industry.

Oak Ridge Schools teachers were invited to sit in with our Atomic Trades and Labor Commission trades and crafts leaders during a teacher in-service day to discuss how best to engage with them about job opportunities and career pathways for their students, and ATLC leaders regularly visit area schools to expose students to opportunities in the trades.

Pantex is participating in the Canyon Independent School District Interview Week. During Interview Week, seniors will be interviewed by business professionals from the community to receive constructive and purposeful feedback. The opportunity to "Practice without Penalty" in an interview setting is

intended to give students the competitive edge needed to succeed when they step into an interview for a highly desired job.

A number of Pantex and Y-12 employees engage with local schools to support FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competitions, and we sponsor science bowls for middle schoolers and high schoolers in Amarillo and Oak Ridge. At the events last month at Pantex, 290 students participated in the High School Science Bowl and another 290 participated in the Middle School Science Bowl, while the High School Science Bowl in Oak Ridge drew 59 teams and approximately 250 students.

Diversity

CNS participates in the NNSA-funded Minority Serving Institutions Partnership Program (MSIPP), which offers research and internship opportunities to students at Historically Black Colleges and Universities (HBCUs) and Hispanic-Serving Institutions (HSIs). Over the past five years, CNS has built strong relationships with 13 HCBUs and four HSIs across the southeast. The MSIPP created multiple research partnerships including joint-funded projects, peer-reviewed research publications, patents, and, most importantly, a diverse hiring pipeline.

The CNS manager of Physical Sciences has attended Florida A&M University's STEM Day each of the past three years and provided a relevant technology demonstration. The event now brings together almost 800 middle and high school minority students in the Tallahassee area.

Each year, Consolidated Nuclear Security hosts an event known as Introduce a Girl to Engineering where employees across the site come together to provide female middle- and high school students in Amarillo and Oak Ridge a chance to interact with women and men working in the engineering and STEM fields. The goal of this event is to ignite an interest for STEM careers. Several booths with hands on activities and speaking engagements are designed to expose the students to the various ways STEM related fields can have an impact on the world that we live in. We had more than 600 students participate in Introduce a Girl to Engineering at both sites last month (approximately 300 at Pantex and 330 at Y-12)—a number that would have been much larger had school not been cancelled in one East Tennessee county because of a flu outbreak.

Summary

It is through all of these avenues that we must continue to grow our future workforce. Just as the history of Pantex and Y-12 is rich and varied, so must be our approaches to recruiting, development, engagement, and retention. A strategic, broad, varied, and complementary approach is necessary to help preserve our capability to perform the important mission work entrusted to us and will help keep Pantex and Y-12 on track to provide a safe, secure and effective nuclear deterrent into the future.

Thank you for the opportunity to speak to you today.